State: TAMIL NADU

Agriculture Contingency Plan for District: NAMAKKAL

1.0 District Agriculture profile					
1.1	**Agro-Climatic/Ecological Zone**				
	Agro Ecological Sub Region (ICAR)	Eastern Ghats And TamilNadu Uplands And D (8.3)			
	Agro-Climatic Region (Planning Commission)	Southern Plateau And Hills Region (X)			
	Agro Climatic Zone (NARP)	North-Western Zone (TN-2)			
	List all the districts or part thereof falling under the NARP Zone	Western Zone (AZ 123) Except Tiruchengode taluk Remaining taluk falling under North western zone.			
	Geographic coordinates of district	Latitude	Longitude	Altitude	
		11°13'27.77"N	78°10'15.29"E	209m	
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Veterinary College & Research Institute, Namakkal-637002			
	Mention the KVK located in the district	KVK, Saniyasi karadu (PO), VC&RI Campus, Namakkal district.Pin.637002.			
1.2	**Rainfall**	Normal RF(mm)	Normal Rainy days (number)	Normal Onset	Normal Cessation
	SW monsoon (June-Sep):	310.3	25	June 1st week	Oct 1st week
	NE Monsoon(Oct-Dec):	314.9	21	Oct 2nd week	Dec. 3rd week
	Winter (Jan- Feb)	10.2	2		
	Summer (Marr-May)	140.6	12		
	Annual	776	60		

1.3	**Land use pattern of the district**	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)	336.3	43.9	38.3	6.7	4.9	3.8	24.6	45.5	9.2

1. 4	**Major Soils (common names like shallow red soils etc.,)**	**Area (‘000 ha)**	**Percent (%) of total**
	1. Red Soil	206.7	60.6
	2. Black soil	30.9	9.0
	3. Brown Soil	12.9	3.8
	4.Alluvial Soil	17.2	5.0
1.5	**Agricultural land use**	Area (‘000 ha)	Cropping intensity %
	Net sown area	166.5	119.2
	Area sown more than once	32.0	
	Gross cropped area	198.5	

1.6	**Irrigation**	Area (‘000 ha)		
	Net irrigated area	65.7		
	Gross irrigated area	82.6		
	Rainfed area	100.8		
	Sources of Irrigation	Number	Area (‘000 ha)	Percentage of total irrigated area
	Canals		6.0	9.4
	Tanks	259	0.2	0.3

	Open wells	81110	61.0	76.00
	Bore wells	8190	4.9	7.6
	Lift irrigation schemes	64	-	0.01
	Micro-irrigation			
	Other sources		4.4	6.9
	Total Irrigated Area	8516	76.8	100.0
	Pump sets			
	No. of Tractors			
	Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	No. of blocks/ Tehsils	(%)	Ground water quality
	Over exploited	8	53.3	53% Good 28% medium saline 11% saline 5% medium alkaline 3% alkali Area comes under grey classification
	Critical	2	13.3	
	Semi- critical	3	20.0	
	Safe	2	13.3	
	Wastewater availability and use	Data not available		
*over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%				

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

1.7		**Major Field Crops cultivated**	**Area (`000 ha)**					
			Kharif		***Rabi***		**Summer**	**Total**
			Irrigated	***Rainfed***	***Irrigated***	***Rainfed***		
	1	Sorghum	6.0	39.6	8.7	12.8	-	67.2
	2	Maize	11.4	-	13.9	-	-	25.4
	3	Paddy	*2.5*	-	*19.7*	-	-	22.3
	4	Greengram	0.6	4.4	0.2	0.4	-	5.6
	5	Blackgram	1.2	1.0	2.1	0.3	-	4.6
		Horticulture crops - Fruits	**Total area (`000 ha)**					
	1	Mango	2.2					
	2	Banana	1.8					
	3	Jack	0.5					
	4	Pineapple	0.5					
	5	Guava	0.3					
		Horticultural crops - Vegetables	**Total area (`000 ha)**					
	1	Tapioca	16.0					
	2	Onion	1.4					
	3	Tomato	0.7					
	4	Bhendi	0.7					
	5	Brinjal	0.5					
		Medicinal and Aromatic crops	**Total area (`000 ha)**					
	1	Tumeric	1.3					
	2	Chilies	0.2					
	3	Coriander	0.9					
	4	Clove	0.9					
	5	Pepper	0.8					
		Plantation crops	**Total area (`000 ha)**					
	1	Coffee	1038					
	2	Arecaut	469					
		Total fodder crop area	--					
		Grazing land	--					

