State: TAMIL NADU

Agriculture Contingency Plan for District: TIRUPPUR

1.0 District Agriculture profile				
1.1	**Agro-Climatic/Ecological Zone**			
	Agro Ecological Region /Sub Region (ICAR)	Eastern Ghat (TN uplands and SE Sahyadris), hot semi-arid ecosystem with mixed red and black soils and GP 90-120 days (8.1,8.3)		
	Agro-Climatic Region (Planning Commission)	Southern Plateau and Hills Region (X)		
	Agro Climatic Zone (NARP)	Western zone of Tamil Nadu (TN-3)		
	List all the districts or part thereof falling under the NARP Zone	Erode, Coimbatore and Tiruppūr Districts, Tiruchengodu taluk of Namakkal district, Manapparai of Tiruchirapalli district, Karur & Aravakurichi taluks of Karur district, Uthamapalayam & Periyakulam taluks of Theni district, Usilampatti taluk of Madurai district, Nilakottai and palani taluks of Dindigul district		
	Geographic coordinates of district	Latitude decimal degrees	Longitude decimal degrees	Altitude (MSL) meter
		$10^{o}24'$ N	$77^{o}26'$E	294 m
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Agricultural Research Station, Bhavanisagar		
	Name and Address of the KVK located in the District	-		
1.2	**Rainfall**	Average (mm)	Normal Onset (specify week and month)	Normal Cessation (specify week and month)
	SW monsoon (June-Sep):	131.4	2^{nd} week of June	1^{st} week October
	NE Monsoon(Oct-Dec):	324.7	2^{nd} week of October	3^{rd} week of December
	Winter (Jan- March)	18.9	-	-
	Summer (Apr-May)	144.3	-	-
	Annual	619.3	-	-

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
	(`000 ha)	519.6	48.2	66.9	0.1	4.0	0.6	2.5	89.4

1. 4	**Major Soils**	Area (‘000 ha)	Percent (%) of total
	Black soils	254.9	46.4
	Red soils	236.7	50.0
	Others	19.0	3.6
1.5	**Agricultural land use**	Area (‘000 ha)	Cropping intensity %
	Net sown area	196.0	103.0
	Area sown more than once	5.9	
	Gross cropped area	201.9	

1.6	**Irrigation**	Area (‘000 ha)	Percent (%)	
	Net irrigated area	119.3	62.8	
	Gross irrigated area	123.1	60.9	
	Rain fed area	72.9	37.1	
	Sources of Irrigation	Number	Area (‘000 ha)	% area
	Canals	18	42.2	35.4
	Tanks	178	1.4	1.2
	Tube wells & filter points	12911	10.1	8.7
	Lift irrigation	79244	75.6	54.8
	Other sources	-	0.1	0.1
	Total	92155	119.4	100
	Pump sets	87945		
	Micro-irrigation			
	Groundwater availability and use	No. of blocks	% area	Quality of water
	Over exploited	1	7.9	Salinity level: 58 % good, 33% moderate and 9% poor Residual Sodium Carbonate: 53% good, 46% moderate and 1% poor Sodium Adsorption Ratio:100 % good
	Critical	3	15.7	
	Semi- critical	8	71.6	
	Safe	1	04.8	
	Wastewater availability and use	Data not available	--	

*over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%

Area under major field crops & horticulture etc.

