

State: TAMILNADU

Agriculture Contingency Plan for District: CUDDALORE

1.0. District Agriculture profile				
1.1	Agro-Climatic/Ecological Zone			
	Agro Ecological Region / Sub Region (ICAR)	Eastern Ghat (T.N. Uplands), (120-150) semi-arid ecosystem (8.3) East Coastal (TN) Plain, hot moist semiarid ecosystem with Coastal and deltaic alluvium-derived soils with GP 120-150 days. (18.2)		
	Agro-Climatic Region (Planning Commission)	Northern coastal Tamil Nadu region (11.4)		
	Agro Climatic Zone (NARP)	North Eastern Zone, (TN-1) Cauvery delta Zone (part of Chidambaram and Kattumannarkovil) (TN-4) High altitude and hilly Zone (part) (TN-2)		
	List all the districts or part thereof falling under the NARP Zone	Villupuram , Vellore , Thiruvanamalai, Kancheepuram ,Thiruvallur		
	Geographic coordinates of district	Latitude	Longitude	Altitude
		15 ⁰ 11' to 12 ⁰ 35'	78 ⁰ 38' to 80 ⁰ 0'	4.6 m MSL
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Regional Research Station, Tamil Nadu Agricultural University, Vriddhachalam, Cuddalore – 606 001 Sugarcane Research Station, Tamil Nadu Agricultural University, Cuddalore Vegetable Research Station, Tamil Nadu Agricultural University, Palur, Cuddalore District.		
Mention the KVK located in the district	TNAU- KVK, Vriddhachalam, Cuddalore – 606 001			
1.2	Rainfall	Average (mm)	Normal Onset (specify week and month)	Normal Cessation (specify week and month)
	SW monsoon (June-Sep):	410.0	2 nd week of June	4 th week of September
	NE Monsoon(Oct-Dec):	651.0	2 nd week of October	4 th week of December
	Winter (Jan- March)	3.4	--	--
	Summer (Apr-May)	160.8	2 nd week of April	4 th week of May

Annual	1225.2		
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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 ('000 ha)	367.8	1.4	58.6	0.6	6.0	17.7	14.6	40.0	15.0

1.4	Major Soils	Area ('000 ha)	Percent (%) of total
	Sandy loam	91.7	24.9
	Sandy	32.0	8.7
	Clay loam	115.6	31.4
	Sandy clay loam	128.6	35.0
1.5	Agricultural land use	Area ('000 ha)	Cropping intensity %
	Net sown area	215.2	122.8
	Area sown more than once	49.1	
	Gross cropped area	264.4	

1.6	Irrigation	Area ('000 ha)	Percent (%)		
	Net irrigated area	150.6	72.36		
	Gross irrigated area	175.1	63.44		
	Rainfed area	64.6	27.64		
	Sources of Irrigation	Number	Area ('000 ha)	% area	
	Canals	270	43.6	29.8	
	Tanks	594	7.0	4.7	
	Open wells	11263	7.6	4.37	
	Bore wells	30687	85.1	58.0	
	Lift irrigation	-	-	-	
	Other sources	21	1.0	0.7	
	Total	42835	142.6	100.0	
	Pumpsets	-	-		
	Micro-irrigation	-			
	Groundwater availability and use	No. of blocks	% area	Quality of water	
	Over exploited	-	-	Presence of chemical constituents more than permissible limit - EC, Cl, NO3 and F Type of water - CaCl, NaCl and Mixed type	
	Critical	-	-		
Semi- critical	10	76.92			
Safe	3	23.08			
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		Rainfed	
		Irrigated	Rainfed	Irrigated	Rainfed	Summer	Total
1	Rice	102.8	-	-	-		102.8
2	Sorghum/ Cholan	0.0	-		1.1		10.9
3	Maize	0.0	-		12.3		12.3
4	Blackgram	1.7	-		46.3		48.0
5	Greengram	0.7	-		3.5		4.2
6	Groundnut	10.4			5.9		16.3
7	Cotton	0.2			2.0		2.1
8	Sugarcane	38.4			-		38.4
	Horticulture crops - Fruits	Total area		Irrigated		Rainfed	
1	Cashew nut	36.9		5.4		31.5	
	Horticultural crops - Vegetables	Total area					
1	Brinjal	0.3					
2	Chillies	0.2					
3	Bhendi	0.1					
4	Tapioca	4.1					