		Sericulture etc	--
		Others (Specify)	--

- **Data from annual report of JDA and HORT 2010**

1.8	**Livestock**	**Male ('000)**	**Female ('000)**	**Total ('000)**
	Non descriptive Cattle (local low yielding)	11.5	23.6	35.1
	Crossbred cattle	44.3	206.4	250.7
	Non descriptive Buffaloes (local low yielding)	42.7	177.0	219.8
	Graded Buffaloes			
	Goat			462.3
	Sheep			151.6
	Others (Camel, Pig, Yak etc.)			21.8
	Commercial dairy farms (Number)			
1.9	**Poultry**	**No. of farms**	**Total No. of birds ('000)**	
	Commercial	979	361.7	
	Backyard	-	4.7	

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	**No. Farmer owned ponds**	**No. of Reservoirs**	**No. of village tanks**

	Department)			
	Namakkal	46	0	259

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 (Average of last 5 years: 2004, 05, 06, 07, 08)

1.11	Name of crop	**Kharif**		**Rabi**		**Summer**		**Total**		**Crop residue as fodder** (Lakh mt)
		Production (tonnes)	Productivity (kg/ha)	Production (mt)	Productivity (kg/ha)	Production (mt)	Productivity (kg/ha)	Production (tones)	Productivity (kg/ha)	
Major Field crops (Crops to be identified based on total acreage)										
1	Paddy	11551	4546	63360	3342			0.7	3343	2.2
2	Sorghum	26179	573	39720	974			0.6	773	2.6
3	Maize	30000	5000	39452	5616			0.7	5308	0.4
4	Sugarcane	1105242	138(mt)	1113522	138(mt)			22.2	138(mt)	
5	Groundnut	50221	1525	33417	2365			0.8	1945	1.9
Major Horticultural crops (Crops to be identified based on total acreage)										

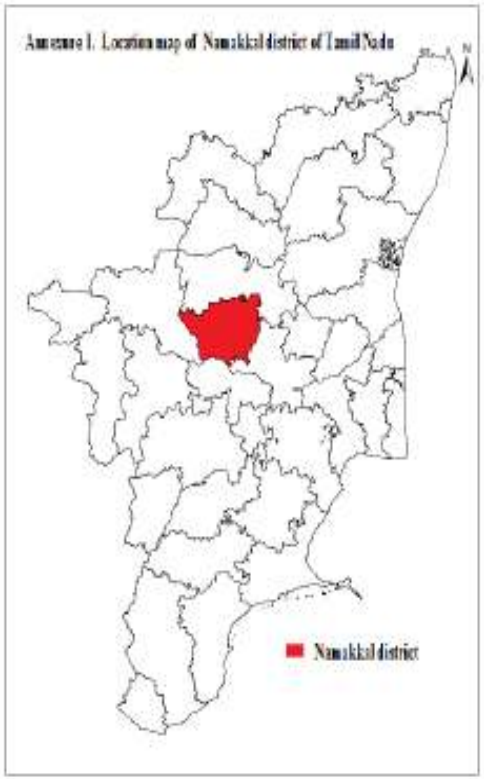
1	Tapioca	799450	50							
2	Mango	17464	8							
3	Banana	108982	58							
4	Onion	30712	22							
5	Turmeric	20790	15							
Others										

