

State: TAMIL NADU

Agriculture Contingency Plan for District: NAGAPATTINAM

1.0 District Agriculture profile				
1.1	Agro-Climatic/Ecological Zone			
	Agro Ecological Region / Sub Region (ICAR)	Eastern Coastal Plain, Hot Subhumid To Se (18.2)		
	Agro-Climatic Region (Planning Commission)	East Coast Plains And Hills Region (XI)		
	Agro Climatic Zone (NARP)	Cauvery Delta zone (TN-4)		
	List all the districts or part thereof falling under the NARP Zone	Thanjavur, Thuraiyur, Musiri, Kulithalai, Lalgudi and Tiruchi of Tiruchirapalli district, Aranthangi of Pudukkottai district, Chidambaram and Kattumannarkovil of South Arcot district		
	Geographic coordinates of district	Latitude	Longitude	Altitude/Elevation
		10°46'12.72"N	79°50'46.68"E	6m
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Tamil Nadu Rice Research Institute, Aduthurai -612 101.		
Mention the KVK located in the district	ICAR KVK, Sikkal, Nagapattinam district -614714			
1.2	Rainfall	Average (mm)	Normal Onset	Normal Cessation
	SW monsoon (June-Sep):	361.6	2 nd week of June	1 st week of August
	NE Monsoon(Oct-Dec):	1065.5	2 nd week of September	1 st week of December
	Winter (Jan- Feb)	76.5		
	Summer (Mar-May)	370.5		
	Annual	1874.1		

1.3	Land use pattern of the district (latest statistics)	Geographical 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)	271.6	4.6	47.7	1.0	3.5	8.2	33.4	6.9	12.2

1.4	Major Soils	Area (000'ha)	Percent (%) of total
	Deep Black soils	70.2	45.7
	Very Deep Black soils	94.6	61.7

1.5	Agricultural land use	Area (000'ha)	Cropping Intensity (%)
	Net sown area	153.3	175.9
	Area sown more than once	116.4	
	Gross cropped area	269.7	

1.6	Irrigation	Area ('000ha)		
	Net irrigated area	128.8		
	Gross irrigated area	160.2		
	Rainfed area	24.6		
	Sources of Irrigation	Number	Area (ha)	% area
	Canals		122.7	99.5
	Tanks	-	-	
	Open wells	4019	-	
	Bore wells	124	-	

Lift irrigation schemes			
Other sources		0.5	0.5
Total		123.4	100.0
Pumpsets			
Micro-irrigation			
Groundwater availability and use	No. of blocks	% area	Quality of water
Over exploited	4	36.4	Data not available
Critical	-	-	
Semi- critical	1	9.1	
Safe	-	-	
Saline	6	54.6	
Wastewater availability and use	Data not available		

Area under major field crops & horticulture etc.

1.7	Major Field Crops cultivated	Area ('000ha)						
		<i>Kharif</i>		<i>Rabi</i>		Summer	Total	
		<i>Irrigated</i>	<i>Rainfed</i>	<i>Irrigated</i>	<i>Rainfed</i>			
	1	Paddy	157.4			-	170.8	
	2	Blackgram			61.5	-	61.5	
	3	Greengram			23.7		23.7	
	4	Sugarcane	Planted : Ratoon : 2.734:3.707					6.4
	5	Groundnut	0.5			-	3.7	
	6	Maize	27.0		-	-		
		Horticulture crops - Fruits	Total area					
	1	Mango	2.9					
	2	Banana	0.6					
3	Cashew	2.2						

	Horticultural crops - Vegetables	Total area
1	Vegetable	
2	Tomato	0.1
3	Brinjal	0.1
4	Bhendi	-
	Flowers	0.4

1.8	Livestock	Male ('000)	Female ('000)	Total ('000)			
	Non descriptive Cattle (local low yielding)	38.4	90.4	128.9			
	Crossbred cattle	30.8	141.2	172.0			
	Buffaloes total	6.6	25.2	31.8			
	Commercial dairy farms			-			
	Goat			453.7			
	Sheep			18.7			
	Others (Camel, Pig, Yak etc.)			23.3			
1.9	Poultry						
	Commercial			192.7			
	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)	

	91415	997	7093			30
ii) Inland (Data Source: Fisheries Department)	No. Farmer owned ponds		No. of Reservoirs		No. of village tanks	
	54		----		662	
B. Culture						
	Water Spread Area (ha)		Yield (t/ha)		Production (tons)	
i) Brackish water (Data Source: MPEDA/ Fisheries Department)	2196		1		2196	
ii) Fresh water (Data Source: Fisheries Department)	62		2		134	
Others						