1.8	Livestock	Male ('000)	Female ('000)	Total ('000)		
	Non descriptive Cattle (local low yielding)	19.2	72.0	91.2		
	Crossbred cattle	55.9	190.4	246.4		
	Non descriptive Buffaloes (local low yielding)	-	-	19.7		
	Graded Buffaloes	-	-			
	Goat			241.3		
	Sheep			47.2		
	Others (Camel, Pig, Yak etc.)			25.14		
	Commercial dairy farms (Number)					
1.9	Poultry	No. of farms	Total No. of birds ('000)			
	Commercial	92	136.9			
	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		
		3950	248	762	248	290
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			

	Major reservoir	Intensive inland fish culture & marketing	FFDA Tanks	Major irrigation tanks (perennial & long seasonal)	Seasonal tanks & other ponds	Derelict water	Aquaculture farms	Estuaries & Backwaters	Total
Estimation of Inland Fish Production (Cuddalore) (Quantity in tonnes) 2008-2009	0.7	66.9	64.2	6519.2	6328.0	217.8	1011.8	1310.4	15519.2

	Reservoir	Intensive Inland Fish Culture in major irrigation & seasonal tanks	FFDA Tanks	Short seasonal tanks & ponds	Derelict water	Aquaculture farm	Estuaries & backwaters
Inland Fisheries Culturable Water Resources (Area in	--	5986	312	12568	1000	477	8100

hectares) 2008-2009							
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	Mechanised	Motorised	Non mechanised	Shore Seine	Total
Marine Fish Production- Craft wise (Quantity in tones in Cuddalore) 2008-2009	15359.0	2555.3	5459.0	293.8	23667.1

	Number of fishing villages	No. of Fish Landing Centres		
		Major	Minor	Total
Marine Fishing villages & Landing Centres (Cuddalore)	49	2	26	28

	Number of crafts								
	Mechanised	Wooden Vallams		FRP Vallams		Wooden Catamarans		FRP Catamarans	
		With engine	Without	With	Without	With	Without	With	Without

			engine	engine	engine	engine	engine	engine	engine
Details of fishing crafts-mechanized fishing boats and country crafts	642	0	0	1111	0	0	5538	0	0

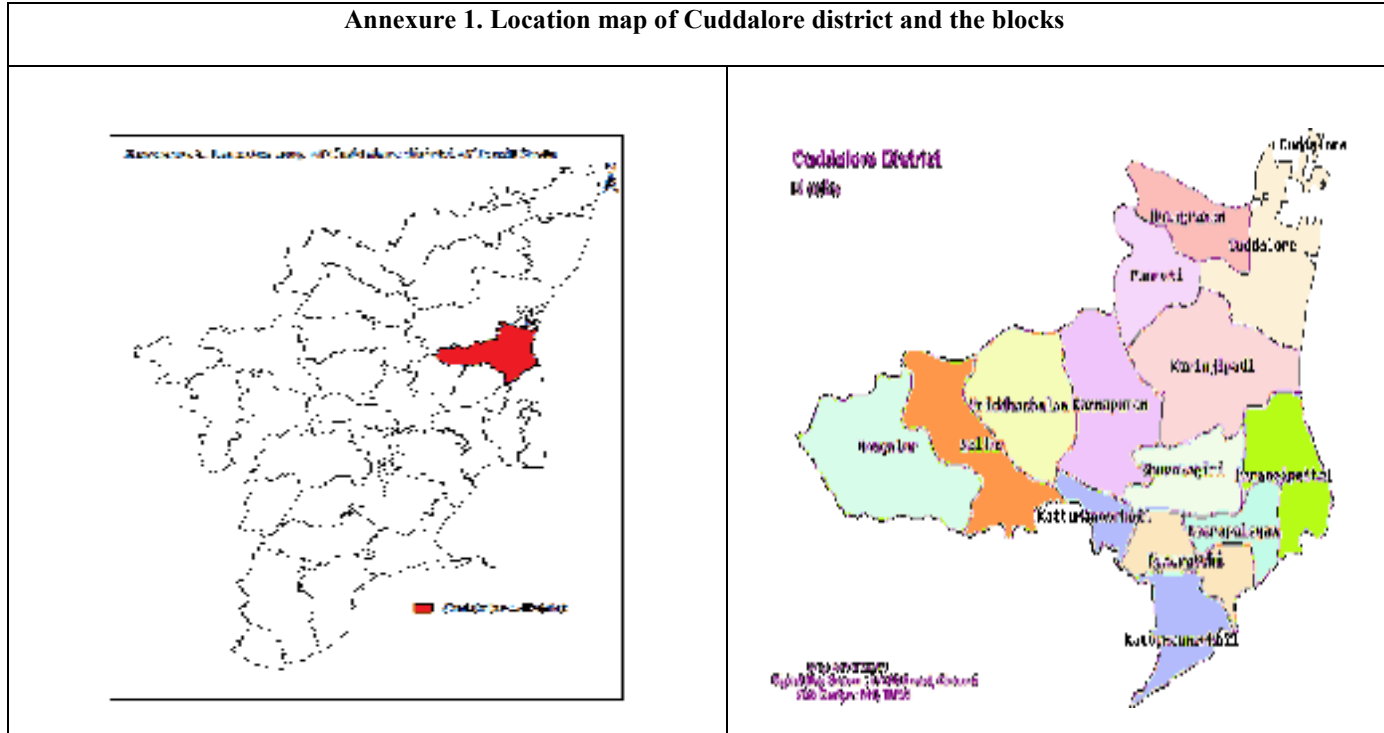
1.11	Production and Productivity of major crops (Average of last 3 years: 2006, 07, 08)	Kharif		Rabi		Summer		Total	
		Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)
	Cereals and millets								
	Rice	-	-	-	-	-	-	543.2	4915
	Sorghum	-	-	-	-	-	-	0.8	382
	Maize	-	-	-	-	-	-	4.2	2352
	Pulses								
	Blackgram	-	-	-	-	-	-	15.9	378
	Greengram	-	-	-	-	-	-	1.4	319
	Oilseeds								
	Groundnut	-	-	-	-	-	-	90.3	2592
	Cash crops								
	Cotton	-	-	-	-	-	-	0.4	305
	Sugarcane	-	-	-	-	-	-	4586.2	32000
	Horticultural crops								
	Cashew nut	-	-	-	-	-	-	22.2	780
	Vegetables								
	Brinjal	-	-	-	-	-	-	3.3	11180
	Chillies	-	-	-	-	-	-	0.1	530
	Bhendi	-	-	-	-	-	-	0.6	7000
	Tapioca	-	-	-	-	-	-	177.6	34360

