

**State: TAMILNADU**

**Agriculture Contingency Plan for District: Theni**

<b>1.0 District Agriculture Profile</b>											
<b>1.1</b>	<b>Agro-Climatic/Ecological Zone</b>										
	Agro Ecological Region / Sub Region (ICAR)			Eastern Ghats And Tamil Nadu Uplands And D (8.1)							
	Agro-Climatic Region (Planning Commission)			West Coast Plains And Ghat Region (XII)							
	Agro Climatic Zone (NARP)			SOUTHERN ZONE , HIGH ALTITUDE AND HILLY ZONE (5,7)							
	List all the district or part thereof failing under NARP Zone			Theni							
	Geographic coordinates of district			Latitude	Longitude			Altitude			
				9 <sup>o</sup> 30 - 10 <sup>o</sup> 30	77 <sup>o</sup> 00 - 78 <sup>o</sup> 30			--			
	Name and address of concerned ZRS / ZARS / RARS / RRS / RRTTS			Horticultural College and Research Institute, Periyakulam – 625 604, Tamil Nadu							
Mention the KVK located in the district			CENDECT (Pvt) KVK, Kamatchipuram - 625 520. Theni District, Tamil Nadu								
<b>1.2</b>	<b>Rainfall</b>			<b>Average (mm)</b>		<b>Normal onset (specify week and month)</b>			<b>Normal Cessation (specify week and month)</b>		
	South West Monsoon (June-Sep)			170.8		1 <sup>st</sup> week of June			1 <sup>st</sup> week of October		
	North East Monsoon (Oct-Dec)			382.4		2 <sup>nd</sup> week of October			4 <sup>th</sup> week of December		
	Winter (Jan-Feb)			53.9		-			-		
	Summer (Mar-May)			222.7		-			-		
	Annual			829.8							
<b>1.3</b>	<b>Land use pattern of the district (latest statistics)</b>		<b>Geographical area</b>	<b>Forest area</b>	<b>Non-agri use</b>	<b>Permanent pastures</b>	<b>Cultivable wasteland</b>	<b>Misc tree crops and groves</b>	<b>Barren and uncultivable land</b>	<b>Current fallows</b>	<b>Other fallows</b>
	Area ('000 ha)		324.2	103.7	24.1	0.3	2.9	1.6	43.3	3.3	32.7

<b>1.4</b>	<b>Major soils</b>	<b>Area ('000 ha)</b>		<b>Percent (%) of total</b>
	1. Red soils	174.2		53.7
	2. Black soils	129.6		40.0
	3. Others	20.4		6.3
<b>1.5</b>	<b>Agricultural land use</b>	<b>Area ('000 ha)</b>		<b>Cropping intensity (%)</b>
	Net sown area	112.9		106.1
	Area sown more than once	6.9		
	Gross cropped area	119.8		
<b>1.6</b>	<b>Irrigation</b>	<b>Area ('000 ha)</b>		<b>Percent (%) of total</b>
	Net irrigated area	57.9		47.0
	Gross irrigated area	64.6		54.2
	Rainfed area	55.0		53.0
	<b>Sources of irrigation</b>	<b>Number</b>	<b>Area (ha)</b>	<b>% area</b>
	Canals	107	11.1	18.9
	Tanks	20	1.3	2.1
	Tube wells	7102	7.7	13.0
	Lift irrigation	--	-	
	Other sources	--	29.0	44.9
	Total		49.6	80.9
	Pump sets	--		
	Micro-irrigation	--		
	<b>Groundwater availability and use</b>	<b>No of blocks</b>	<b>% area</b>	<b>Quality of water</b>
	Over exploited (> 100%)	5	62.5	76% Good 22% medium saline 2% saline
	Critical (90 - 100%)	3	37.8	
Semi-critical (70 - 90%)	-			
Safe (< 70%)	-			
Wastewater availability and use	Data not available			

**Area under major field crops & horticulture crops**

1.7	Major Crops cultivated		Area ('000 ha) during 2006-07						
	Field Crops		Kharif		Rabi		Summer		Total
			Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	
1	Millets		2.8	8.5	4.8	8.4	-	-	24.5
2	Paddy		5.6	-	9.6	-	0.2	-	14.7
3	Sugarcane		-	-	-	-	-	-	9.1
4	Pulses		0.1	4.8	0.1	2.3	-	-	7.2
5	Cotton		0.5	0.1	1.0	0.3	-	-	1.9
6	Maize		-	-	-	-	-	-	-
	Horticulture Crops		Total						
1	Mango		8.8						
2	Banana		4.1						
3	Grapes		2.0						
4	Coconut		15.3						
5	Vegetables		5.3						
6	Cardamom		1.5						

