

State: TAMILNADU

Agriculture Contingency Plan for District: KRISHNAGIRI

1.0 District Agriculture profile				
1.1	<b>Agro-Climatic/Ecological Zone</b>			
	Agro Ecological Region / Sub Region (ICAR)	Eastern Ghats And TamilNadu Uplands And D (8.1)		
	Agro-Climatic Region (Planning Commission)	Southern Plateau and Hills Region (X)		
	Agro Climatic Zone (NARP)	north-western zone (2)		
	List all the districts or part thereof falling under the NARP Zone	Krishnagiri and Dharmapuri (excluding hilly areas), Salem, Nammakkal (except Tiruchengodu Taluk) and Perambalur Taluk of Perambalur District.		
	Geographic coordinates of district	<b>Latitude</b>	<b>Longitude</b>	<b>Altitude</b>
		12°31'60" N	78°13'60"E	630m MSL
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Regional Research Station, TNAU, Paiyur, Dharmapuri districts- 636808		
Mention the KVK located in the district	Dr. Perumal Krishi Vigyan Kendra, (ICAR), Krishnagiri			
1.2	<b>Rainfall</b>	Average (mm)	Normal Onset ( specify week and month)	Normal Cessation (specify week and month)
	SW monsoon (June-Sep):	402	2 <sup>nd</sup> week of July	1 <sup>st</sup> week of October
	NE Monsoon(Oct-Dec):	271	3 <sup>rd</sup> week of October	2 <sup>nd</sup> week of December
	Winter (Jan- March)	27		
	Summer (Apr-May)	147		
	Annual	847		

<b>1.3</b>	<b>Land use pattern of the district</b> (latest statistics)	Geographical area	Forest area	Land under non-agricultural use	Permanent pastures	Cultivable waste land	Land under Misc. tree crops and groves	Barren and uncultivable land	Current fallows	Other fallows
	Area ('000 ha)	514.3	202.4	42.2	8.2	4.0	9.7	24.3	35.6	9.4
<b>1.4</b>	<b>Major Soils</b>		Area ('000 ha)		Percent (%) of total					
	Deep Red		163.8		31.8					
	Very shallow Red		64.7		12.6					
	Deep Black		60.9		11.8					
	Very Deep Black		49.7		9.7					
	Moderately Shallow Red		40.9		8.0					
	Moderately Deep Black		33.5		6.5					
	Moderately Shallow Black		31.8		6.2					
<b>1.5</b>	<b>Agricultural land use</b>		Area ('000 ha)		Cropping intensity %					
	Net sown area		190.0		104.5					
	Area sown more than once		8.6							
	Gross cropped area		198.6							

<b>1.6</b>	<b>Irrigation</b>	Area ('000 ha)	Percent (%)		
	Net irrigated area	52.0	27.2		
	Gross irrigated area	54.7	30.6		
	Rainfed area	138.0	72.8		
	<b>Sources of Irrigation</b>	Number	Area ('000 ha)	% area (to net irrigated area)	
	Canals	-	0.8	1.6	
	Tanks	1327	7.2	15.6	
	Open wells	64690	31.1	15.4	
	Bore wells				
	Lift irrigation	-	-	-	
	Other sources	-	-	-	
	Total	-	41.0	41.9	
	Pumpsets	-	-	-	
	Micro-irrigation	-	2.50	5.05	
	<b>Groundwater availability and use</b>	No. of blocks	% area	Quality of water	
	Over exploited	4	28	Data not available	
	Critical	-	-		
Semi- critical	4	33.3			
Safe	2	38.6			
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.**

1.7	Major Field Crops cultivated	Area ('000 ha)					
		<i>Kharif</i>		<i>Rabi</i>		Summer	Total
		<i>Irrigated</i>	<i>Rainfed</i>	<i>Irrigated</i>	<i>Rainfed</i>		
1	Finger millet	0.1	58.6	0.4	0.4		60.4
2	Horse gram				31.3		31.3
3	Paddy	15.6		12.2			27.8
4	Little millet		21.0				21.0
5	Ground nut	0.07	12.8	0.1	0.2		13.3
6	Sorghum		10.9				10.9
7	Sugarcane						3.0
	<b>Horticulture crops - Fruits</b>	<b>Total area</b>					
1	Mango	35.4					
2	Banana	2.3					
	<b>Horticultural crops - Vegetables</b>	<b>Total area</b>					
1	Tomato	3.7					
2	Cabbage	0.5					
3	Chillies	0.5					
4	Brinjal	0.3					