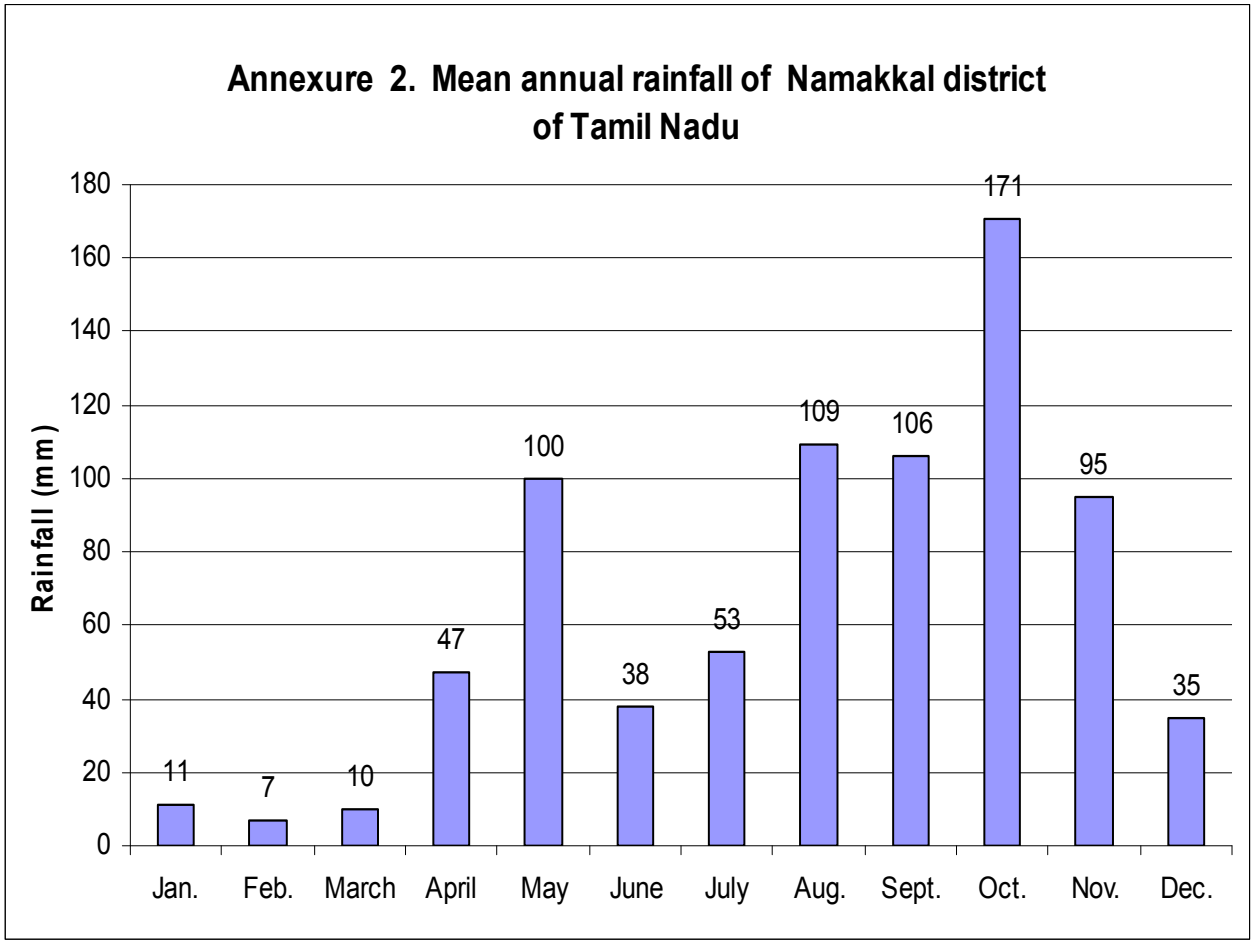
1.12	**Sowing window for 5 major field crops** (start and end of normal sowing period)	Paddy	Sorghum	Groundnut	Maize	Sugarcane
	Kharif- Rainfed	--	2nd week of June- 4th week of June	2nd week of May- 1st week of June	--	
	Kharif-Irrigated	2nd week May- 2nd week of June	2nd week of August - 2nd week of September	2nd week of May- 1st week of June	2nd week of Aug - 2nd week of September	
	Rabi- Rainfed	2nd week of October- 2nd week of November	2nd week of October- 2nd week of November	--	--	
	Rabi-Irrigated	2nd week of October- 2nd week of November		--	2nd week of October- 2nd week of November	2nd week of Dec. – 2nd week of 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			✓
	Frost			✓
	Sea water inundation			✓
	Pests and diseases		✓ Papaya mealy bug	