1.12	Sowing window for 5 major crops (start and end of sowing period)	Groundnut	Cotton	maize	Sesame	Sugarcane
	Kharif- Rainfed	June – July	-	-	-	-
	Kharif-Irrigated	June – July	-	-	-	-
	Rabi- Rainfed	October - September	October - September	October - September	-	-
	Rabi-Irrigated	-	-	-	February - March	January-February

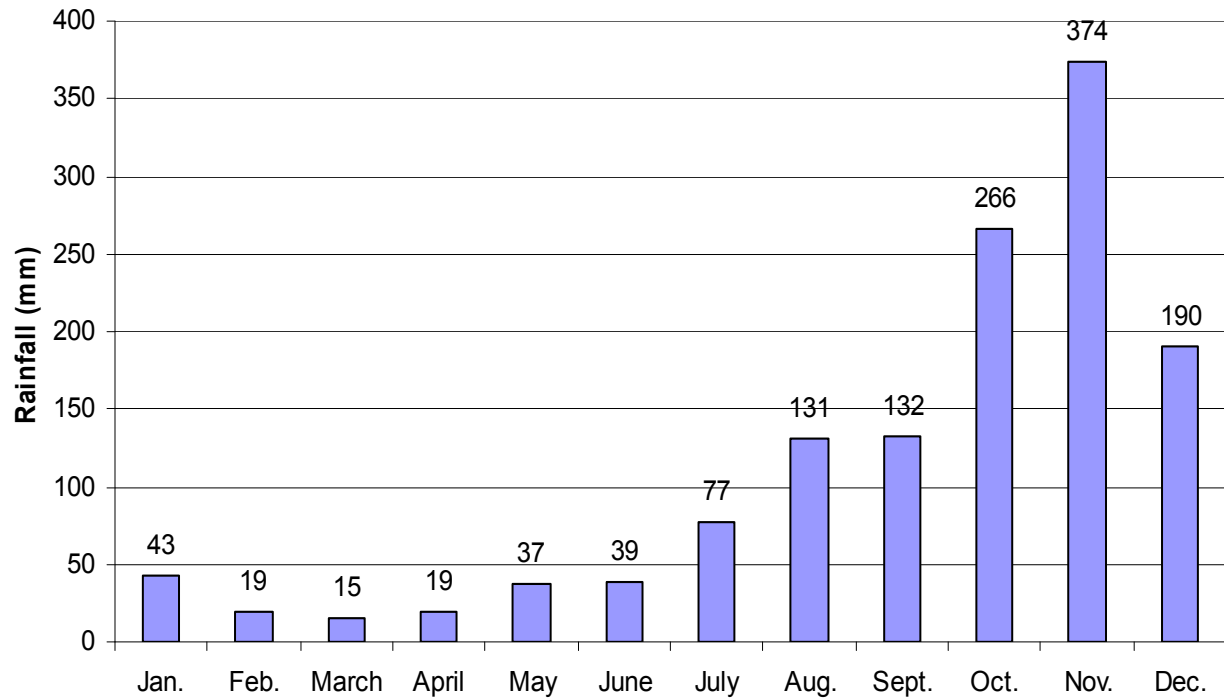
1.13	What is the major contingency the district is prone to? (Tick mark and mention years if known during the last 10 year period)	Regular	Occasional	None
	Drought		√	
	Flood		√	
	Cyclone			√
	Hail storm			√
	Heat wave			√
	Cold wave			√
	Frost			√
	Sea water inundation			√
	Pests and diseases (specify)		√	
	Sheath blight, sheath rot and stem borer at Karunkuzhi and Kollakudi villages of Kurunjipadi block in Cuddalore District during Rabi 2010			