		<b>Plantation crops</b>	<b>Total area</b>
1		Coconut	14.5
2		Sugar cane	3.0
		<b>Fodder crops</b>	<b>Total area</b>
1		Cholam	2.2
2		Others	0.1
		<b>Total fodder crop area</b>	2.3
		<b>Grazing land</b>	8.1
		<b>Sericulture etc</b>	2.0
		<b>Others (Specify)</b>	-

<b>1.8</b>	<b>Livestock</b>	<b>Male ('000)</b>	<b>Female ('000)</b>	<b>Total ('000)</b>
	Non descriptive Cattle (local low yielding)	59.1	299.5	358.6
	Crossbred cattle	13.6	136.6	150.2
	Non descriptive Buffaloes (local low yielding)	2.4	17.1	19.5
	Graded Buffaloes	0.1	1.7	1.9
	Goat	42.9	106.8	149.7
	Sheep	82.9	211.2	294.2
	Others (Camel, Pig, Yak etc.)			12.7
	Commercial dairy farms (Number)			-

<b>1.9</b>	<b>Poultry</b>	<b>No. of farms</b>	<b>Total No. of birds ('000)</b>
	Commercial		497.4
	Backyard		721.1

1.10 Fisheries						
A. Capture						
i. Marine (Data Source: Fisheries Department)	No. of fishermen	Boats		Nets		Storage facilities (Ice plants etc.,)
	7928	Mechanized	Non-mechanized	Mechanized (Trawl nets, Gill nets)	Non-mechanized (Shore Seines, Stake & trap nets)	
			469		Total nets :5621	
ii. Inland (Data Source: Fisheries Department)	No. Farmers owned ponds		No. of Reservoirs		No. of village tanks	
	25		- 5 -		50	
B.Culture						
	Water Spread Area (ha)		Yield (t/ha0)		Production (*000 tons)	
i. Brackish water (Data Source: MPEDA/Fisheries Department)	-		-		-	
ii. Fresh water(Data Source:	2250.9		-		-	

	Fisheries Department)			
	Others			

1.11	Production and Productivity of major crops	Total	
		Production ('000 t)	Productivity (kg/ha)
1	Paddy	118.8	4264
2	Finger millet	125.8	2080
3	Horse gram	23.1	737
4	Little millet	23.1	1099
5	Ground nut	23.3	1751
6	Sorghum	21.2	1938

<b>Major Horticultural crops</b>			
1	Mango	172.0	4855
2	Tomato	48.3	13126
3	Cabbage	24.6	44926
4	Chillies	0.3	648
5	Brinjal	6.5	18202
6	Banana	10.7	49763

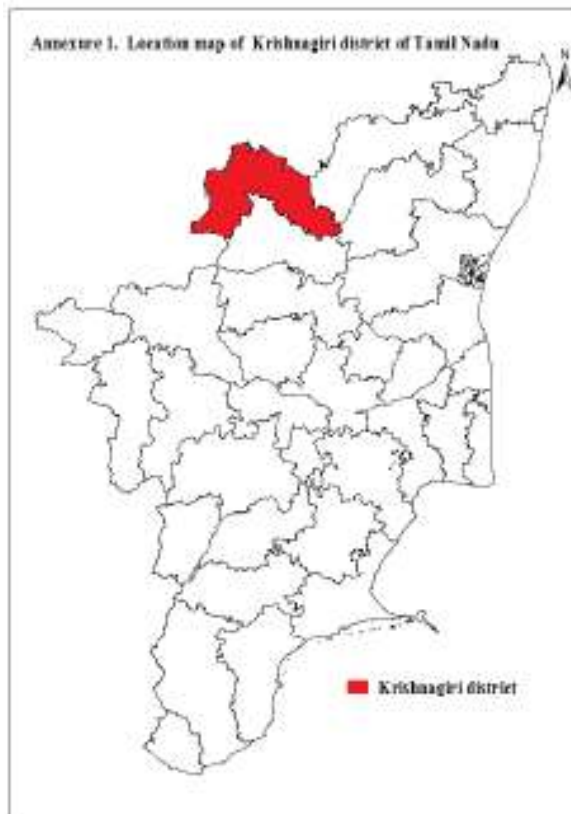
<b>1.12</b>	<b>Sowing window for 5 major crops (start and end of sowing period)</b>	<b>Paddy</b>	<b>Finger millet</b>	<b>Horse gram</b>	<b>Little millet</b>	<b>Ground nut</b>
	Khariif- Rainfed	--	Jul- Aug	--	Jul- Aug	Jul- Aug
	Khariif-Irrigated	Jun – Jul (Early samba) Aug - Sep (Samba)	--	--	--	--
	Rabi- Rainfed	--	--	Sep- Oct	--	--
	Rabi-Irrigated	Nov - Dec	Nov - Dec	--	--	--