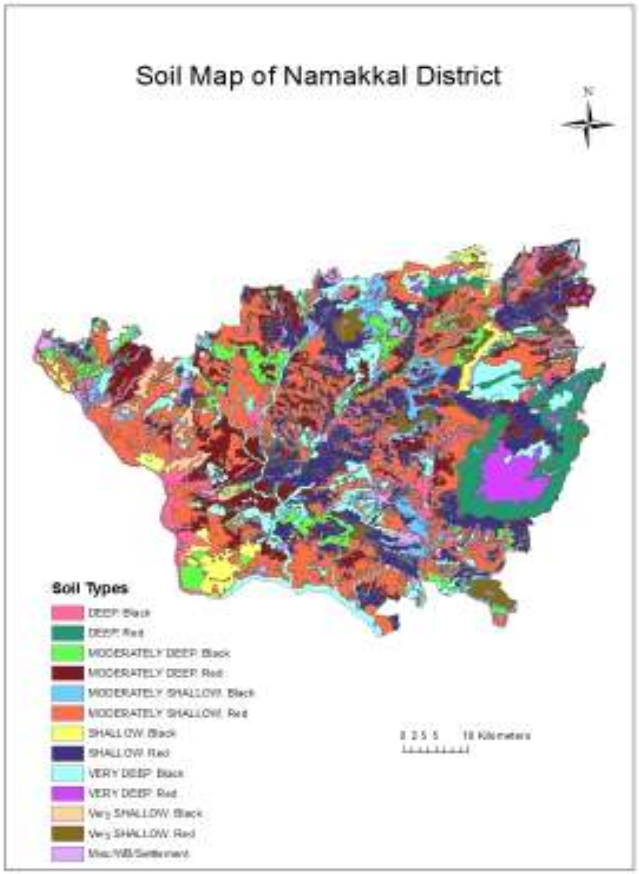
1.14	**Include Digital maps of the district for**	Location map of district within State as Annexure I	Enclosed: Yes
		Mean annual rainfall as Annexure 2	Enclosed: Yes
		Soil map as Annexure 3	Enclosed: Yes

Annexure 1. Location map of Namakkal district and the blocks




Annexure 2. Mean annual rainfall of Namakkal district of Tamil Nadu
Rainfall (mm)
180
160
140
120
100
80
60
40
20
0
11
7
10
47
100
38
53
109
106
171
95
35
Jan.
Feb.
March
April
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.

Annexure 3. Soil map of Namakkal district of Tamil Nadu



2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation *Kharif*

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delay by 2 weeks (3rd week of June)	Red soils	Groundnut	No change	Seed treatment with 2% KCl	
		Green gram			
	Black soils	Tapioca	No change	Raising poly bag nursery	
				*Azotobacte*r 2 kg/ ha – soil application after receipt of shower along with 20 kg FYM and 20 kg soil	

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delay by 4 weeks (1st week of July)	Red soils	Ground nut	Groundnut short duration varieties (TMV7, VRI2)	Seed treatment with 2% KCl	
		Maize	Fodder maize (African tall)		

		Tapioca (June-May)	Tapioca – CO2 variety	Raising polybag nursery *Azotobacte*r 2 kg/ ha – soil application after receipt of shower along with 20 kg FYM and 20 kg soil Mulching with polythene or crop mulch	

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delay by 6 weeks (3rd week of July)	Red soils	Groundnut	Black gram Growing Maize CoHM 5	Seed treatment KCl – 2%	
		Tapioca	Minor millets + pulses / castor / fodder Ragi (C014, Paiyur1) B.gram (VBN 3, 4) Castor (TMVCH1, YRCH1) July- December	• Raising polybag nursery. • *Azotobacte*r 2 kg/ ha – soil application after receipt of shower along with 20 kg FYM and 20 kg soil • Mulching with polythene or crop mulch	

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delay by 8 weeks (1st week of August)	Red soils	Groundnut	Black gram Growing Maize CoHM 5	Seed treatment KCl – 2%	
	Black soils	Tapioca	Minor millets + pulses / castor / fodder Ragi C014, Paiyur1 B.gram VBN 3, 4 Castor TMVCH1, YRCH1 July- December	• Raising polybag nursery. • *Azotobacte*r 2 kg/ ha – soil application after receipt of shower along with 20 kg FYM and 20 kg soil • Mulching with polythene or crop mulch	

Condition			**Suggested Contingency measures**		
Early season drought **(Normal onset)**	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**
Early season drought (Normal onset, followed by 15-20 days dry spell after sowing leading to poor	Red soils	Millets	Thinning / Resowing	Line sowing Water spray using rain gun	
		Groundnut	-	Seed hardening with 0.5% $CaCl_2$	

germination/crop stand etc.)					
	Deep Black soil	Millets			
	Red soil Red soil Deep Black soil	Groundnut	Prefer new spreading variety of Groundnut to replace TMV.1	--	
		Millets	--	--	--
		Greengram	--	--	--