1.11	Production and Productivity of major crops (Average of last 3 years: 2006, 07, 08)	Kharif		Rabi		Summer		Total	
		Production (tonnes)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production (tonnes)	Productivity (kg/ha)
1	Rice	80357	3050	271830	2367			352187	2182
2	Groundnut							9723	3045
3	Sesamum							260	282
4	Blackgram							15028	266
5	Greengram							7146	302
	Major Horticultural crops								
1	Mango							15116.4	5.2
2	Banana							21152	32
3	Cashew							6.8	3.0

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

1.13	What is the major contingency the district is prone to? (Tick mark and mention years if known during the last 10 year period)	Regular	Occasional	None
	Drought			√
	Flood	√		
	Cyclone			√
	Hail storm			√
	Heat wave			√
	Cold wave			√
	Frost			√
	Seawater inundation			√

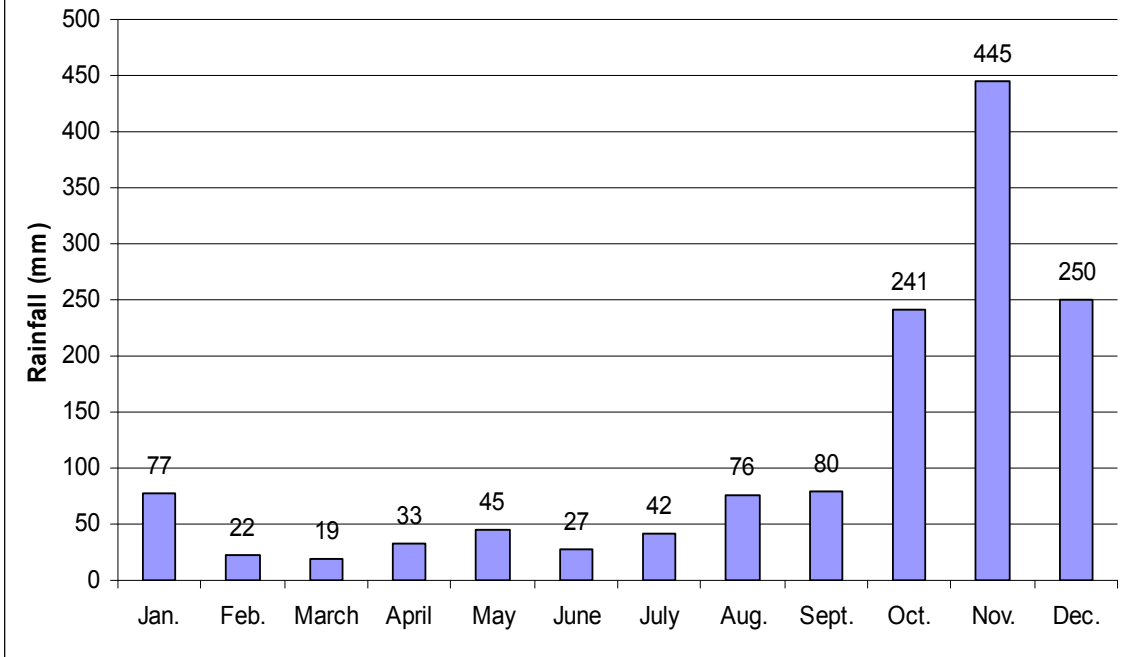
	<p>Outbreak of pests and diseases</p> <p><u>Rice</u> Stemborer Leaf folder Blast Bacterial leaf streak</p> <p><u>Pulse</u> Pod borer Blackgram Root rot</p>	√		
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1.14	Include Digital maps of the district for	Location map of district within State as Annexure 1	Enclosed: Yes
		Mean annual rainfall as Annexure 2	Enclosed: Yes
		Soil map as Annexure 3	Enclosed: Yes