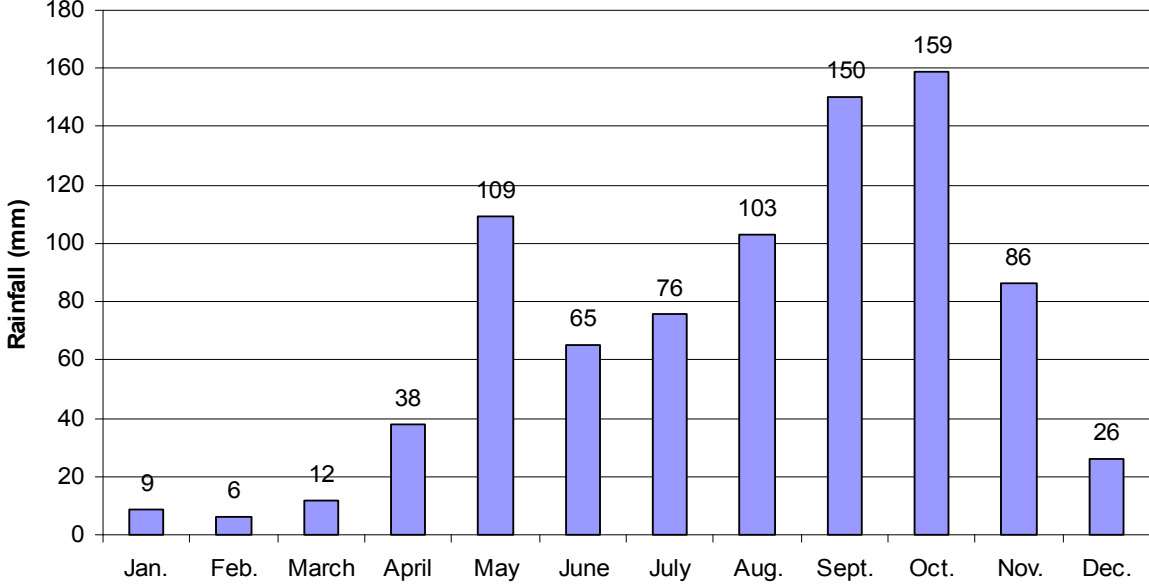
1.13	What is the major contingency the district is prone to? (Tick mark and mention years if known during the last 10 year period)	Regular	Occasional	None
	Drought	✓		
	Flood			✓
	High intense storms			
	Cyclone			✓
	Hail storm		✓	
	Heat wave			✓
	Cold wave			✓
	Frost			✓
	Sea water inundation			✓
	Pests and diseases (specify)	✓		

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

## Annexure 1. Location map of Krishnagiri district and the blocks



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





## 2.0 Strategies for weather related contingencies

### 2.1 Drought

#### 2.1.1 Rainfed situation ( South West Monsoon)

Condition			Suggested Contingency measures		
Early season drought	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delay by 2 weeks (July 4 <sup>th</sup> week)	Red non calcareous soils with rolling topography	Ragi – (Lab Lab+ Sorghum + Red gram)	Change of ragi varieties from long duration (LD) to medium duration (MD). LD- Paiyur 1, GPU-28, L-5, MR-1, HR-911 MD- Paiyur 1	Raising community nursery and transplanting.  Seed hardening with KH <sub>2</sub> PO <sub>4</sub> (2%)	
	Shallow marginal and sub marginal red non calcareous soils	Samai – Horse gram	Varieties- Paiyur 2, Co-2 and Co-3	Seed hardening & P <sub>2</sub> O <sub>5</sub> enriched FYM	
Delay by 4 weeks (Aug 2 <sup>nd</sup> week)	Red non calcareous soils with rolling topography	Ragi – ( Lab Lab+ Sorghum + Red gram)	Change long duration varieties to short duration Indaf 9, Co-7	Seed hardening Application of Azospirillum Soil mulching with blade harrow Spray ethrel 200 ppm at 45 and 65 DAS to induce early maturity	ICDP, SVP, ATMA