Condition			**Suggested Contingency measures**		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measues**	**Remarks on Implementation**
At vegetative stage	Deep Black soil	Greengram	--	Intercultivation with chisel plough to conserve moisture	-
		Millets	--	Intercultivation	
		Groundnut	--	Water spray Seed hardening	
		Millets	--		
	Red soil	Groundnut	Prefer new spreading variety of groundnut to replace TMV.1	--	
		Millets	--	--	

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**
At flowering/ fruiting stage	Deep Black soil	Greengram	---	Intercultivation to conserve moisture	--
		Millets	--	--	Seed hardening and chisel Ploughing
	Red soil	Groundnut	--	Water spray	--
		Millets	--		

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 release of water in canals due to low rainfall	Red soil	Groundnut- Pulses / Gingelly	No change	--	
	Deep black soil	Tapioca	Fodder maize or sorghum	--	
		Banana	No change	Delayed planting	
		Onion	No change	Nursery raising technology for Co-On 5 through seed propagation (40 days nursery)	

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	Not applicable				

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	Not applicable				

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Insufficient groundwater recharge due to low rainfall	Not applicable				
Any other condition (specify)					

2.2 Unusual rains (untimely, unseasonal etc)

Rainfed situation

Condition	Suggested contingency measure			
	Vegetative stage	**Flowering stage**	**Crop maturity stage**	**Post harvest**
Continuous high rainfall in a short span leading to water logging				
Sorghum Maize	Provide drainage	Provide drainage Spray extra 25% nitrogen dose for crop recovery	Provide drainage Harvest for fodder	Store seeds after seed treatment with fungicide
Groundnut	Provide drainage Spray cycocel to reduce profuse vegetative growth	Provide drainage Apply gypsum to loosen soils further for drainage	Provide drainage	Store seeds after seed treatment with fungicide
Horticulture				
Tapioca	Provide drainage	Provide drainage Soil drenching with biopesticides/ systemic fungicides	Provide drainage Early harvest,	Should be used for milling purpose immediately
Mango	Basin formation, polythene mulching, crop mulch, Forming trenches	Basin formation, polythene mulching, crop mulch, Forming large trenches, spray mango boosters to prevent flower drop	Form trenches for drainage	Providing storage facilities
Heavy rainfall with high speed winds in a short span				
Sorghum Maize Groundnut	Provide drainage Provide wind breaks	Provide drainage and wind breaks	Provide drainage Harvest for fodder	Store seeds after seed treatment with fungicide
Horticulture				

Tapioca	Provide drainage	Provide drainage Soil drenching with bio-pesticides / systemic fungicide	Provide drainage Early harvest at physiological maturity	Use the produce for starch preparation/ consumption purpose
Mango	Basin formation, polythene mulching, crop mulch, Forming trenches	Basin formation, polythene mulching, crop mulch, Forming large trenches, spray mango boosters to prevent flower drop	Form trenches for drainage	Providing storage facilities

Irrigated situation

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	Provide drainage	Provide drainage, Spraying of extra nitrogen dose and micronutrients	Provide drainage	Store produce after seed treatment or early disposal of rice
Groundnut	Provide drainage Spray cycocel to reduce profuse vegetative growth	Provide drainage Apply gypsum to loosen soils further for drainage	Provide drainage and Early harvest	Store seeds after seed treatment with fungicide
Horticulture				
Tapioca	Provide drainage	Provide drainage Soil drenching with bio-pesticides/ systemic fungicide	Provide drainage Early harvest,	Use the produce for starch preparation/ consumption purpose
Banana	Provide drainage	Provide drainage and spraying of banana sakthi	Provide drainage, early Harvest as green banana	Provide storage and packing