1.8	Livestock		Male ('000)	Female ('000)	Total ('000)		
	Non descriptive Cattle (local low yielding)		10.4	14.3	24.7		
	Crossbred cattle		5.4	106.5	112.0		
	Non descriptive Buffaloes (local low yielding)				5.3		
	Graded Buffaloes						
	Goat				109.3		
	Sheep				87.4		
	Others (Camel, Pig, Yak etc.)				21.5		
	Commercial dairy farms (Number)		<b>No. of farms</b>	<b>Total No. of birds ('000)</b>			
1.9	Poultry						
	Commercial				1259.8		
	Backyard						
1.10 Capture							
District	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)	
		No. Farmer Owned Ponds	No. of Reservoirs		No. of Village tanks		
		-	2		-		
A. Culture							
		Water Spread Area (ha)	Yield (t/ha)	Production ('000 tons)			
	Brackish Water (Data Source: MPEDA / Fisheries Department)	--	--	--			
	Fresh Water (Data Source : Fisheries Department)	6387	--	13260.4			
	Others	--	--	--			

\* Information for 1.8, 1.9, 1.10 will be provided by Veterinary University (TANUVAS), Chennai

**Production and Productivity of major field crops & horticulture crops**

1.11	Production and Productivity of Major Crops	Average of five years ending 2006-07							
	Field Crops	Kharif		Rabi		Summer		Total / average	
		Production ('000T)	Productivity (Kg/ha)	Production ('000T)	Productivity (Kg/ha)	Production ('000T)	Productivity (Kg/ha)	Production ('000T)	Productivity (Kg/ha)
1	Paddy	20.143	4381	39.198	4267	2.014	4134	61.355	4305
2	Millets	-	-	-	-	-	-	45.593	4233
3	Pulses	-	-	-	-	-	-	4.363	601.80
4	Cotton	-	278	-	532	-	-	5141 (bales)	480
5	Sugarcane	-	-	-	-	-	-	915.975	115000
6	Maize	-	-	-	-	-	-	-	-
	Horticulture Crops	Irrigated		Rainfed		Total			
		Production ('000T)	Productivity (Kg/ha)	Production ('000T)	Productivity (Kg/ha)	Production ('000T)		Productivity (Kg/ha)	
1	Mango	-	-	-	-	89.386		12980	
2	Banana	-	-	-	-	146.487		53584	
3	Grapes	64.597	32090	-	-	64.597		32090	
4	Coconut	-	-	-	-	3949 lakh nuts		16970 (nuts)	
5	Vegetables	-	-	-	-	38.672		20793	
6	Cardamom	-	-	0.139	96	0.139		96	

1.12	Sowing window for 5 major crops	Paddy	Vegetables	Pulses/Milletts	Cotton	Sugarcane / Banana
	Kharif rainfed	---	--	June 3 <sup>rd</sup> week to July 2 <sup>nd</sup> week	---	--
	Kharif irrigated	June 1 <sup>st</sup> week – 2 <sup>nd</sup> week	July 2 <sup>nd</sup> week – 3 <sup>rd</sup> week (Chillies)	--	--	--
	Rabi rainfed	--	--	Oct. 2 <sup>rd</sup> week to Nov. 2 <sup>nd</sup> week	--	--
	Rabi irrigated	Oct 2 <sup>nd</sup> week – 3 <sup>rd</sup> week	---	--	--	--
	Summer Irrigated	--	--	April 1st week – 4 <sup>th</sup> week	February 2 <sup>nd</sup> week – 4 <sup>th</sup> week	February 2 <sup>nd</sup> week – 4 <sup>th</sup> week

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	Never
	Drought		√	
	Flood		√	
	Cyclone		√	
	Hail storm			
	Heat wave			
	Cold wave			
	Frost			
	Sea water intrusion			
	Pests and diseases (specify)		<u>Rice</u> : Blast, BLB <u>Black gram</u> : YMV	
Others (Fog)		√		