*If break-up data (irrigated, rainfed) is not available, give total area

1.7		**Major Field Crops cultivated**	**Area ('000 ha)**					
			Kharif		***Rabi***		**Summer**	**Total**
			Irrigated	***Rainfed***	***Irrigated***	***Rainfed***		
	1	Maize	13.7	0.0	14.4	0.4	-	28.5
	2	Sorghum	1.9	13.6	1.0	10.0	-	26.5
	3	Rice	0.0	0.0	9.7	-	1.3	11.1
	4	Groundnut	1.3	5.5	2.6	0.2	-	9.7
	5	Sugarcane	6.4				-	6.4
	6	Horse gram	-	1.1	-	4.7	-	5.9
	7	Green gram	-	1.4	0.1	2.1	-	3.6
	8	Cowpea	-	2.0	0.1	1.3	-	3.4
	9	Gingelly	0.2	0.4	1.8	0.1		2.5
	10	Sunflower	0.6	-	1.1	0.0	-	1.7
		Horticulture crops - Fruits	**Total area**		**Irrigated**		**Rainfed**	
	1	Total fresh fruits	6.2		6.2		0.0	
	2	Banana	3.9		3.9		-	
	3	Mango	1.7		1.7		0.0	
	4	Sapota	0.4		0.3		0.1	
	5	Guava	0.1		0.1		0.0	
	6	Amla	0.6		0.6		0.0	
		Horticultural crops - Vegetables	**Total area**		**Irrigated**		**Rainfed**	
	1	Onion	3.0		1.4 **(K)**	1.7**(R)**	-	
	2	Tomato	1.5		1.5		-	
	3	Tapioca	1.3		1.3		-	
	4	Drumstick	0.7		0.7		0.6	
	5	Beet root	0.4		0.4		-	
	6	Brinjal	0.3		0.3		-	

		Medicinal and Aromatic crops	**Total area**	**Irrigated**	**Rainfed**
	1	Kanvazhi kizanku (*Choriosa superpa)*	1.0	1.0	-
	2	Tobacco	0.3	0.3	0.0
		Spices and condiments			
	1	Turmeric	1.3	1.3	-
	2	Chillies	1.0	1.0	-
	3	Coriander	0.8	0.2	0.6
		Plantation crops	**Total area**	**Irrigated**	**Rainfed**
	1	Coconut	44.282	44.282	-
		Fodder crops	**Total area**	**Irrigated**	**Rainfed**
	1	Sorghum	23.5	1.2	22.3
	2	Naripayir (Phillipesara)	5.0	-	5.0
		Total fodder crop area	29.0	1.6	27.4
		Grazing land		--------	
		Sericulture etc			
		Others (Specify)			

1.8	**Livestock**	**Male (number)**	**Female (number)**	**Total (number)**
	Non descriptive Cattle (local low yielding)	-	-	19.2
	Crossbred cattle	-	-	220.3
	Non descriptive Buffaloes (local low yielding)	-	-	84.6
	Graded Buffaloes	-	-	
	Goat	-	-	223.2
	Sheep	-	-	300.5
	Others (Camel, Pig, Yak etc.)	-	-	66.6
	Commercial dairy farms (Number)			--
1.9	**Poultry**	**No. of farms**	**Total No. of birds (number)**	

	Commercial		5124.9
	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)	
		-	-	-	-	-	-
	ii) Inland (Data Source: Fisheries Department)	**No. Farmer owned ponds**		**No. of Reservoirs**		**No. of village tanks**	
		-		-		-	
	B. Culture						
		Water Spread Area (ha)		**Yield (t/ha)**		**Production ('000 tons)**	
	i) **Brackish water** (Data Source: MPEDA/ Fisheries Department)						
	ii) **Fresh water** (Data Source: Fisheries Department)						
	Others						

1.11	**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)
1	Maize							168.7	7302
2	Sorghum							88.6	1867
3	Paddy							83.0	6547

4	Groundnut								
5	Sugarcane								
Others									

* Tiruppur is the 31st district created recently and therefore production and productivity data is not available.

