

State: TAMILNADU

Agriculture Contingency Plan District: THIRUVARUR

1.0 District Agriculture profile				
1.1	Agro-Climatic/Ecological Zone			
	Agro Ecological Sub Region (ICAR)	East Coastal Plain, hot, subhumid ecosubregion (18.2)		
	Agro-Climatic Region (Planning Commission)	East Coastal Plains and Hill Region (XI)		
	Agro Climatic Zone (NARP)	Cauvery Delta zone (TN-4)		
	List all the districts or part thereof falling under the NARP Zone	Thiruvarur, Thanjavur, Nagapattinam and Parts of Trichy, Ariyalore, Cuddalore and Pudukottai		
	Geographic coordinates of district Hqs	Latitude	Longitude	Altitude
		10° 20' N	75° 15' E	10 m
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Tamil Nadu Rice Research Institute, P.O :Aduthurai.		
Mention the KVK located in the district	Krishi Vigyan Kendra , Needamangalam (Post), Thiruvarur District			
1.2	Rainfall	Average (mm)	Normal Onset	Normal Cessation
	SW monsoon (June-Aug):	302	2 nd week of June	1 st week of August
	NE Monsoon (Sep - Dec):	665	2 rd week of September	1 st week of December
	Winter (Jan- Feb)	57	4 nd week of January	2 nd week of February
	Summer (Mar-May)	100	3 rd week of April	2 nd week of May
	Annual	1124		

1.3	Land use pattern of the district	Geographical area	Forest area	Land under non-agricultural use	Permanent pastures	Net cultivated area	Cultivable wasteland	Land under Misc. tree crops and groves	Barren and uncultivable Land	Current fallows	Other fallows
	Area ('000ha)	209.7	2.45	37.08	0.79	155.24	1.74	2.19	0.12	2.14	7.97

1.4	Major Soils	Area (Sq.Km)	Percent (%) of total
	Very deep black soils	828	39.5
	Deep black soils	628	30.0
	Deep red soils	118	5.6
	Moderately deep red soils	112	5.3
	Moderately deep black soils	59	2.8
1.5	Agricultural land use	Area ('000 ha)	Cropping intensity %
	Net sown area	155.2	176.5
	Area sown more than once	118.8	
	Total cultivable area	274.0	

1.6	Irrigation	Area ('ha)	Per cent (%) to gross and net cultivated area	
	Net irrigated area	149.6	94.79	
	Gross irrigated area	187.1	96.25	
	Rainfed area	5.7	5.21	
	Sources of Irrigation	Number	Area (ha)	% area
	Canals	13	145.2	100.0
	Tanks	-	-	
	Open wells	164	-	
	Tube wells -	10477	-	
	Filter points tube well	2849	-	
	Dug cum bore wells	338	-	
	Other sources-Supplementary wells	-	27248	16.4
	Total irrigated area		166145	100.0
	Pumpsets	18860	-	
	No. of Tractors	NA	-	
	Groundwater availability and use	No. of blocks	% area	Quality of water
	Over exploited	1	14.1	pH – 7.2 to 7.6 EC - 1.3 to 1.5
	Critical	1	11.4	
	Semi- critical	4	50.7	
	Safe	2	23.8	
	Waste water availability and use (MCum)	Data not available		

*NA=Not available

1.7 Area under major field crops & horticulture etc. (2008-09)

1.7	S.No.	Major Field Crops cultivated	Area ('000 ha)*					
			Kharif		Rabi		Summer	Total
			Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	
1	Paddy	9.0	-	140.6	-	1.9	151.6	
2	Blackgram	0.4	-	0.3	52.9	-	53.7	
3	Greengram	-	0.02	-	30.7	-	30.7	
4	Groundnut	0.09	-	7.7	-	-	7.8	
5	Gingelly	-	0.01	0.7	2.0	-	2.7	
	S. No	Horticulture Crops - Vegetables	Total Area ('000 ha)* (2008-09)					
	1.	Tapioca	0.2					
	2.	Brinjal	0.02					
	3.	Bhendi(ladies finger)	0.01					
	4.	Drumstick	0.04					
	5.	Greens	0.008					
	S. No	Horticulture Crops – Fruits	Total Area ('000 ha)* (2008-09)					
	1.	Banana	0.4					
	2.	Mango	0.1					
	3.	Jack	0.01					
	S. No	Flowers	Total Area (2008-09)					
			-					
	S. No	Spices & Plantation crops	Total Area ('000 ha)* (2008-09)					
	1	Arecanut	0.02					
	2	Coconut	5.3					
	3	Tamarind	0.1					