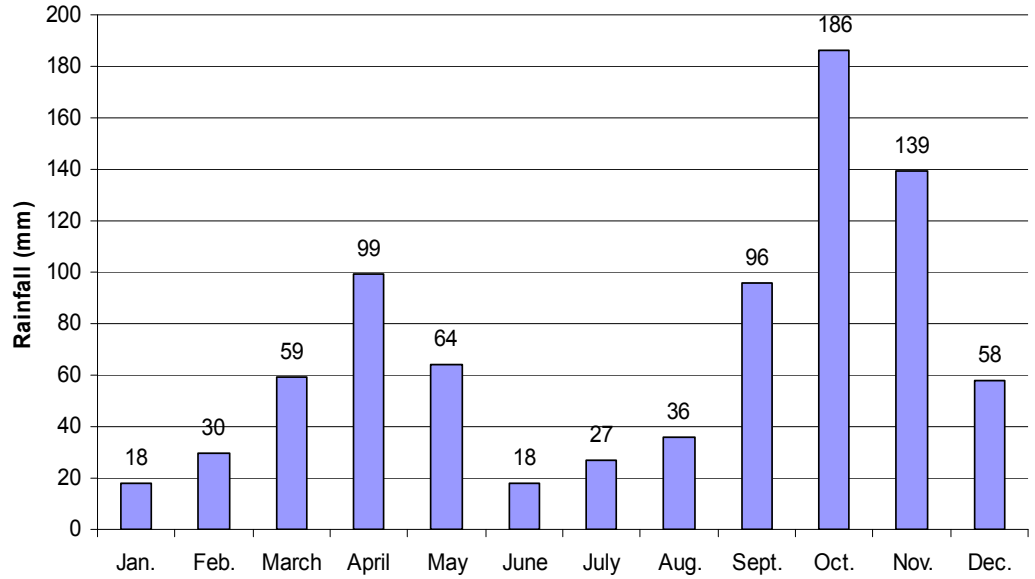
<b>1.14</b>	<b>Maps of the district</b>	Location map of district within State as Annexure I	Enclosed: Yes
		Mean annual rainfall as Annexure II	Enclosed: Yes
		Soil map as Annexure III	Enclosed: Yes