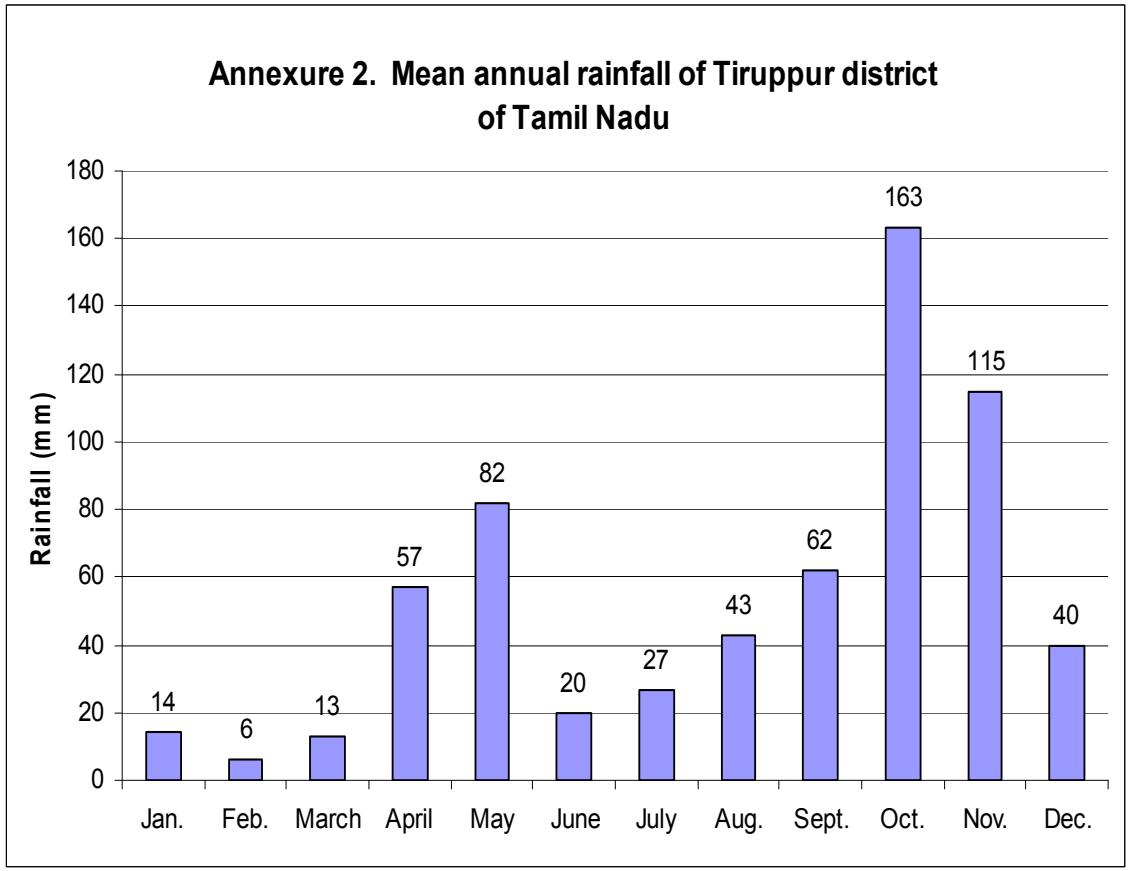
1.12	**Sowing window for 5 major crops (start and end of sowing period)**	Maize	Sorghum	Paddy	Groundnut	Sugarcane
	Kharif- Rainfed	July 1st week to Aug 1st week	July 1st week to Aug 1st week Up to July 1st week (grain) Up to Mid Sep (fodder)	---	June 3rd week to July 2nd week	---
	Kharif-Irrigated	May 2nd week- June 3rd week	July 2nd week-Aug 2nd week	June 2nd week to July 3rd week	---	---
	Rabi- Rainfed	Oct 2nd week to Nov 1st week	Oct 3rd week-Nov 2nd week	---	---	---
	Rabi-Irrigated	Nov 2nd week – Dec 4th week	Dec 1st week- Dec 4th week	Aug 3rd week to Sep 2nd week	---	Oct-Jan

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	-	-	√
	High intense storms	-	√	-
	Cyclone	-	-	√