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

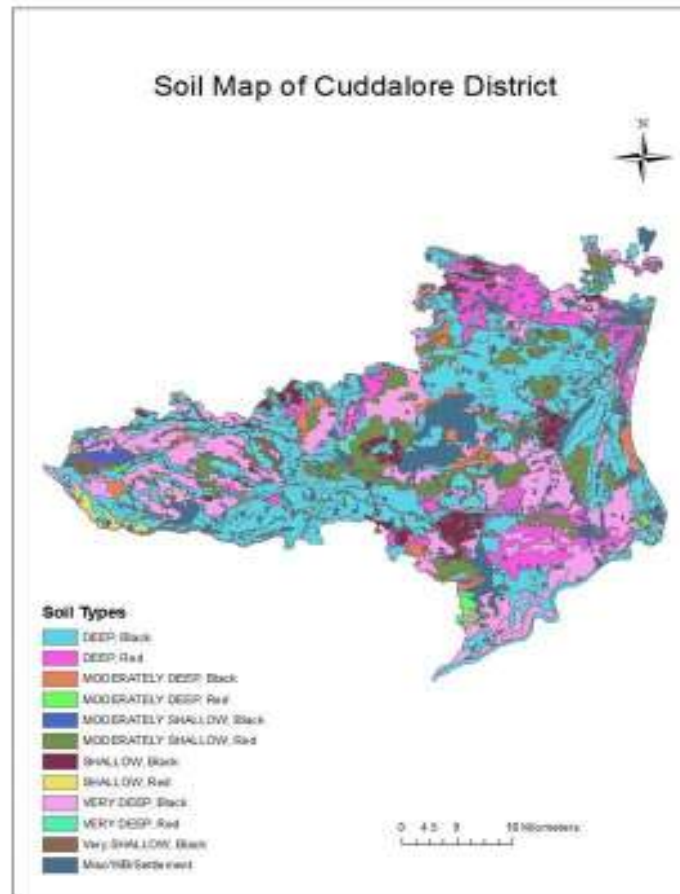
Annexure 1. Location map of Cuddalore district and the blocks



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



Annexure 3. Soil map of Cuddalore district



2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation

Condition	Kharif season		Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delay by 2 weeks (Specify month) June 4 th week	Laterite and black soils	Maize/pearl millet (Jun.-Sep) Groundnut (June-Sep.)	-	-	Linkage with NFSM for supply of seeds for pulse crops
Delay by 4 weeks (Specify month) July 1 st week	Laterite and black soils	Maize/Pearl Millet (Jun.-Sep)	Pearl millet Short duration variety like COCU 9	Seed pelleting Conserve soil moisture by mulching	
		Groundnut (June-Sep.)	Groundnut Short duration variety like VRI 3, TMV 7	Apply 0.5 % KCl spray at vegetative stage	
Delay by 6 weeks (Specify month) July 4 th week	Laterite and black soils	Maize/pearl millet (Jun.-Sep)	Varagu/samai	Open furrow Apply 2 % DAP for cowpea	
		Groundnut (June-Sep.)	Fodder Sorghum / Pulses- Cowpea, Horsegram		
Delay by 8 weeks (Specify month) August 2 nd week	Laterite and black soils	Maize/pearl millet (Jun.-Sep)	As above	-	
		Groundnut (June-Sep.)			