**Annexure 1. Location map of Theni district and the blocks**

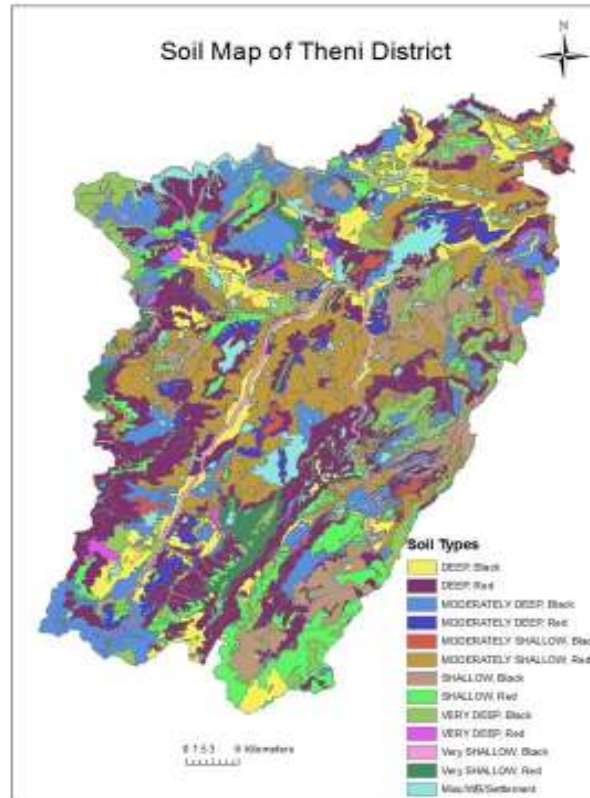




**Annexure 2. Mean annual rainfall of Theni district of Tamil Nadu**



### Annexure 3. Soil Map of Theni district of Tamil Nadu



## 2.0 Strategies for weather related contingencies

### 2.1. Drought :

#### 2.1.1 Ranifed Situations :

Condition	Kharif Season		Suggested contingency measures		
Early season drought (Delayed onset)	Major Farming situations	Normal Crop / cropping systems	Change in crop/cropping system	Agronomic measures	Remarks on implementation
<b>Kharif season</b>  Delay by 2 weeks (3 <sup>rd</sup> week of June)	Red soils	Pulses/ Sorghum	No change	Mechanical sowing with tractor drawn seed drill  Seed treatment with Thiram or <i>Carbendazim</i> @2g/Kg or <i>T.Viride</i> @4g/kg or <i>P.Fluorescens</i> @ 10g/kg	Linkages with NFSM for seed supply of pulse crops
	Black soils	Pulses/ Maize	No change		
Delay by 4 weeks (1 <sup>st</sup> week of July)	Red soils	Pulses/ Sorghum	Short duration pulses Black gram: VBN 1,2,3, Co5	Seed drill sowing for pulses Seed hardening-(18 hrs. soaking in water followed by 24 hrs. shade drying  2% DAP spray	
	Black soils	Pulses/ Maize	Red gram : CoRG 7, Co6 Cowpea: CoCT7		
Delay by 6 weeks (3 <sup>rd</sup> week of July)	Red soils	Pulses/ Fodder Sorghum	Short duration pulses Black gram: VBN 1,2,3, Co5	Seed drill sowing for pulses  Crop residue mulching Spray NAA 40 mg/lit or salicylic acid @ 100mg/lit AT preflowering and 15days thereafter. Seed treatment with 3pkts Azospirillum+ 3Pkts Phosphobacteria or 6 Azophos  2% DAP spray	
	Black soils	Pulses /Fodder Maize	Red gram : CoRG 7, Co6 Cowpea: CoCT7		
Delay by 8 weeks (1 <sup>st</sup> week of August)	Red soils	Fodder Maize/Ffodder Sorghum	Short duration varieties	--	
	Black soils				

Condition	Rabi season		Suggested contingency measures		
Early season drought (Delayed onset)	Major Farming situations	Crop / cropping systems	Change in crop/cropping system	Agronomic measure	Remarks on implementation
<b>Rabi season</b> Delay by 2 weeks (4 <sup>th</sup> week of October)	Red soils	Pulses ( Redgram)	No change	Mechanical sowing with tractor drawn seed drill  Seed treatment with Thiram or Carbendazim @2g/Kg or T.Viride @4g/kg or <i>P.Fluorescens</i> @ 10g/kg	Linkage with NFSM/RDVY ofr supply of seeds (p Redgram and Cowpea)
	Black soils	Maize	No change		
Delay by 4 weeks (2 <sup>nd</sup> week of Nov.)	Red soils	Pulses ( Redgram) Cowpea	Short duration Red gram : CoRG 7, Co6, Cowpea: CoCT7	Seed drill sowing for pulses Seed hardening-(18 hrs. soaking in water followed by 24 hrs. shade drying	
	Black soils	Maize			
Delay by 6 weeks (4 <sup>th</sup> week of Nov.)	Red soils	Pulses ( Green gram/Black gram/ Cowpea)	Short duration pulses Black gram: VBN 1,2,3, Co5, Co6 Cowpea: CoCT7	Seed drill sowing for pulses  Crop residue mulching Spray NAA 40 mg/lit or salicylic acid @ 100mg/lit AT preflowering and 15days thereafter. Azospirillum+ 3Pkts Phosphobacteria or 6 Azophos Seed treatment with 3pkts	
	Black soils	Maize			
Delay by 8 weeks (1 <sup>st</sup> week of Dec.)	Red soils	Fodder Maize/ Fodder Sorghum	Short duration varieties	--	
	Black soils				

### 2.1.2 Irrigated situation

Condition	Major Farming situation	Normal 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	Low land tube well canal irrigated red and black soil	Paddy (sub merged condition)  Chillies	SRI method of rice cultivation Maize Maize: CoRH1, CoHM 4 Sugarcane – sub surface drip fertigation  Sorghum, Horsegram	Limited irrigation with mulching  Alternate Furrow irrigation  Drip irrigation with residue mulching  Sprinkler irrigation with mulching	Seeds through ISOPOM and NFSM

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Non release of water in canals under delayed onset of monsoon in catchment	Red soils	Vegetable areas	Sorghum, Horsegram recommended	-	Seeds through NFSM

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			NA		

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Insufficient groundwater recharge due to low rainfall	Tube well red and black soil	Paddy	Maize, Groundnut and vegetables (Chilli and Brinjal)	1.Limited irrigation 2. Alternate Furrow irrigation 3. Sprinkler irrigation	1.Seeds through Dept of Horticulture, NFSM, NHM and ISOPOM

**2.2 Unusual rains (Untimely, unseasonal etc) - NA**

**2.3 Floods - NA**

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

Extreme event type	Suggested contingency measure <sup>r</sup>			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Heat Wave	NA			
Cold wave				
Frost				
Hailstorm				
Cyclone				