1.8	Livestock	Male ('000)	Female ('000)	Total ('000)			
	Cattle	-	-	269.5			
	Buffalo			7.6			
	Sheep			311.1			
	Goat			5.8			
	Others			2.05			
	Commercial poultry			6000(No. of farms-6)			
	Rat			386			
1.9	Poultry	No. of farms	Total No. of birds ('000)				
	Commercial						
	Backyard						
1.10	Fisheries						
	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)	
		12032	-	-	-	-	-
	ii) Inland (Data Source: Fisheries Department)	No. Farmer owned ponds		No. of Reservoirs		No. of village tanks	
		300		----		4814	
	B. Culture						
		Water Spread Area (ha)		Yield (t/ha)		Production ('000 tons)	
	i) Brackish water (Data Source: MPEDA/ Fisheries Department)	540		1		540	

ii) Fresh water (Data Source: Fisheries Department)	500	2	1000
Others	-	-	-

1.11 Production and Productivity of major crops (Average of last 3 years i.e. 2006, 2007, 2008)

1.1 1	Production and Productivity of major crops	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)
	Paddy	32.2	3568	271.8	1933	7.2	3707	311.3	3069
	Blackgram	91.6	207	62.6	207	10977.8	207	11132.0	207
	Greengram	4.4	135	4905.6	135	-	-	4910.0	135
	Groundnut	215.6	2199	17133.3	2199	-	-	17349.0	2199
	Gingelly	431	570	1073	532	-	-	1504	551

1.12	Sowing window for 5 major crops (start & end of sowing period)	Paddy	Blackgram	Greengram	Groundnut	Cotton	Sugarcane
	Kharif- Irrigated	2 st week of June to 1 st week of July	1 st week of June to 1 st week of July	-	1 st week of June to 2 nd week of July	-	-
	Kharif - Rainfed	-	-	-	-	-	-
	Rabi- Irrigated	2 st week of September to 1 st week of October	3 rd week of September to 2 nd week of October	-	-	3 rd week of September to 2 nd week of October	2 nd week of December to last week of January
	Rabi-Rainfed	-	-	-	-	-	-

	Summer-Irrigated	2 st week of December to 1 st week of January	last week of December to 1 st week of January	4 th week of December to 1 st week of January	3 rd week of December to 2 nd week of January	2 st week of January to 1 st week of February	-
--	------------------	---	--	---	---	---	---

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 inundation	-	-	√
	Pests and diseases (specify)	-	√	-
	Others (specify)	-	-	-

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

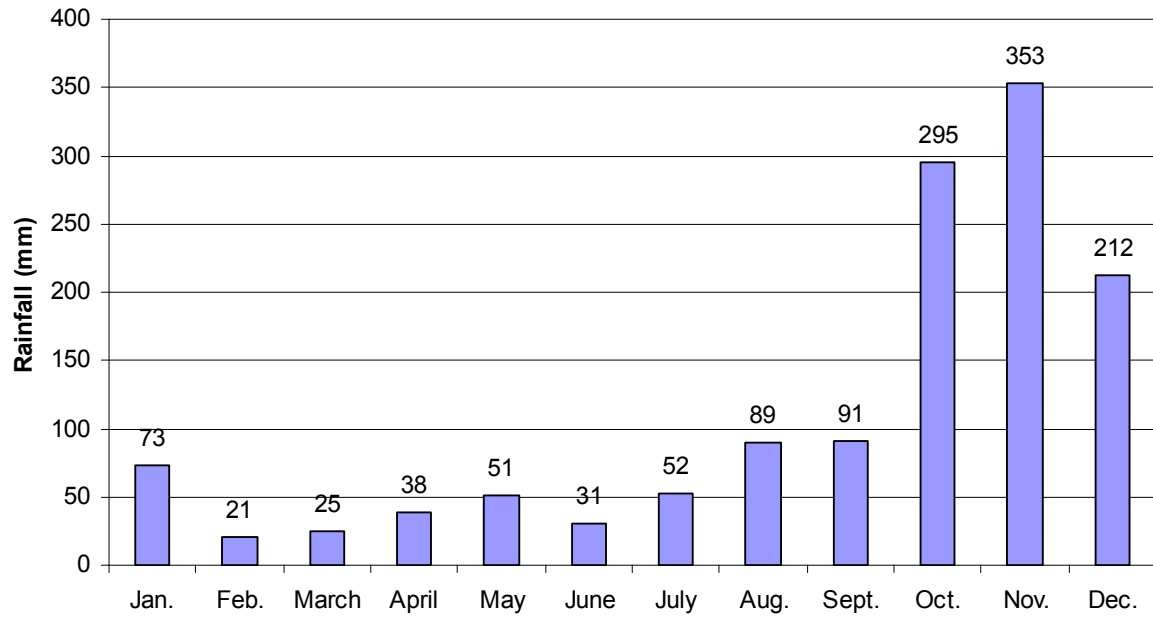
Annexure 1. Location map of Thiruvarur district and the blocks