Condition		Rabi Season	Suggested Contingency measures		
Early season drought of NE monsoon	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delay by 2 weeks (Specify month) Oct 3 rd week	Laterite and black soils	Groundnut (Oct-Feb)	No Change	-	Linkage with NFSM and RKVY for seed supply of contingency crops – Millets/Fodder sorghum
		Pulses / Gingelly (Oct.-Jan.)			
Delay by 4 weeks (Specify month) November 1st week	Laterite and black soils	Groundnut (Oct-Feb)	Sunflower Kodomillet Fodder Sorghum	Seed hardening techniques 0.5 % KCl spray at vegetative stage	
		Gingelly (Oct.-Jan.)			
Delay by 6 weeks (Specify month) November 3 rd week	Laterite and black soils	Groundnut (Oct-Feb)	Small millets, Kodomillet Dewgram	Conserve soil moisture by mulching Seed hardening techniques 0.5 % KCl spray at vegetative stage	
		Gingelly (Oct.-Jan.)			
Delay by 8 weeks (Specify month) December 1 st week	Laterite and black soils	Groundnut (Oct-Feb)	Fallow	-	
		Gingelly (Oct.-Jan.)			

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.)	Laterite and black soils	Maize/Pearl Millet (Jun- Sep)	Supplementary irrigation, if available	Intercultivation	-
		Groundnut (June - Sep.)		Make conservation furrow at 8m interval	
				Mulching with saw dust	

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Crop management	Soil management	Remarks on Implementation
Mid season drought (long dry spell)	Laterite and black soils	Maize/pearl millet (Jun.-Sep)	Maintain low plant population	-	-
At reproductive stage		Groundnut (June-Sep.)			

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Crop management	Rabi Crop planning	Remarks on Implementation
Terminal drought	NA	-	-	-	-

2.1.2 Irrigated situation

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delayed/ limited release of water in canals due to low rainfall	Command Areas: Heavy clay	Rice (June-Sep.) - rice (Oct.-Jan.) - pulses/gingelly (Feb.-May)	No change	-	-
		• Rice (Aug.-Jan.) - pulses/sesame/cotton (Jan.-April)			
		• Maize /vegetables/pulses/sesame/green manure (June-Sep.) - rice (Aug.-Feb.) - pulses (Feb.-May)			
		• Sugarcane (Dec.-Nov.) - ratoon sugarcane (Dec.-Nov.) - rice (Dec.-May) -			
		Groundnut (June-Sep./Oct.) - 3 years rotation			
Non release of water in canals under delayed onset of monsoon in catchment	Command Areas: Heavy clay	Same as above	Gingelly / Sorghum / Maize	Short duration varieties should be preferred Adopt moisture conservation practices	

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Lack of inflows into tanks due to insufficient delayed onset of monsoon	Tankfed areas : Tank alluvium (Heavy clay soils)	Rice/vegetables (Aug.-Jan.) - Gingelly/Pulses (Feb.-May)	Rice Sesame Fodder legumes	Improved management techniques such as SRI, Direct sown crop for Paddy Short duration crops for fodder purpose Adopt moisture conservation practices in ID crops	
Insufficient groundwater recharge due to low rainfall	Well irrigated areas : Laterite, red and black soils	Rice (June-Sep.) - rice (Oct.-Jan.) - pulses/gingelly (Feb.-May)	Rice Sorghum Fodder Sorghum Greens	Adopt improved production technologies like SRI, mulching Less water requiring grain/fodder Sorghum preferable Limited irrigation and practice water saving irrigation methods such as alternate wetting and drying in paddy, skip row irrigation in Maize and Sugarcane and sprinkler irrigation in Groudnut Alternatively go for	
		• Rice (Aug.-Jan.) - pulses/sesame/cotton (Jan.-April)			
		• Maize /vegetables/pulses/sesame/green manure (June-Sep.) - rice (Aug.-Feb.) - pulses (Feb.-May)			
		• Sugarcane (Dec.-Nov.) - ratoon sugarcane (Dec.-Nov.) - rice (Dec.-May) -			
		Groundnut (June-Sep./Oct.) - 3 years rotation			

Condition	Suggested Contingency measures				
	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
				millet/fodder crops and leafy vegetables with limited irrigation	
Any other condition (specify)	-	-	-	-	-