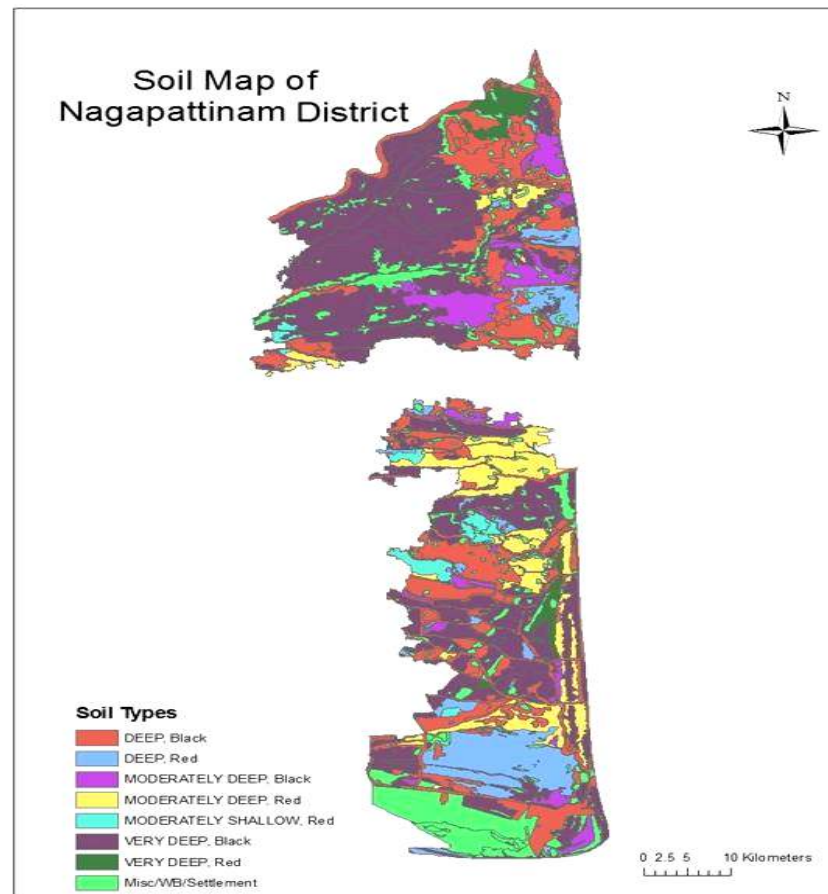
Annexure 1. Location map of Nagapattinam district and the blocks



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



Annexure 3. Soil map of Nagapattinam district



2.0 Strategies for weather related contingencies

2.1 Drought

Condition	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Suggested Contingency measures	
				Agronomic measures	Remarks on Implementation
Early season drought (delayed onset)	Black soil	Blackgram	No change	1.Seed treatment 2. Normal sowing will be taken up. 3.Maintaining the population (22 plants per Sq.m) 4.Using of mobile sprinklers	Department of Agriculture
Delay by 2 weeks (4 th week of June)		Gingelly			

2.1.1 Rainfed situation

Condition	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Suggested Contingency measures	
				Agronomic measures	Remarks on Implementation
Early season drought (delayed onset)	Black soil	Blackgram	No change	1.Seed treatment 2.Spray 0.5 % KCl spray during flowering and pod development stage 3.Maintaining the population (11 plants per Sq.m)	Department of Agriculture
Delay by 4 weeks (2 nd week of July)		ADT 3			
		Gingelly			

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Early season drought (delayed onset) Delay by 6 weeks (4 th week of July)	Black soil	Blackgram	Green Manure crops like Daincha, Sunhemp and Kolingi	1. Seed treatment 2. Soil and moisture conservation practices for Rabi sowing 3. Spray anti-transpirants.	Department of Agriculture
		Gingelly		1. Seed treatment 2. Soil and moisture conservation practices for Rabi sowing	

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Early season drought (delayed onset) Delay by 8 weeks (2 nd week of August)	Black soil	Blackgram	No change	-	Department of Agriculture
		Gingelly	-do-	-	

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Crop management	Soil management	Remarks on Implementation
Early season drought (Normal onset, followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.) At vegetative stage	Black soil	Blackgram	No Change Prefer varieties like ADT 3 & 5	1. Intercultivation 2. Conservation Furrow 3. Thinning	Department of Agriculture

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		Remarks on Implementation
			Crop management	Soil management	
Early season drought (Normal onset, followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.)		Gingelly	No Change Prefer varieties like TMV 6 & TMV 3		

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		Remarks on Implementation
			Crop management	Soil management	
Mid season drought (long dry spell) At reproductive stage	Black soil	Blackgram	No Change Prefer varieties like ADT 3 & 5	1. Inter cultivation 2. Conservation Furrow	Department of Agriculture
		Gingelly	No Change Prefer varieties like TMV 6 & TMV 3		

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		Remarks on Implementation
			Crop management	Rabi Crop planning	
Terminal drought	Black soil	Blackgram	In situ residue mulching	Timely raising of rabi crops	Department of Agriculture
		Gingelly			