## 2.5 Contingent strategies for Livestock, Poultry & Fisheries\*

### 2.5.1 Livestock

	Suggested contingency measures		
	Before the event <sup>s</sup>	During the event	After the event
<b>Drought</b>			
Feed and fodder availability	Establishment of fodder banks & Preparation of silage	Using unconventional feeds and tree Fodders & Development of Draught resistant grass varieties	Cultivation of Green fodders
Drinking water	Construction of check dam& Rain water Harvesting	Recycling of water	Recycling of water
Health and disease management	Deworming and vaccination against contagious diseases	Supplementation of mineral mixture And concentrate feed	Deworming and vaccination against contagious diseases
<b>Floods</b>			
Feed and fodder availability	Storage of dry fodders well above the ground level	Feeding with silage, concentrate and dry fodder	Creating drainage facility in the Fodder plots
Drinking water	Storage of water in the over head tanks	Using bore well water for drinking purpose	Disinfected water can be used for drinking purpose
Health and disease management	Deworming and vaccination against contagious diseases	Keeping the animals in a proper shed with hygienic environment	Deworming and vaccination against contagious diseases
<b>Cyclone</b>			
Feed and fodder availability	Cultivation and storage of green fodder	Usage of stored fodder	Usage of stored fodder
Drinking water	Creating permanent water source	Using bore well water for drinking purpose	Creating drainage facility in the Fodder plots



Health and disease management	Improving the immune status of animals	Keeping the animals in a proper shed with hygienic environment	Improving the immune status of animals
<b>Heat wave and cold wave</b>			
Shelter/environment management	Construction of concrete shed & Planting Of trees in the farm premises	Sprinkling of water over the shed and Animals in heat wave	Improving the immune status of animals
Health and disease management	Feeding with balanced diet	Providing ad libitum water	Improving the immune status of animals

<sup>s</sup> based on forewarning wherever available

## 2.5.2 Poultry

	Suggested contingency measures			Convergence/linkages with ongoing programs, if any
	Before the event <sup>a</sup>	During the event	After the event	
<b>Drought</b>				
Shortage of feed ingredients	Storage of feed ingredients	Usage of Stored feed ingredients	Usage of Stored feed ingredients	--
Drinking water	Collection of rain water	Usage of stored rain water	Usage of stored rain water	--
Health and disease management	Deworming and vaccination against Specific diseases	Following strict hygienic measures in the farm	Deworming and vaccination against Specific diseases	--
<b>Floods</b>				
Shortage of feed ingredients	Storage of dry fodders	Feeding with silage,	Creating drainage facility	--

	well above the ground level	concentrate and dry fodder	in the Fodder plots	
Drinking water	Storage of water in the over head tanks	Using bore well water for drinking purpose	Disinfected water can be used for drinking purpose	--
Health and disease management	Deworming and vaccination against Specific diseases	Following strict hygienic measures in the farm	Deworming and vaccination against Specific diseases	--
<b>Cyclone</b>				
Shortage of feed ingredients	Storage of feed ingredients in a puca manner	Control of moisture in the feed ingredients	Preventive measures should be taken against Aflatoxins	--
Drinking water	Creating permanent water source	Using bore well water for drinking purpose	Creating drainage facility in the farm	--
Health and disease management	Improving the immune status of animals	Keeping the shed In a hygienic manner	Improving the immune status of animals	--
<b>Heat wave and cold wave</b>				
Shelter/environment management	Construction of concrete shed & Planting Of trees in the farm premises	Sprinkling of water over the shed and birds in heat wave	Improving the immune status of animals	--
Health and disease management	Feeding with balanced diet	Providing ad libitum water	Improving the immune status of animals	--