			Harvesting for leaf purposes	facilities
Onion	Provide drainage	Provide drainage Soil drenching with phytolon	Provide drainage Soil drenching with phytolon	Bulb treatment before storage
Heavy rainfall with high speed winds in a short span				
Rice	Provide drainage	Provide drainage, Spraying of extra nitrogen dose and micronutrients	Provide drainage	Store produce after seed treatment or early disposal of rice
Groundnut	Provide drainage Spray cycocel to reduce profuse vegetative growth	Provide drainage Apply gypsum to loosen soils further for drainage	Provide drainage and Early harvest	Store seeds after seed treatment with fungicide
Horticulture				
Tapioca	Provide drainage	Provide drainage Soil drenching with bio pesticides/ systemic fungicide	Provide drainage Early harvest,	Use the produce for starch preparation/ consumption purpose
Banana	Provide drainage and wind belts	Propping with poles, wind breaks, closer planting of crops Provide drainage and spraying of banana sakthi	Propping with poles, wind breaks, Provide drainage, early harvest as green banana	Provide storage and packing facilities
Onion	Provide drainage	Provide drainage Soil drenching with phytolon	Provide drainage Soil drenching with phytolon	Bulb treatment before storage

Outbreak of pests and diseases due to unseasonal rains				
Rice	Leaf folder - Chlorpyriphos	Sheath blight		
Sorghum		Smut, rust, leaf spot – Bavistin/ COC		
Maize				
Groundnut	Leaf spot	Bud necrosis (Coc)		

Horticulture				
Tapioca				
Mango				
Banana				
Onion	Onion root rot			

2.3 Floods

Condition	**Suggested contingency measure**			
Transient water logging/ partial inundation	**Seedling / nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Rice	Provide drainage	Provide drainage, Spray 1% urea	Provide drainage,	Provide drainage,
Sorghum			Provide drainage, Early harvest and use it for fodder	
Groundnut	Provide drainage		Provide drainage, harvest ealier	Provide drainage
Horticulture				
Tapioca	Provide drainage	Provide drainage Soil drenching with bio pesticides/ systemic fungicide	Provide drainage Early harvest,	Use the produce for starch preparation/ consumption purpose
Mango	Provide drainage	Basin formation, polythene mulching, crop mulch, Forming large trenches, spray mango boosters to prevent flower drop	Form trenches for drainage Early harvest and using it for household purposes	Basin formation, polythene mulching, crop mulch, Forming large trenches, spray mango boosters to prevent flower drop
Banana	Provide drainage	Provide drainage and spraying of banana sakthi	Provide drainage, early Harvest as green banana Harvesting for leaf purposes	Provide storage and packing facilities

Onion	Provide drainage	Provide drainage Soil drenching with phytolon	Provide drainage Soil drenching with phytolon	Bulb treatment before storage
Continuous submergence for more than 2 days				
Rice	Provide drainage	Provide drainage, Spray 1% urea	Provide drainage,	Provide drainage,
Sorghum			Provide drainage, Early harvest and use it for fodder	Provide drainage, Early harvest and use for fodder
Maize				
Groundnut		Provide drainage	Provide drainage, harvest earlier	Provide drainage
Horticulture				
Tapioca	Provide drainage		Provide drainage Soil drenching with biopesticides/ systemic fungicide	Provide drainage Early harvest
Banana	Provide drainage	Provide drainage and spraying of banana sakthi	Provide drainage, early Harvest as green banana Harvesting for leaf purposes	Provide storage and packing facilities
Onion	Provide drainage	Provide drainage Soil drenching with phytolon	Provide drainage Soil drenching with phytolon	Bulb treatment before storage
Sea water intrusion	Not applicable			