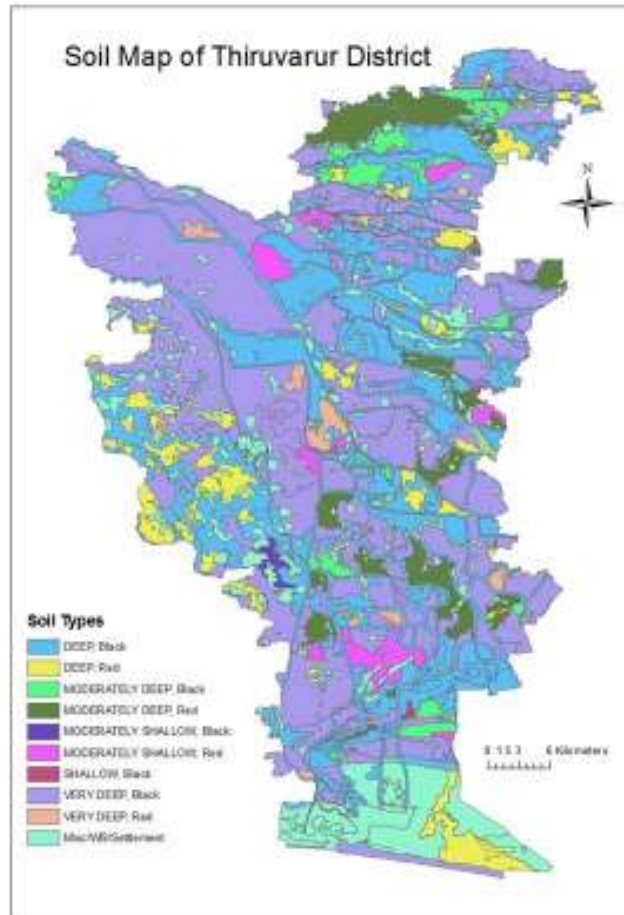
Thiruvarur District Blocks



Annexure 2. Mean annual rainfall of Thiruvarur district of Tamil Nadu



Annexure 3. Soil map of Thiruvarur district of Tamil Nadu



Source:NBSSLUP

2.0 Strategies for weather related contingencies

2.1 Drought –Not applicable

2.1.1 Rainfed situation – Not applicable for Thiruvavarur district

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delay by 2 weeks)			NA		
Delay by 4 weeks					
Delay by 6 Weeks					
Delay by 8 Weeks					
Condition			Suggested Contingency measures		
Early season drought (Normal onset, followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.)			NA		
Mid season drought (long dry spell)			NA-		
At vegetative stage			NA-		
At reproductive stage			NA-		
	NA-				