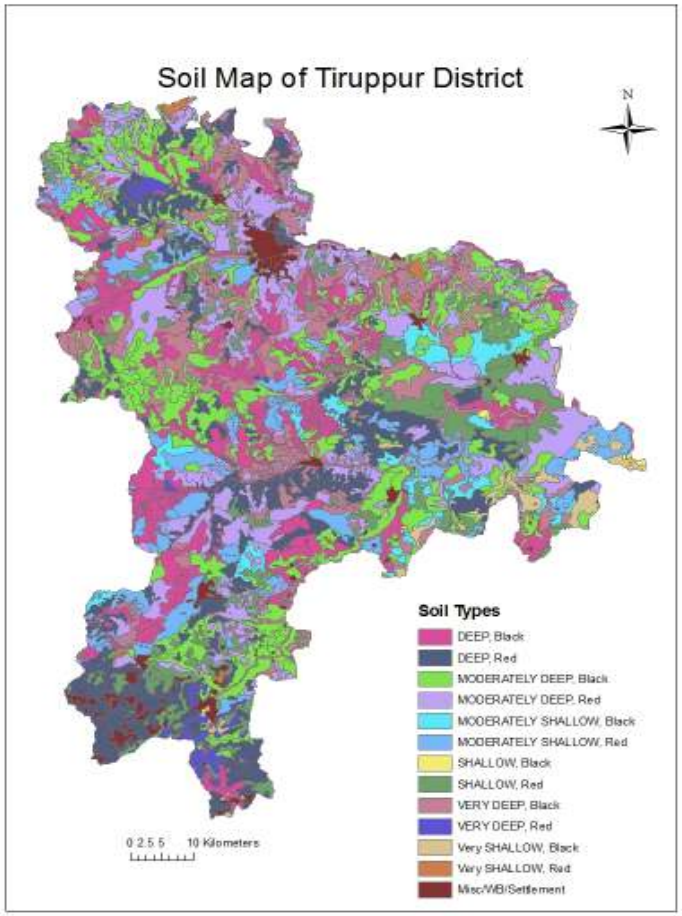
	Hail storm	-	-	√
	Heat wave	-	-	√
	Cold wave	-	-	√
	Sea water inundation	-	-	√
	Pests and diseases (specify)	√	-	-

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 1. Location map of Tiruppur district and the blocks


Annexure 2. Mean annual rainfall of Tiruppur district of Tamil Nadu
Rainfall (mm)
180
160
140
120
100
80
60
40
20
0
14
6
13
57
82
20
27
43
62
163
115
40
Jan.
Feb.
March
April
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.

Annexure 3. Soil map of Tiruppur District of Tamil Nadu



2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation

Condition			**Suggested Contingency measures for Kharif**		
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 (July 1st week)	Shallow red soils	Groundnut + Pulses intercropping	No change	➢ Mechanical sowing with tractor drawn seed drills to speed up the sowing to capture moisture for germination ➢ Seed hardening with 50% of volume solution of 0.5% Calcium chloride, for 6 hours ➢ Supplemental irrigation if available	Dept. of Agriculture
Delay by 4 weeks (July 3rd week)			Pure crop of sorghum/pearl millet/horgegram	-do-	
Delay by 6 weeks (August 1st week)			Pure crop of fodder sorghum /Horse gram /	Sowing along the contour If terminal drought occurred, crops may be harvested for fodder purpose. For sorghum crop, nitrogen application during vegetative stage enables early flowering when sufficient moisture is available	

Condition			**Suggested Contingency measures for Kharif**		
Early season drought (delayed onset)	**Major Farming situation**	**Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delay by 8 weeks (August 3rd week)	Shallow red soils	Groundnut + pulses intercropping system	Early sowing of rabi crops	-	-