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				
Groundnut	-	Drain excess water	Weather based advisory to be followed for harvesting	1. Shifting of produce immediately after drying. 2. Threshing on 5 th day after harvest of groundnut crop
Cotton	Proper drainage	Drain excess water	Weather based advisory to be followed for harvesting	1. Shifting of produce Immediately after drying. 2. Harvest opened bolls immediately
Outbreak of pests and diseases due to unseasonal rains				

Groundnut	-	Timely plant protection measures are to be taken against thrips, Early leaf spot (ELS) and stem rot.		
Cotton	Timely plant protection measures are to be taken against sucking pest and stem weevil	Timely plant protection measures are to be taken against boll worms		
Horticulture				
Tapioca	Proper drainage	--		

2.3 Floods

Condition	Suggested contingency measure			
Transient water logging/ partial inundation	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Rice	Drain out excess water, Gap filling and drenching with fungicide to prevent seedling rot	Drain out excess water, Weeding and top dressing	Drain out excess water, Earthing up	Drain out excess water, Harvesting and drying of earheads
Maize	Drain out excess water, Gap filling		Drain out excess water, Earthing up	Drain out excess water, Harvesting and drying of cobs
Blackgram	Drain out excess water, Gap filling and drenching with fungicide to prevent seedling rot		Drain out excess water, Spraying with NAA@ 25 ppm	Drain out excess water, Harvesting and drying of plants
Cotton	Drain out excess water, Gap filling		Drain out excess water, Earthing up	Drain out excess water, Harvesting of bolls

Continuous submergence for more than 2 day				
Rice	Drain out excess water	Drain out excess water, Weeding and top dressing	Drain out excess water; Tying up of lodged plants	Drain out excess water, Tying up of lodged plants drying of earheads and Harvesting
Maize	Drain out excess water, Gap filling		Drain out excess water, Earthing up; Tying up of lodged plants	Drain out excess water, Harvesting and drying of cobs
Blackgram	Drain out excess water, Gap filling and drenching with fungicides		Drain out excess water, Spraying with NAA@ 25 ppm	Drain out excess water, Harvesting and drying of plants
Cotton	Drain out excess water, Gap filling		Drain out excess water, Earthing up	Drain out excess water, Harvesting of bolls

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

2.5 Contingent strategies for Livestock, Poultry & Fisheries

2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event	During the event	After the event
1) Drought			
A. Capture			

Marine	Not applicable	Not applicable	Not applicable
Inland			
(i) Shallow water depth due to insufficient rains/inflow	<ul style="list-style-type: none"> i. Rainwater harvesting ii. Deepening/ Desilting of existing water bodies iii. Removal of debris and strengthening of pond embankments through turfing 	<ul style="list-style-type: none"> i. Shallow areas of derelict water bodies can be used for raising table sized fishes using stunted fish seeds and the culture can be done in enclosures (pens). Pens of 0.1 to 0.2ha are ideal for easy operation and economical. ii. Indian major carps and freshwater prawns are ideal species for culture. iii. Temporarily raising the height of the enclosures maybe done to prevent loss of stock in the event of sudden rise in water level due to sudden onset of rain or flooding. 	<ul style="list-style-type: none"> i. Due to severe water shortage farmers have to harvest fish in large quantities to avoid loss due to mortality. Leading to difficulties in marketing the fish farmers can be trained on the frozen storage techniques and in preparing value added products (ready to eat and processed products) ii. Adoption of short term culture of species wherein culture of species having rapid initial growth can be stocked. Eg. minor carps like silver barb (<i>Puntius gonionotus</i>) and fringe lipped carp (<i>Labeo fimbriatus</i>) can be undertaken. iii. Culture of minor carp like <i>Amblypharyngodon mola</i> can be done in shallow ponds and this being an auto breeder it spawns two or three times in a year which also ensure auto stocking.
(ii) Changes in water quality	<ul style="list-style-type: none"> i. Strictly implement in avoiding the 	<ul style="list-style-type: none"> i. Reduced water volume in the pond/ local water bodies lowers its 	

	<p>use of plastics and other non-biodegradable material along the river belts (intervention and polluting by human is a common factor)</p> <p>ii. Avoid entry of pollutants like industrial effluents, run off from agricultural land into rivers</p>	<p>buffering capacity hence every precaution has to be taken while adopting use of manures and fertilizers to avoid onset of algal blooms and eutrophication</p>	
(iii) Any other	--	<p>i. Stunting of major carp fingerlings and stocking in grow out ponds as they grow faster (three times more growth than the non stunted fingerlings)</p> <p>ii. Ornamental fish rearing utilizing gold fishes, koi carp or live bearers like mollies and guppies can be done in summer. This ensures money flow to the farmers</p> <p>Supply of fish stock in case of loss</p>	
B. Aquaculture/	Before the event	During the event	After the event