2.1.2 Irrigated situation

Condition				Suggested Contingency measures	
	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delayed/ limited release of water in canals due to low rainfall	Black soil	Rice – Rice Rice – Groundnut	No Change	Rice: 1. Raise Rice crop in semi dry condition 2. Spray Cycocel @ 1000 ppm 3. Foliar spray of Kaolin 3 % or KCl 1 %. Split application of Potassium i.e. 50 % at basal and 25 % each at tillering and panicle initiation stage. Groundnut: Application of Gypsum @ 400 Kg/ha to groundnut Application of polythene mulch for Groundnut	Department of Agriculture

Condition				Suggested Contingency measures	
	Major Farming situation	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	Black soil	Rice – Blackgram	No change	1. Spray 2 % DAP at the time of flowering and second spray 15 days after first spray & 2. Spray NAA 40 ppm twice (First appearance of flowering and after a fortnight) and TNAU Pulse wonder(1%) to pulses	Department of Agriculture

Condition				Suggested Contingency measures	
	Major Farming situation	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	Black soil	Rice	Green Manure (Daincha, Sunhemp and Kolingi)	In situ residue mulching	Department of Agriculture

Condition	Suggested Contingency measures				Remarks on Implementation
	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	
Insufficient groundwater recharge due to low rainfall	Black soil	Rice – Rice	Green Manure (Daincha, Sunhemp and Kolingi)	In situ residue mulching	Department of Agriculture

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	1. Proper Drainage 2. A mixture of Ammonium Chloride- 42 kg (or) Ammonium Sulphate 50 kg (or) Urea 22 kg, Gypsum 18 kg and Neem Seed Kernel Extract (NSKE) – 4 kg is prepared and kept for 24 hours then 17 kg of potash is added and the same is applied to the crop	1. Proper drainage 2. DAP – 4kg is mixed with 20 l of water, kept overnight and filtered. The filtrate is mixed with 2 kg urea, 2 kg potash and 180 l of water and sprayed as foliar spray twice.	Proper Drainage	The harvested grains are dried using mechanical drier
Groundnut	Proper drainage	Proper drainage Foliar application of TNAU Groundnut rich (2%)	1. Proper drainage 2. Harvesting at physiological maturity stage	Drying the seeds at recommended moisture level of 14%
Pulse (Black gram, Green gram)	1. Proper drainage 2. Gap filling by broadcasting the seed	Proper drainage 2. Foliar application of DAP (2%) and Pulse wonder (1%)	-do-	-do-

Sesamum	Proper drainage	Proper drainage Foliar application of NAA (2%)	-do-	-do-
Horticulture				
Bannana		Propping with bamboo boles and tying with GI wires		
Mango				
Heavy rainfall with high speed winds in a short span				
Rice	Proper drainage		Foliar application of urea (2%), Super phosphate (1%) and Muriate of Potash (1%) Application zinc sulphate @ 10kg /ac	
Horticulture				
Bannana		Propping with bamboo boles and tying with GI wires		
Outbreak of pests and diseases due to unseasonal rains				
<u>Rice</u> Stemborer Leaf folder Blast Bacterial leaf streak <u>Pulse</u> Pod borer	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 Adopting IPDM practices for pulse pest and disease problems Systemic insecticide application Dimethote, Phosphomidon @ 400ml/ac and Endosulphon @ 400ml/ac			-
Groundnut	-	-	-	
Blackgram	-	-	Root rot: Carbendazim drenching @ 1 g litre.	-

Gingelly	-	-	-	-
Ragi	-	-	-	-

2.3 Floods

Condition	Suggested contingency measure			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Transient water logging/ partial inundation				
Paddy	Raised bed nursery and tray nursery Sprouted seeds for sowing	Nutrient management Pest and disease management		

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

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	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 in the event of flood and tsunami 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	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

	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		Supply of essential nutrients,minerals and trace elements
Heat wave and cold wave			
Shelter/environ management	-	-	-
Health and disease management	-	-	-

2.5.2 Poultry

	Suggested contingency measures			Convergence/linkages 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 safe areas in the event of flood and tsunami Sanitary measurement to be taken	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	-
Cyclone				
Shortage of feed ingredients	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 Provision of temporary shelters in high areas Sanitary measurement to be taken	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				
Shelter/environment management	-	-	-	-
Health and disease management	-	-	-	-

2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event	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			
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 infra structure
(vi) Any other			
3. Cyclone / Tsunami			
A. Capture			
Marine	Prevention of fishing	Safely return back to the shore/Staying in cyclone shelter	Rehabilitation of affected area
(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)			