2.1.2 Irrigated situation

Condition	Suggested Contingency measures				
	Major Farming situation	Normal Crop/cropping system	Change in crop /cropping system	Agronomic measures	Remarks on Implementation
Delayed/ limited release of water in canals due to low rainfall	Very deep clay, deep clay and medium clay soils	Rice-Rice-Pulse	Green manure-Rice-Pulse	Use short duration varieties like ADT 36, ADT 37 , ADT 38 , ADT (R) 48 SRI method of planting to reduce the duration of seedling age Direct sown wet seeding by drum seeder Areobic rice cultivation by irrigaion of water after disapperance Semi dry rice cultivation (line sowing and broad casting of sprouted seeds in well ploughed soil based on the receipt rainfall and converted as wetland conditionafter water released from canal water.	Source for seeds : Department of Agriculture, Krishi Vigyan Kendra, and Tamil Nadu Rice Research Institute.
	Deep red and moderately deep red soils	Rice (Short Duration)-Rice (Medium Duration)-Rice fallow pulse Fallow- Rice (Medium Duration)-Rice fallow pulse	Maize-Rice –Rice Fallow pulse (summer irrigated) Green manure-Rice-Irrigated and Rice fallow Pulse	Use maize short duration hybrids Hybrids : COMH 5, Kargil, Cultivation of maize in broad bed furrows Application of micro nutrient @ 12.5 kg /ha Management of shoot fly by treating the seeds with carbofuran 3 G (20 :1 ratio) Rice Sowing green manures like sunhemp, daincha and theprosia (Kozhungi) Use short duration variety like ADT 36, ADT 37 , ADT 38 , ADT (R) 48 SRI method of planting Transplanting the seedling by Paddy transplanter ZnSO4 application & 25 kg/ha Adopting IPDM practices to control pest and disease problem	Source for seeds : TNAU, Coimbatore ad Privte seed companies like MAHYCO, RASI seeds Source for green manure seeds: TRRI, Aduthurai and Department of Agriculture

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	Rice based farming system Very deep clay, deep clay and medium clay soil Deep red and moderately deep red soil	Rice-Rice-Pulse/Groundnut	Pulse – Rice – Rice Fallow Pulse Pulse – Rice – Gingelly Pulse – Rice – Vegetables	Sowing short duration black gram varieties like ADT 3 and ADT 5. Long duration rice variety (CO (R) 50, CR 1009, BPT 5204 and Improved White Ponni Application rice micronutrient(IX) mixture Sowing improved gingelly varieties like SVPR 1, SVPR 2 and TMV 7 Cultivation of vegetables like bhendi, chilli and brinjal Foliar application of 2% DAP and 1% TNAU Pulse wonder spray for pulses Adopting IPDM practices for rice pests and disease problem like Stem borer, Leaf folder, Blast, Bacterial leaf streak, Grain discoloration Adopting IPDM practices for pulse pest and disease problem like Thrips, Aphids, Pod borer Adopting IPDM practices for gingelly pests and disease problem like Leaf miner, Phyllody Adopting IPDM practices for pests on vegetables and diseases problem like Fruit borer, Wilt	TNAU Pulse wonder is available in Department of crop Physiology, TNAU, Coimbatore. For gingelly and vegetable seeds Department of Seed science and technology and department of Olericulture, TNAU, Coimbatore
Insufficient groundwater recharge due to low rainfall	Rice based cropping system Very deep clay, deep clay and Medium clay soils Deep red and moderate deep	Rice-Rice-Pulse/Oilseeds	Groundnut/sunflower/Maize/vegetables-Rice-Pulse/Oilseeds	Groundnut Application of Gypsum @ 400 Kg/ha to groundnut Application of polythene mulch for Groundnut Pulses Foliar spray of nutrients DAP (25) and TNAU Pulse wonder(1%) to pulses Maize Sowing short duration maize hybrids CoMH 5, Kargil	TNAU Pulse wonder is available in Department of crop Physiology, TNAU, Coimbatore. Technology on polythene mulch is available from ARS, Vridhachalam and

Condition	Suggested Contingency measures				
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agonomic measures	Remarks on Implementation
	red soils			Adopting IPDM practices for rice pest and disease problem like Stem borer, Leaf folder, Blast, Bacterial leaf streak, Grain discolouration Adopting IPDM practices for pulse pest and disease problem like Thrips and Aphids, Pod borer Adopting IPDM practices for groundnut pest and disease problem like Leaf miner, Leafspot Adopting IPDM practices for vegetables pest and disease problem like Fruit borer, Wilt	ORS, Tindivanam For groundnut, sunflower and vegetable seeds Department of Seed science and technology and department of Olericulture, TNAU, Coimbatore

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

Condition	Suggested contingency measure			
	Vegetative stage	Flowering stage	Crop maturity stage	Post harvest
Continuous high rainfall in a short span leading to water logging				
Rice	Providing adequate drainage facility to drain out excess water Application of urea, gypsum, Neemcake and Potash at the rate of 22kg, 18, kg, 4, kg and 17 kg /acre	Providing adequate drainage facility to drain out excess water	Providing adequate drainage facility to drain out excess water Harvesting at physiological maturity stage	Drying the seeds at recommended moisture level of 14%
Pulses (Black gram, Green gram)	Providing adequate drainage facility to drain out excess water Gap filling by broadcasting the seed	Providing adequate drainage facility to drain out excess water Foliar application of DAP (2%) and Pulse wonder (1%) .		