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

2.5 Contingent strategies for Livestock, Poultry & Fisheries

2.5.1 Livestock

	Suggested contingency measures		
	Before the event	**During the event**	**After the event**
Drought			
Feed and fodder availability	1. Collect all tapioca waste and store properly for use as feed supplement during drought 2. Sowing of cereals (Sorghum) and leguminous crops (Lucerne, Horse gram, Cowpea) during North-East monsoon under dry land system for fodder production. 3. Encourage fodder production with Sorghum – stylo- Sorghum on rotation basis and also to cultivate short-term fodder crops like sunhemp 4. Promoted creation of fodder models with Guinea grass, stylo, desmanthus, kolukkattai grass etc. at village level 5. Creation of tree fodder models with Subabul, Glyricidia, Agathi, Prosopis etc. at village level 6. Promote Azolla cultivation at backyard 7. Chopping of fodder should be made as mandatory in every village through supply and establishment of good quality crop cutters. 8. Capacity building and preparedness of the stakeholders and official staff for the drought/floods	1. Harvest and use biomass of dried up crops (paddy/Sorghum//maize/ Black gram/Green gram) material as fodder 2. Use of unconventional and locally available cheap feed ingredients especially tapioca for feeding of livestock during drought 3. Harvest all the top fodder available (Subabul, Glyricidia, Agathi, Prosopis etc) and feed the LS during drought 4. All the hay should be enriched with 2% Urea molasses solution or 1% common salt solution and fed to LS. 5. Continuous supplementation of minerals to prevent infertility. 6. Promotion of cultivation of Horse gram as contingent crop and harvesting it at vegetative stage as fodder 7. Encourage mixing available kitchen waste with dry fodder while feeding to the milch animals 8. Arrangements should be made for mobilization of small ruminants across the districts where no drought exits 9. Unproductive livestock should to be culled during severe drought 10. Create transportation and marketing facilities for the culled and unproductive animals (10000-20000 animals) 11. Subsidized loans (5-10crores) should be	1. Encourage progressive farmers to grow multi cut fodder crops of sorghum/bajra/maize(UP chari, MP chari, HC-136, HD-2, GAINT BAJRA, L-74, K-677, Ananad/African Tall, Kisan composite, Moti, Manjari, B1-7 on their own lands & supporting them with assisting infrastructures like seeds, money manure. 2. Supply of quality seeds of COFS 29, Stylo and fodder slips of Co3, Co4, guinea grass well before monsoon 3. Flushing the stock to recoup 4. Replenish the feed and fodder banks

		provided to the livestock keepers	
Drinking water	1. Adopt various water conservation methods at village level to improve the ground water level for adequate water supply. 2. Identification of water resources 3. Desilting of ponds 4. Rain water harvesting and create water bodies/watering points (when water is scarce use only as drinking water for animals) 5. Construction of drinking water tanks in herding places/village junctions/relief camp locations 6. Community drinking water trough can be arranged in shandies /community grazing areas	1. Adequate supply of drinking water. 2. Restrict wallowing of animals in water bodies/resources 3. Daily basis.	1. Watershed management practices shall be promoted to conserve the rainwater. Bleach (0.1%) drinking water / water sources 2. Provide clean drinking water
Health and disease management	1. Procure and stock emergency medicines and vaccines for important endemic diseases of the area 2. All the stock must be immunized for endemic diseases of the area 3. Surveillance and disease monitoring network to be established at Joint Director (Animal Husbandry) office in the district 4. Adequate refreshment training on draught management to be given to VAS, Jr.VAS, LI with regard to health & management measures. 5. Procure and stock multivitamins & area specific mineral mixture	1. Carryout deworming to all animals entering into relief camps 2. Identification and quarantine of sick animals 3. Constitution of Rapid Action Veterinary Force 4. Performing ring vaccination (8 km radius) in case of any outbreak 5. Restricting movement of livestock in case of any epidemic 6. Rescue of sick and injured animals and their treatment 7. Organize with community, daily lifting of dung from relief camps	1. Keep close surveillance on disease outbreak. 2. Undertake the vaccination depending on need 3. Keep the animal houses clean and spray disinfectants Farmers should be advised to breed their milch animals during July-September so that the peak milk production does not coincide with mid summer

Floods	1. In case of early forewarning (EFW), harvest all the crops (Paddy/groundnut/ Greengram/ Blackgram/ Horsegram (etc.) that can be useful as feed/fodder in future (store properly) 2. Keeping sufficient of dry fodder to transport to the flood affected villages 3. Don't allow the animals for grazing if severe floods are forewarned 4. Keep stock of bleaching powder and lime 5. Carry out Butax spray for control of external parasites 6. Identify the Clinical staff and trained paravets and indent for their services as per schedules 7. Identify the volunteers who can serve in need of emergency 8. Arrangement for transportation of animals from low lying area to safer places and also for rescue animal health workers to get involve in rescue operations	1. Transportation of animals to elevated areas 2. Proper hygiene and sanitation of the animal shed 3. In severe storms, un-tether or let loose the animals 4. Use of unconventional and locally available cheap feed ingredients for feeding of livestock. 5. Avoid soaked and mould infected feeds / fodders to livestock 6. Emergency outlet establishment for required medicines or feed in each village 7. Spraying of fly repellants in animal sheds	1. Repair of animal shed 2. Bring back the animals to the shed 3. Cleaning and disinfection of the shed 4. Bleach (0.1%) drinking water / water sources 5. Encouraging farmers to cultivate 6. Short-term fodder crops like sunhemp. 7. Deworming with broad spectrum dewormers 8. Proper disposable of the dead animals / carcasses by burning / deep burying (4-8 feet) with lime powder (1kg for small ruminants and 5kg for large ruminants) in pit 9. Drying the harvested crop material and proper storage for use as fodder.
Cyclone	**NA**		
Heat wave and cold wave	**NA**		