<sup>a</sup> based on forewarning wherever available

### 2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event	During the event	After the event
<b>1) Drought</b>			
<b>A. Capture</b>			
Marine	Negligible changes	Negligible changes	Negligible changes
Inland			
(i) Shallow water depth due to insufficient rains/inflow	<ul style="list-style-type: none"> <li>• Harvesting large individuals</li> <li>• Move and enclose Stacked into pens or in smaller/confined areas</li> </ul>	<ul style="list-style-type: none"> <li>• Harvesting large individuals</li> <li>• Disposable of unwanted excess stock</li> <li>• Stocking of desirable/special individuals in brood stock ponds</li> </ul>	<ul style="list-style-type: none"> <li>• Proper nutrition and management of water bodies to improve remaining stock</li> </ul>
(ii) Changes in water quality	Negligible changes in water quality	Negligible changes in water quality	Negligible changes in water quality
(iii) Any other			
<b>B. Aquaculture</b>			
(i) Shallow water in ponds due to insufficient rains/inflow	<ul style="list-style-type: none"> <li>• Harvesting of the stock</li> </ul>	<ul style="list-style-type: none"> <li>• Harvesting of the stock</li> <li>• Transferring of smaller fishes to artificial ponds (if available) for tiding over the drought</li> </ul>	<ul style="list-style-type: none"> <li>• Steps to improve the quality of stocked fishes, via supplementary feed/fertilizer water quality management</li> </ul>
(ii) Impact of salt load build up in ponds / change in water quality	<ul style="list-style-type: none"> <li>• Harvesting of the stock</li> </ul>	<ul style="list-style-type: none"> <li>• Harvesting of the stock</li> <li>• Transferring of smaller fishes to artificial ponds (if available) for tiding over the drought with water from other source (less hardness)</li> </ul>	<ul style="list-style-type: none"> <li>• Steps to improve the quality of stocked fishes, via feed/fertilizer water quality management</li> </ul>
(iii) Any other	--	--	--
<b>2) Floods</b>			

<b>A. Capture</b>			
Marine	Proper bunds and strengthening of existing structures to prevent flooding Ensure proper draining works to divert flood water	Netting and strengthening of weaker beach structures to prevent escaping of fishes	Improve the shore structures and beaches
Inland	<ul style="list-style-type: none"> <li>• Proper fencing to prevent escaping of fishes</li> <li>• Increasing bund height and improve bund strength</li> <li>• Improve land drainage to allow easy and quick flow of flood waters</li> </ul>	<ul style="list-style-type: none"> <li>• In extreme conditions, controlled draining of flooded ponds</li> <li>• Thinning of stock by harvesting of larger individuals</li> </ul>	<ul style="list-style-type: none"> <li>• Repair damaged bunds</li> <li>• Collect and preserve existing stock</li> </ul>
(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	<ul style="list-style-type: none"> <li>• Negligible changes</li> </ul>	<ul style="list-style-type: none"> <li>• Flood water can bring parasites, and increased turbidity – repair/correct drainage to improve quick drainage of flood waters</li> </ul>	<ul style="list-style-type: none"> <li>• Turbid waters may be flushed off with fresh bore well/well water</li> </ul>
(vi) Health and diseases	--	--	--
<b>B. Aquaculture</b>			
(i) Inundation with flood water	<ul style="list-style-type: none"> <li>• Proper fencing to prevent escaping of fishes</li> <li>• Increasing bund height and improve bund strength</li> <li>• Improve land drainage to allow easy and quick flow of flood waters</li> </ul>	<ul style="list-style-type: none"> <li>• In extreme conditions, controlled draining of flooded ponds</li> <li>• Thinning of stock by harvesting of larger individuals</li> </ul>	<ul style="list-style-type: none"> <li>• Repair damaged bunds</li> <li>• Collect and preserve existing stock</li> </ul>
(ii) Water continuation and changes in water quality	<ul style="list-style-type: none"> <li>• Negligible changes</li> </ul>	<ul style="list-style-type: none"> <li>• Water can become turbid due to flood waters, reduce stock to prevent mortality</li> </ul>	<ul style="list-style-type: none"> <li>• Flushing of pond water with bore-well water to improve water quality</li> </ul>

(iii) Health and diseases	--	--	--
(iv) Loss of stock and inputs (feed, chemicals etc)	<ul style="list-style-type: none"> <li>• Negligible changes</li> </ul>	<ul style="list-style-type: none"> <li>• Harvesting of stock</li> <li>• Shift reserve of brood stock to ponds at elevated levels</li> </ul>	<ul style="list-style-type: none"> <li>• Selling remaining stock and inundated equipment immediately to minimize losses</li> </ul>
(v) Infrastructure damage (pumps, aerators, huts etc)	<ul style="list-style-type: none"> <li>• Dismantling of pumps, aerators and other equipment and shifting to safer zones</li> </ul>	<ul style="list-style-type: none"> <li>• Salvaging of inundated pumps, aerators and other equipment and shifting to safer zones</li> </ul>	<ul style="list-style-type: none"> <li>• Selling remaining stock and inundated equipment immediately to minimize losses</li> </ul>
(vi) Any other			