Condition			Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
<b>Early season drought</b>	<b>Major Farming situation</b>	<b>Normal Crop/cropping system</b>			
	Shallow marginal and sub marginal red non calcareous soils	Samai - Horsegram	Varieties- Paiyur 2, Co-2 and Co-3	Application of FYM Seed hardening	ICDP, SVP, ATMA
Delay by 6 weeks (Aug 4 <sup>th</sup> week)	Red non calcareous soils with rolling topography	Ragi – (Lab Lab+ Redgram + Sorghum)	Change from millets to pulses (cowpea) or fodder Sorghum	Application of tank silt 80-100 t/ha as a long term measure in these soils Split application of fertilizers	-
	Shallow marginal and sub marginal red non calcareous soils	Samai  Horsegram	SD-Cowpea = CoCP 6, 7 P-152  Sorghum – Co4, Paiyur 2	Seed treatment with azophos.	
Delay by 8 weeks (Sep 2 <sup>nd</sup> week)	Red non calcareous soils with rolling topography	Ragi – ( Lab Lab+ Red gram + Sorghum)	Skipping of I <sup>st</sup> kharif crop and raising of II <sup>nd</sup> rabi crop Horsegram	<i>Insitu</i> soil moisture conservation for rabi crop	-
	Shallow marginal and sub marginal red non calcareous soils	Samai – Horsegram	Skipping of kharif crop and raising rabi crop Horsegram		

**Rainfed situation ( North East Monsoon)**

<b>Condition</b>		<b>Suggested Contingency measures</b>			
<b>Early season drought</b>	<b>Major Farming situation</b>	<b>Rabi season Normal Crop/cropping system</b>	<b>Change in crop/cropping system</b>	<b>Agronomic measures</b>	<b>Remarks on Implementation</b>
Delay by 2 weeks (Nov 1 <sup>st</sup> week)	Shallow marginal and sub marginal red non calcareous soils	Horse gram	No change	No change	-
Delay by 4 weeks (Nov 3 <sup>rd</sup> week)			Re sowing of Horse gram	Water conservation and management techniques	
Delay by 6 weeks (Dec 1st week)			Fodder sorghum	-	
Delay by 8 weeks (Dec 3rd week)			Fallow		

<b>Condition</b>		<b>Suggested Contingency measures</b>			
<b>Early season</b>	<b>Major Farming situation</b>	<b>Crop/cropping system</b>	<b>Crop management</b>	<b>Rabi crop planning</b>	<b>Remarks on Implementation</b>

<b>drought (Normal onset, followed by 15-20 days dry spell after sowing leading to poor germination / crop stand etc.)</b>	Red non calcareous soils with rolling topography	Ragi – ( Lab Lab+ Red gram +Sorghum)	If very poor germination resowing may be adopted.  Life saving irrigation if available can be given  Foliar application of nutrients can be adopted.	Application of tank silt 80-100 t/ha as a medium term measure  Application of P <sub>2</sub> O <sub>5</sub> enriched FYM	-
	Shallow marginal and sub marginal red non calcareous soils	Samai – Horsegram			
<b>Mid season drought (long dry spell) at vegetative stage</b>	Red non calcareous soils with rolling topography	Ragi – ( Lab Lab+ Red gram + Sorghum)	Spraying of KCl (1%) to alleviate stress  Foliar application of nutrients  Reduce plant population & use biomass as mulch  Spray of ethrel (200 ppm) for early maturity	In-situ soil moisture conservation techniques  Soil mulching  Application of azospirillum & phosphobacteria	
	Shallow marginal and sub marginal red non calcareous soils	Samai – Horsegram			