		Suggested Contingency measures for Rabi			
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 October 3rd week	Black and red soils -Rabi	Maize/Sunflower/ sorghum/Horse gram	No change	For sunflower, soaking seeds in 2% ZnSO4 for 12 hrs and shade drying as seed hardening For sorghum, the seeds are pre-soaked in 2% potassium dihydrogen phosphate solution for 6 hours in equal volume and then dried back to its original moisture content in shade and are used for sowing Supplemental irrigation especially for maize available harvested water	
Delay by 4 weeks November 1st week			Sunflower/sorghum/horse gram	Early maturing hybrids/varieties sunflower: CO-1, Morden Supplemental irrigation if available	
Delay by 6 weeks November 3rd week			Same crops to be sown. If failure of grain crop, it may be used for fodder	For sorghum crop, nitrogen application during vegetative stage enables flowering when sufficient moisture is available No fertilizer is recommended for horse gram	
Delay by 8 weeks December 1st week			Crop failure	-	

Condition			Suggested Contingency measures for *Kharif*		
Early season drought (Normal onset)	**Major Farming situation**	**Crop/cropping system**	**Crop management**	**Soil management**	**Remarks on Implementation**
15-20 days dry spell after sowing leading to poor germination/crop stand etc.)	Shallow red soils	Groundnut + Pulses/ intercropping system	➢ Fodder sorghum as a alternate crop ➢ Initial drought of 15-20 days will not affect germination / crop stand. It actually helps groundnut crop for profuse and synchronous flowering	➢ Compartmental bunding on regular basis as the district is prone for frequent drought ➢ Tied ridging ➢ Sowing along the contour, ridging after three weeks.	
Mid season drought (long dry spell, > 2 consecutive weeks rainless (>2.5 mm) period At vegetative stage			➢ Supplemental irrigation through rain gun irrigation if available	➢ Sowing along the contour and ridging after three weeks. ➢ Thinning to reduce the plant population ➢ Dust mulching	
Mid season drought (long dry spell, > 2 consecutive weeks rainless (>2.5 mm) period At reproductive stage			➢ Severe drought years, crop will be harvested for fodder purpose. ➢ Supplemental irrigation with harvested rain water in ponds (10 mm depth.)	➢ Soil dust mulching	
Terminal drought			➢ Pods may be digged out manually using mamutty ➢ Soaking the soil artificially to enable easy picking.	--	

Condition			Suggested Contingency measures for Rabi season		
Early season drought (Normal onset)	**Major Farming situation**	**Crop/cropping system**	**Crop management**	**Soil management**	**Remarks on Implementation**
15-20 days dry spell after sowing leading to poor germination/crop stand etc.)	Black and red soils	Sunflower/Sorghum/Horse gram	➢ Resowing of crops ➢ Seed hardening with chemicals	➢ Compartmental bunding on regular basis as the district is prone for frequent drought ➢ Tied ridging	
Mid season drought (long dry spell, > 2 consecutive weeks rainless (>2.5 mm) period At vegetative stage			Supplemental irrigation Rain gun irrigation if available	➢Sowing along the contour, tieing alternate furrows with mulching of locally available material can be practiced ➢ Sowing along the contour, ridging after three weeks especially for sunflower.	
Mid season drought (long dry spell, > 2 consecutive weeks rainless (>2.5 mm) period At reproductive stage			Severe drought years, crop will harvest for fodder purpose. Supplemental irrigation with harvested rain water in ponds		
Terminal drought			-	**Late rabi Crop planning** 1. In rainfed black soils the following crops are recommended. a) Bengal gram (First FN of December)	

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	Canal irrigated red and black soils	Paddy	ID crops like maize-sunflower/ Gingelly	1. Irrigation at critical stages 2. Adopting microrrigation systems drip/sprinkler	

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	Canal irrigated red soils	Paddy	Maize/Sorghum/ greengram / horsegram are recommended during October as rainfed crops.	Prefer Drought tolerant variety Supplemental irrigation	

Condition			Suggested Contingency measures		
	Major Farming situation	**Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Insufficient groundwater recharge due to low rainfall	Bore well irrigated red soils and black soils	Sorghum Pearl millet Pulses	Sorghum area can be increased instead of maize.	Timely sowing2. Adopting irrigation for at critical stages Applications of nitrogen fertilizers to sorghum crop initiates early flowering	