Sesamum	--	Providing adequate drainage facility to drain out excess water Foliar application of NAA (2%)		
---------	----	--	--	--

Groundnut		-do -		
Sugarcane		Providing adequate drainage facility to drain out excess water Propping the plants		
Horticulture				
Banana	--	Propping with bamboo poles and tying with GI wires	--	--
Brinjal				
Coconut				

Heavy rainfall with high speed winds in a short span²				
Rice	Providing adequate drainage facility to drain out excess water	--	Foliar application of urea (2%), Super phosphate (1%) and Muriate of Potash (1%) Application zinc sulphate @ 10kg /ac	
Horticulture				
Banana		Propping with bamboo poles and tying with GI wires		
Outbreak of pests and diseases due to un seasonal rains				

Rice Stemborer Leaf folder Blast Bacterial leaf streak False smut / Grain discolouration Pulse Thrips and Aphids Pod borer Groundnut Leaf miner Leafspot	Spraying of Prophenophos 35 Ec @ 400ml /ac Spraying of Kocide 50 WP @ 300g /ac Spraying of Propiconazole 35 Ec @ 400ml /ac Adopting IPDM practices for rice pest and disease problem like Pheromone traps (5 no/ac), bird perches (20 nos/ac), sowing of cowpea seeds in bunds Adopting IPDM practices for pulse pest and disease problem like Systemic insecticide application Dimethote, Phosphomidon @ 400ml/ac And Endosulphon @ 400ml/ac Adopting IPDM practices for groundnut pest and disease problem	-
Horticulture		
Vegetables like Bhendi, Chillies, Brinjal Fruit borer Wilt	Adopting IPDM practices for vegetables pest and disease problem	

2.3 Floods

Condition	Suggested contingency measure			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Transient water logging/ partial inundation¹ Rice	Raised bed nursery and tray nursery Use sprouted seeds will be used for sowing	Nutrient management Foliar spray of 1% urea + 0.5% ZnSO ₄ Pest and disease management		

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

Extreme event type	Suggested contingency measure			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Heat Wave	Not applicable			
Cold wave				
Frost				
Hailstorm				
Cyclone				

2.5 Contingent strategies for Livestock, Poultry & Fisheries:

2.5.1 Livestock

Condition	Suggested contingency measures		
	Before the event	During the event	After the event
Drought			
Feed and fodder availability	Establishment of grain and fodder banks at Taluk level	Block level officers to be entrusted with distribution of feed and fodder materials	Reviewing the number of feed and fodder banks and their ability to cope with the emergency in relation to feed and fodder availability and planning for more such feed and fodder banks in strategic areas
Drinking water	Creating filter points exclusively for supply of water In strategic areas Conservation of rain water in rain shed areas	Mobilization of water for drinking to affected areas from exclusive filter points at block level	Cleaning and desilting of water bodies in rain shed areas and cleansing the filter points for aquifer recharge
Health and disease management	Preventive vaccination against endemic diseases Supply of essential nutrients,minerals and trace elements	Ring vaccination in adjoining areas in case of outbreak to prevent further spread of disease Supply of essential nutrients,minerals and trace elements	Serological survey to assess the immune status against known endemic infectious diseases Supply of essential nutrients,minerals and trace elements
Floods			
Feed and fodder availability	Establishment of feed banks in elevated areas not known to be affected by floods	Mobilization of feed at the existing fodder bank from block level authorities	Replenishment of feed banks with good quality grains and crop residues