<b>Condition</b>			<b>Suggested Contingency measures</b>		
<b>Mid season drought (long dry spell)</b>	<b>Major Farming situation</b>	<b>Crop/cropping system</b>	<b>Crop management</b>	<b>Rabi crop planning</b>	<b>Remarks on Implementation</b>
<b>At reproductive stage</b>	Red non calcareous soils with rolling topography	Ragi – ( Lab Lab+ Red gram + Sorghum)	Foliar application 2% Urea  Water conservation and	-	-



<b>Condition</b>			<b>Suggested Contingency measures</b>		
<b>Mid season drought (long dry spell)</b>	<b>Major Farming situation</b>	<b>Crop/cropping system</b>	<b>Crop management</b>	<b>Rabi crop planning</b>	<b>Remarks on Implementation</b>
	Shallow marginal and sub marginal red non calcareous soils	Samai – Horsegram	management practices		
<b>Terminal drought</b>	Red non calcareous soils with rolling topography	Ragi – ( lab lab+ red gram + sorghum)	Early harvest at physiological maturity Conserving moisture for rabi crops	Sowing of rabi crop - Horsegram	
	Shallow marginal and sub marginal red non calcareous soils	Samai – Horsegram			

## 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	Wetland paddy canal irrigated	Rice – Rice	Change of varieties from Medium duration (MD) to Short duration (SD)  MD – Paiyur 1, W.Ponni, BPT5204  SD – IR42, 64, ADT 39	Practicing of SRI techniques. In case of transplanting use aged seedling of 45-60DAS, closer spacing & more seedlings / hill Nipping of tips of over grown seedlings Basal 25% of N extra to be applied	IAMWARM, ICDP, NADP, ATMA

Condition	Major Farming situation	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	Wetland Paddy canal irrigated	Rice – Rice	Change from Rice (I season) to Ragi / Green manure / vegetables and raising Rice in second season (Nov – Dec)	-	-

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	Wetland paddy tank irrigated	Rice – Ragi	Change of varieties from Medium duration to short duration SD-IR42, 64, ADT-39	SRI techniques Adopt Drum seeding in canal irrigated situation  Practicing of SRI techniques. In case of transplanting use aged seedling of 45-60DAS, closer spacing & more seedlings / hill Nipping of tips of over grown seedlings Basal 25% of N extra to be applied	-

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	Garden land paddy – well irrigated	Rice – Ragi / Vegetables	Change from MD to SD varieties transplanting 45-60 day old seedlings SD-IR 42,64,ADT-39		-

Condition	Suggested Contingency measures				
	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Any other condition (specify)	-	-	-	-	-