Mariculture			
(i) Shallow water in ponds due to insufficient rains/inflow	<ul style="list-style-type: none"> i. Water depth should be at least 1m for initiating fish culture. ii. Adopt low stocking density to reduce culture duration and culture should be done only after ensuring water availability for minimum period of 3 months. iii. In low tidal amplitude areas which receives north-east monsoon it is advised not to go for summer crop because of high temperatures which will lead to stress of culturable species. 	<ul style="list-style-type: none"> i. Farmers can be advised to take up integrated farming (poultry, piggery, duckery and animal husbandry with crops) to cut down cost on expensive inputs like feed and manure. ii. Avoid fertilization and manuring on supplementary basis iii. Air breathing fish culture to be practiced (Cat fish farming) 	<ul style="list-style-type: none"> i. Prepare pond for the next crop after early harvest ii. Always keep a constant check on the onset of algal blooms which will cause mass mortality of fishes iii. Harvest fish brood stock, if any and shift to deeper safer areas like cement systems in indoor units to utilize for breeding on onset of monsoon
(ii) Impact of silt load build up in ponds / change in water quality	<ul style="list-style-type: none"> i. Rainwater harvesting ii. Deepening/ Desilting of existing water bodies iii. Removal of debris 	<ul style="list-style-type: none"> i. Feeding should be minimum to avoid organic loading 	<ul style="list-style-type: none"> i. On onset of sudden heavy rains heavy mortality will result so feeding should be controlled to avoid waste accumulation on pond bottom soil.
(iii) Any other	<ul style="list-style-type: none"> i. The physico-chemical quality of water has to be monitored regularly for its suitability for fish culture. 	<ul style="list-style-type: none"> i. Concept of Re-circulatory system can be adopted as additional water is not required thereby curtailing need for water exchange. ii. Use of aerators to overcome thermal stratification and build up of ammonia during high temperatures 	<ul style="list-style-type: none"> i. Train the farmers to breed fish in captivity and produce required amount of seed either through hormonal treatment and environment manipulation. ii. Use of cryopreserved milt supplied from research units to aid breeding and ensure

		<p>will help break the thermal stratification</p> <p>** subsidy can be provided to farmers for the aerators</p> <p>iii. Partial harvesting to reduce biomass thereby competition for space and food is reduced.</p> <p>iv. Reduced stocking densities</p>	<p>healthy stock</p> <p>(in collaboration with TANUVAS)</p>
2) Floods	Before the event	During the event	After the event
A. Capture			
Marine	<p>i. Train fisher folk on hygienic handling of fishes, short and long term preservation techniques and on preparation and packaging of value added fish products – as a small scale village activity</p> <p>ii. Establish cold chain facilities</p> <p>iii. Ensure strengthening of coastal belt by planting and maintaining the mangrove ecosystems</p> <p>** mangrove wetlands mitigate the adverse impact of storms, cyclones Tsunami in coastal areas and coastal erosion</p>	<p>i. Avoid fishing in deeper waters to avoid loss to gear, craft and human lives.</p>	<p>i. Loss incurred should be reported will be assessed by the State Fisheries Department officials and reimbursed.</p>

	<p><i>** mangroves are ideal breeding ,nursery and feeding grounds for a number of commercially important prawns, fishes and other shell fishes.</i></p> <p>iv. Ecologically sensitive areas to be earmarked such as mangroves, corals and estuaries to avoid overfishing</p> <p>v. Commercial exploitation of coral reefs and large scale removal of mangrove vegetation to be surveyed as this leads to dwindling fish harvests</p>		
Inland			
(i) Average compensation paid due to loss of human life	--- NA---		As per the norms of the State Government and implemented by the State Fisheries Department
(ii) No. of boats / nets/damaged	---NA---		
(iii) No. of houses damaged	---NA---		
(iv) Loss of stock	Sell the available fish stock as much as possible	Installation of gill net and using cast net for fishing the stock escaped through flooding	There is a possibility of onset of toxic gases in the system, hence immediate stocking of fishes should not be carried out
(v) Changes in water quality	Strengthening of bunds and embankments either through turfing and terracing to avoid water	Water should not be used for domestic purposes	There is a possibility of onset of toxic gases in the system, hence immediate stocking of fishes should not be carried out