Drinking water	Establishment of filter points in elevated areas	Mobilization of water from filter points exclusively maintained for the purpose from block level authorities	Replenishment of water resources by proper cleaning and maintenance for recharging aquifers in filter points
Health and disease management	Preventive vaccination against endemic diseases Supply of essential nutrients,minerals and trace elements Sanitary measurement to be taken Provision of safe shelter Farm disaster kit containing temporary animal identification tags, handling equipment, first aid kit should be kept in a place known to the community	Mobilization of affected animals and provision of vaccine and medication Stranded animals should be rescued to safer places Emergency Veterinary Squad to be formed	Follow up health coverage Serological survey to assess the immune status against known endemic infectious diseases Supply of essential nutrients,minerals and trace elements
Cyclone			
Feed and fodder availability	Establishment of feed banks in safe areas not known to be affected by cyclone	Mobilization of feed from the existing fodder bank	Replenishment of feed banks with good quality grains and crop residues
Drinking water	Establishment of filter points in safe areas	Mobilization of water from filter points exclusively maintained for the purpose	Replenishment of water resources by proper cleaning and maintenance for recharging aquifers in filter points
Health and disease management	Preventive vaccination against endemic diseases Supply of essential nutrients,minerals and trace elements Sanitary measurement to be taken Provision of safe shelter Farm disaster kit containing temporary animal identification tags, handling equipment, first aid kit should be kept in a place known to the community	Mobilization of affected animals with vaccine and medication Emergency Veterinary Squad to be formed	Follow up health coverage Serological survey to assess the immune status against known endemic infectious diseases Supply of essential nutrients,minerals and trace elements
Heat wave and cold wave	Not applicable		

2.5.2 Poultry

	Suggested contingency measures			Convergence/lin kages with ongoing programs, if any
	Before the event	During the event	After the event	
Drought				-
Feed ingredients	Establishment of grain/feed banks at block levels	Mobilization of feed resources from block level	Replenishment of feed resources	
Drinking water	Establishment of filter points for supply of water	Mobilization of water for drinking from filter points	Cleaning and desilting water bodies and cleansing the filter points for aquifer recharge	
Health and disease management	Preventive vaccination against endemic diseases Supply of essential nutrients,minerals and trace elements	Ring vaccination in adjoining areas in case of outbreak to prevent further spread of disease Supply of essential nutrients,minerals and trace elements	Serological survey to assess the immunity against known endemic infectious diseases Supply of essential nutrients, minerals and trace elements	
Floods				
Feed ingredients	Establishment of feed and water banks in elevated areas not known to be affected by floods	Mobilization of feed from the existing fodder bank	Replenishment of feed banks with good quality grains and crop residues	
Drinking water	Establishment of filter points in elevated areas	Mobilization of water from filter points exclusively maintained for the purpose	Replenishment of water resources by proper cleaning and maintenance for recharging aquifers in filter points	
Health and disease management	Preventive vaccination against endemic diseases Supply of essential minerals and trace elements Provision of temporary shelters in high areas Sanitary measurement to be taken	Mobilization of affected birds with vaccine and medication Emergency Veterinary Squad to be formed	Follow up health coverage Serological survey to assess the immune status against known endemic infectious diseases Supply of essential nutrients,minerals and trace elements	
Cyclone	Not applicable			
Heat wave and cold wave				

2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures			Convergence/linkages with ongoing programs, if any
	Before the event ^a	During the event	After the event	
1) Drought				-
A. Capture		-	-	
Marine	-	-	-	
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	Safe disposal of the stock	Emergency harvest/Water supply from other sources (bore well)	Pond drying till bottom cracking	
(ii) Impact of salt load build up in ponds / change in water quality	Increase in salinity		Reclamation of soil	
(iii) Any other	-			
2) Floods				
A. Capture				
Marine	Prevention of fishing	Safely return back to the shore/Staying in cyclone shelter	Return to fishing	
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	Raising the bunds	Damage and loss	Strengthening the bunds	
(ii) Water continuation and changes in water quality	Emergency harvest		Water quality testing and corrective measures	
(iii) Health and diseases	Emergency harvest		Preparation of pond following sanitation measures	

(iv) Loss of stock and inputs (feed, chemicals etc)	Disposal of the stock to a safe place		Proper storage construction to keep the stock and inputs	
(v) Infrastructure damage (pumps, aerators, huts etc)	Safe removal of valuables to other place		Replacement/repairing the infrastructure	
(vi) Any other				
3. Cyclone / Tsunami	NA			