2.2 Unusual rains (untimely, unseasonal etc) -NA

2.3 Floods : - NA

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			

<p>Feed and fodder availability</p>	<p>Sowing of cereals (Sorghum) and leguminous crops (Lucerne, Horsegram, Cowpea) during North-East monsoon under dry land system for fodder production.</p> <p>Fodder production with Sorghum – stylo- Sorghum on rotation basis.</p> <p>Harvesting of crop residues especially Paddy, Groundnut and sugarcane tops and hay making during the months of January and February for use in summer months/drought season.</p> <p>Motivating the sugarcane farmers to convert green sugarcane tops in to silage by the end of February</p> <p>Create awareness on establishment of pasture with drought resistant fodder Varieties like Guinea grass, stylo, kolukkattai grass, Acacia trees, etc.</p> <p>Creation of tree fodder models with Subabul, Glyricidia, Agathi, etc for tree fodder production during summer.</p> <p>Encouraging farmers to cultivate short-term fodder crops like sunhemp.</p> <p>Keeping sufficient stock of mineral mixture.</p> <p>Popularization of the use of chaff cutters to avoid fodder wastage.</p> <p>Educate the farmers about the proper method of hay making in order to avoid spoilage.</p> <p>Conservation of crop residues for summer feeding.</p> <p>Promote Azola cultivation at backyard</p> <p>Capacity building and preparedness of the stakeholders and official staff for the unexpected events</p>	<p>Harvest and use biomass of dried up crops (Sorghum/groundnut/paddy/maize/ Blackgram) material as fodder</p> <p>Chaffing of green and dry fodder to avoid wastage</p> <p>Use of unconventional and locally available cheap feed ingredients for feeding of livestock.</p> <p>Enrichment of dry fodder with urea, Salt and molasses.</p> <p>Continuous supplementation of minerals to prevent infertility.</p> <p>Transport of dry fodder bales from the fodder grid at DLF, Hosur to the drought affected villages</p> <p>Advising the farmers to feed balanced ration during summer months.</p> <p>Feeding of chaffed and salt sprinkled crop residues.</p> <p>Supplementation of tree fodder with the available grass fodder.</p> <p>Feeding livestock with locally available cheaper brewery waste.</p> <p>Using of ensiled grasses and sugarcane tops during the drought period.</p> <p>Promotion of cultivation of Horse gram as contingent crop and harvesting it at vegetative phase as fodder</p> <p>Herd should be split and supplementation should be given only to the highly productive and breeding animals during severe drought</p> <p>Provision of emergency grazing/feeding (Cow-calf camps or other special arrangements to protect high productive &amp; breeding stock) during severe drought</p> <p>Encourage mixing available kitchen waste with dry fodder while feeding to the milch animals</p> <p>Arrangements should be made for mobilization of small ruminants across the districts where no drought exits</p> <p>Unproductive livestock should to be culled during severe drought</p> <p>Create transportation and marketing facilities for the culled and unproductive animals (10000-20000 animals)</p> <p>Subsidized loans (5-10 crores) should be provided to the livestock keepers</p>	<p>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 &amp; supporting them with assisting infrastructures like seeds, money manure.</p> <p>Supply of quality seeds of COFS 29, Stylo and fodder slips of Co3, Co4, guinea grass well before monsoon</p> <p>The technique of over – seeding the dryland sorghum on cultivation with Stylosanthes hamata be popularized</p> <p>Flushing the stock to recoup</p> <p>Replenish the feed and fodder banks</p>
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<p>Drinking water</p>	<p>Adopt various water conservation methods at village level to improve the ground water level for adequate water supply.</p> <p>Identification of water resources</p> <p>Desilting of ponds</p> <p>Rain water harvesting and create water bodies/watering points (when water is scarce use only as drinking water for animals)</p> <p>Construction of drinking water tanks in herding places/village junctions/relief camp locations</p> <p>Community drinking water trough can be arranged in shandies /community grazing areas</p>	<p>Adequate supply of drinking water.</p> <p>Restrict wallowing of animals in water bodies/resources</p>	<p>Watershed management practices shall be promoted to conserve the rainwater. Bleach (0.1%) drinking water / water sources</p> <p>Provide clean drinking water</p>
<p>Health and disease management</p>	<p>March: Anthrax- Thally block</p> <p>April FMD – Hosur</p> <p>May FMD- Kelamangalam, Hosur Anthrax- Uthangarai</p> <p>June FMD- Kelamangalam Anthrax- Hosur, Uthangarai</p> <p>Surveillance and disease monitoring network to be established at Joint Director (Animal Husbandry) office in the district</p> <p>Adequate refreshment training on draught management to be given to VAS, Jr.VAS, LI with regard to health &amp; management measures.</p> <p>Procure and stock multivitamins &amp; area specific</p>	<p>Carryout deworming to all animals entering into relief camps</p> <p>Identification and quarantine of sick animals</p> <p>Constitution of Rapid Action Veterinary Force</p> <p>Performing ring vaccination (8 km radius) in case of any outbreak</p> <p>Restricting movement of livestock in case of any epidemic</p> <p>Rescue of sick and injured animals and their treatment</p> <p>Organize with community, daily lifting of dung from relief camps</p>	<p>Keep close surveillance on disease outbreak.</p> <p>Undertake the vaccination depending on need</p> <p>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</p>

	mineral mixture		
<b>Floods</b>	NA		
<b>Cyclone</b>	NA		
<b>Heat wave and cold wave</b>	NA		

### 2.5.2. Poultry

	Suggested contingency measures		
	Before the event <sup>a</sup>	During the event	After the event
<b>Drought</b>			
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 IBD	Mixing of Vit. A,D,E, K and B-complex including vit C in drinking water (5ml in one litre water)	Hygienic and sanitation of poultry house Disposal of dead birds by burning / burying with lime powder in pit
<b>Floods</b>	NA		

<b>Cyclone</b>	<b>NA</b>
<b>Heat wave and cold wave</b>	<b>NA</b>

### **2.5.3 Fisheries - NA**