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

Condition	Suggested contingency measure			
Continuous high rainfall in a short span leading to water logging	**Vegetative stage**	**Flowering stage**	**Crop maturity stage**	**Post harvest**
Groundnut	----		Drain excess water and Weather based advisory to be followed for harvesting.	1. Immediately after harvesting drying of produce

2.3 Floods **Not Applicable**

2.5 Contingent strategies for Livestock, Poultry & Fisheries

2.6 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	On anticipation of draught, farmers are advised to preserve the available fodder either in the form of hay or silage	Farmers are advised to avoid feed wastages by using machineries like feed chop cutter Advised to utilize agricultural by-products. Utilization of draught resistant tree fodders like leaves and pods of karuvel and velvel.	Feeding of animals for health improvement Farmers are advised to cultivate fodder for animal feeding.
Drinking water	Farmers are advised to build rain water harvesting system in their house and other building, construction of check dam and ponds in their field and other procedures to improve the ground water level. Farmers are educated to conserve the water.	Avoid wastage of water and advised to use only necessary quantity of water for all their operations.	Advised for effective utilization of water.
Health and disease management	As per the disease forecast of Animal Husbandry, Tirupur, the following diseases were encountered in this area during the period of draught and animals should be vaccinated 3 months before	Bacterial diseases should be treated with antibiotics. Viral diseases should be treated with supportive therapy. Antibiotic therapy for prevention of secondary	Animals should be treated with supportive therapy. Feeding of animals for health improvement.

	the anticipated draught. 1. Sheep pox 2. Foot and Mouth disease 3. Anthrax.	bacterial infections.	
Floods	Not Applicable		
Cyclone	Not Applicable		
Heat wave and cold wave	Not Applicable		

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	On anticipation of drought, farmers are advised to store the available feed ingredients.	Use unconventional feed ingredients. Maintain the birds depending upon the available feed	Maintain the birds depending upon the available feed	NIL
Drinking water	Farmers are advised to build rain water harvesting system in their house and other building, construction of check dam and ponds in their field and other procedures to improve the ground water level. Farmers are educated to	Avoid wastage of water and advised to use only necessary quantity of water for all their operations. Use of modern drinkers like nipple drinkers etc should be used	Advised for effective utilization of water.	

	conserve the water.			
Health and disease management	The birds should be vaccinated, medicated as per the schedule. Necessary steps to be taken to prevent heat related by draught like planting the trees, covering the low heat conducting material on the top of the shed etc.	Bacterial diseases should be treated with antibiotics. Viral diseases should be treated with supportive therapy. Antibiotic therapy for prevention of secondary bacterial infections. Necessary steps to be continued to prevent heat related by draught like planting the trees, covering the low heat conducting material on the top of the shed etc.	Birds should be treated with supportive therapy. Feeding of birds for health improvement and improved productivity.	
Floods	Not Applicable			
Cyclone	Not Applicable			
Heat wave and cold wave	Not Applicable			

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	• Harvesting large individuals • Increased Stocking-density in smaller/confined areas	• Harvesting large individuals • Disposable of unwanted excess stock • Stocking of desirable/special individuals in brood stock ponds	• Proper management of the local environment

(ii) Changes in water quality	Negligible changes in water quality	Negligible changes in water quality	Negligible changes in water quality
(iii) Any other			
B. Aquaculture			
(i) Shallow water in ponds due to insufficient rains/inflow	• Harvesting of the stock	• Harvesting of the stock • Transferring of smaller fishes to artificial ponds (if available) for tiding over the drought	• Steps to improve the quality of stocked fishes, via feed management water quality management
(ii) Impact of salt load build up in ponds / change in water quality	• Harvesting of the stock	• Harvesting of the stock • Transferring of smaller fishes to artificial ponds (if available) for tiding over the drought with water from other source (less hardness)	• Steps to improve the quality of stocked fishes, via feed management water quality management
(iii) Any other	Not applicable		
2) Floods			
3. Cyclone / Tsunami			
4. Heat wave and cold wave			