	overflow or entry of waters from outside.		
(vi) Health and diseases	Water quality management to be followed thoroughly by weekly sampling to monitor water quality parameters		Ulcers and pox diseases in fishes will occur hence the fish stock has to be discarded or buried.
B. Aquaculture/ Mariculture in ponds	Before the event	During the event	After the event
(i) Inundation with flood water	i. Avoid culture of fishes requiring longer duration of culture. ii. Initiating fish culture in advance in areas frequently prone to flooding.	Immediately harvest the stocked fishes	--
(ii) Water exchange and changes in water quality	i. Strengthening of bunds and embankments either through turfing and terracing		Application of lime to stabilize pH.
(iii) Health and diseases	i. Water quality management to be followed thoroughly by weekly sampling to monitor water quality parameters		Discard diseased stock and the following measures to be practiced: i. Drying up of confined water bodies ii. Let pond bottom to sun dry by cracking of soil to let out the release of obnoxious gases and other pests iii. Application of lime to balance soil pH.
(iv) Loss of stock and inputs (feed, chemicals etc)	The stock (feed and medicines) have to be stored separately in rooms designed for the purpose with air circulation facilities and they have to be stored		Discard stock if affected by water as they will lead to fungal borne infections in the fish stock.

	on raised platforms to avoid loss		
(v) Infrastructure damage (pumps, aerators, huts etc)	i. Initiating fish culture in advance in areas frequently prone to flooding to prevent damage to the infrastructure		As on date there has been no measure to give subsidy to the inland fish farmers for loss of fish stock or infrastructure hence the farmers are suffering a heavy loss. Therefore suggestions can be made to the Government to assess the impact of damage and the rate of compensation can be decided by the officials
(vi) Any other	Compensation to practicing inland fish farmers may be contemplated in case of cyclone. The practicing inland/marine fish farmers should register with the State Fisheries Department to avail the formulated compensation		
3. Cyclone / Tsunami	Before the event	During the event	After the event
A. Capture			
Marine			
(i) Average compensation paid due to loss of fishermen lives	As per prevailing Government norms		
(ii) Avg. no. of boats / nets/damaged	As per prevailing Government norms		
(iii) Avg. no. of houses damaged	**As per the existing government norms compensation is given to the fisherfolk whenever there is loss due to the impact of cyclones/tsunami		
Inland	Cyclone / Tsunami		

B. Aquaculture/ Mariculture	Before the event	During the event	After the event
(i) Overflow / flooding of ponds	i. Planting trees like casuarinas along coastal belt to avoid coastal erosion and inundation of sea waters.	--	
(ii) Changes in water quality (fresh water / brackish water ratio)	i. Stocking fishes which can tolerate wide salinity changes eg. Milkfish, pearl spot etc.	--	Application of lime to stabilize pH.
(iii) Health and diseases	i. Water quality management to be followed thoroughly by weekly sampling to monitor water quality parameters	--	Discard diseased stock and the following measures to be practiced: i. Drying up of confined water bodies ii. Let pond bottom to sun dry by cracking of soil to let out the release of obnoxious gases and other pests iii. Application of lime to balance soil pH.
(iv) Loss of stock and inputs (feed, chemicals etc)	i. The stock (feed and medicines) have to be stored separately in rooms designed for the purpose with air circulation facilities and they have to be stored on raised platforms to avoid loss	--	Discard stock if affected by water as they will lead to fungal borne infections in the fish stock.
(v) Infrastructure damage (pumps, aerators, shelters/huts etc)	Initiating fish culture in advance in areas frequently prone to flooding to prevent damage to the infrastructure	--	-

(vi) Any other	Training programmes for stakeholders including resource users, planners and policy makers on coastal regulations, shoreline protection and environmental awareness		
4 Heat wave and cold wave	Before the event	During the event	After the event
A. Capture			
Marine			i. To conduct studies on the ecological changes to assess the density and diversity of phyto and zooplankton and other benthic macro fauna
Inland			
B. Aquaculture	Before the event	During the event	After the event
(i) Changes in pond environment (water quality)			
(ii) Health and Disease management			
(iii) Any other	<p>i. Conservation of our coral reefs (natural treasures) as they are the most diversified and complex marine ecosystems</p> <p>ii. Conserve sea grass beds by imposing strict measures on trawling, removal for commercial purposes.</p>		