2.5.2 Poultry

	Suggested contingency measures		
	Before the event	**During the event**	**After the event**
Drought			
Shortage of feed ingredients	Storing of house hold grain like maize, broken rice etc, in to use as feed in case of severe drought	Supplementation only for productive birds with house hold grain Supplementation of shell grit (calcium) for laying birds Culling of weak birds	Supplementation to all survived birds
Drinking water		Use water sanitizers or offer cool hygienic drinking water	
Health and disease management	Culling of sick birds. Deworming and vaccination against RD and fowl pox	Mixing of Vit. A,D,E, K and B-complex including vit C in drinking water (5ml in one liter water)	Hygienic and sanitation of poultry house Disposal of dead birds by burning / burying with lime powder in pit
Floods			
Shortage of feed ingredients	In case of early forewarning of floods, shift the birds to safer place Storing of house hold grain like maize, broken rice, bajra etc,	Use stored feed as supplement Don't allow for scavenging Culling of weak birds	Routine practices are followed Deworming and vaccination against RD
Drinking water		Use water sanitizers or offer cool hygienic drinking water	
Health and disease management	In case of EFW, add antibiotic powder (Teramycin/Ampicilline/ Ampiclox etc., 10g in one litre) in drinking water to prevent any disease outbreak	Prevent water logging surrounding the sheds through proper drainage facility Assure supply of electricity by generator or solar energy or biogas Sprinkle lime powder to prevent ammonia accumulation due to dampness	Sanitation of poultry house Treatment of affected birds Disposal of dead birds by burning / burying with line powder in pit Disposal of poultry manure to prevent protozoal problem Supplementation of coccidiostats

			in feed Vaccination against RD
Cyclone	**NA**		
Heat wave and cold wave	**NA**		

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
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

2) Floods			
A. Capture	-	-	-
Marine	-	-	-
Inland	• Proper fencing to prevent escaping of fishes • Increasing bundh height and improve bundh strength • Improve land drainage to allow easy and quick flow of flood waters	• In extreme conditions, controlled draining of flooded ponds • Thinning of stock by harvesting of larger individuals	• Repair damaged bundhs • Collect and preserve existing stock
(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	• Negligible changes	• Flood water can bring parasites, and increased turbidity – repair/correct drainage to improve quick drainage of flood waters	• Turbid waters may be flushed off with fresh bore well/well water
(vi) Health and diseases	-	-	-
B. Aquaculture			
(i) Inundation with flood water	• Proper fencing to prevent escaping of fishes • Increasing bundh height and improve bundh strength • Improve land drainage to allow easy and quick flow of flood waters	• In extreme conditions, controlled draining of flooded ponds • Thinning of stock by harvesting of larger individuals	• Repair damaged bundhs • Collect and preserve existing stock
(ii) Water continuation and changes in water quality	• Negligible changes	• Water can become turbid due to flood waters, reduce stock to prevent mortality	• Flushing of pond water with bore-well water to improve water quality
(iii) Health and diseases	-		
(iv) Loss of stock and inputs (feed, chemicals etc)	• Negligible changes	• Harvesting of stock • Shift reserve of brood stock to	• Selling remaining stock and inundated equipment immediately

		ponds at elevated levels	to minimize losses
(v) Infrastructure damage (pumps, aerators, huts etc)	• Dismantling of pumps, aerators and other equipment and shifting to safer zones	• Salvaging of inundated pumps, aerators and other equipment and shifting to safer zones	• Selling remaining stock and inundated equipment immediately to minimize losses
3. Cyclone / Tsunami	-	-	-
4. Heat wave and cold wave	-	-	-
A. Capture	-	-	-
Marine	-	-	-
Inland	-	-	-
B. Aquaculture		-	-
(i) Changes in pond environment (water quality)	• Strengthening of pond bundh to prevent seepage • Shifting of stock to a more sheltered pond	• Shifting of stock to a more sheltered pond • Improve aeration and water recycling	• Shifting of stock to normal ponds to ensure proper growth
(ii) Health and Disease management	-	-	-