

State: TAMIL NADU

Agriculture Contingency Plan for District: COIMBATORE

1.0 District Agriculture profile				
1.1	Agro-Climatic/Ecological Zone			
	Agro Ecological Region /Sub Region (ICAR)	Tamil Nadu uplands and leeward flanks of south Sahyadris, hot, dry semi-arid eco-subregion (8.1)		
	Agro-Climatic Region (Planning Commission)	West Coast Plains And Ghat Region, Southern Plateau And Hills Region (XII, X)		
	Agro Climatic Zone (NARP)	High Altitude And Hilly Zone and Western Zone (TN-7, TN-3)		
	List all the districts or part thereof falling under the NARP Zone	Coimbatore, Erode, Namakkal (Thiruchengodu), Karur (Karur and Manapparai), Dindigul (Nilakottai and Palani), Madurai (Usilampatti) and Theni(Uthamapalayam and Periyakulam)		
	Geographic coordinates of district	Latitude	Longitude	Altitude
		11°01'06.00" N	76°58'2900" E	463.6 m
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTS	Nil		
	Mention the Agricultural College and Research Institute and research station located in the district	Agricultural College and Research Institute, Coimbatore - 641003		
Mention the KVK located in the district	TNAU-KVK, Coimbatore -641003			
1.2	Rainfall	Average (mm)	Normal Onset	Normal Cessation
	SW monsoon (June-Sep):	153	2 nd week of June (23 rd Std. week)	1 st week of October (40 th Std. week)
	NE Monsoon(Oct-Dec):	307	2 nd week of October (41 st Std. week)	4 th week of December (52 nd Std. week)
	Winter (Jan- Feb)	31		
	Summer (Mar-May)	113		
	Annual	604		

1.3	Land use pattern of the district	Geographic 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	Net cultivable area	Other fallows
	Area ('000 ha)	747.1	158.8	109.9	0.1	13.0	3.4	6.6	96.6	51.2	747.1

1.4	Major Soils	Area ('000 ha)	Percent (%) of total
	Deep black soil	87.6	18.1
	Deep red soils	86.5	17.8
	Misc./WB/Settlement soils	28.8	
	Moderately deep black soils	74.6	15.4
	Moderately deep red soils	35.9	7.4
	Moderately shallow black soils	6.2	1.3
	Moderately shallow red soils	65.7	13.6
	Shallow black soils	2.9	0.6
	Shallow red soils	59.4	12.3
	Very deep black soils	22.9	4.7
	Very deep red soils	7.5	1.6
	Very shallow black soils	4.6	1.0
	Very shallow red soils	1.8	0.4

1.5	Agricultural land use	Area ('000ha)	Cropping intensity %
	Net sown area	312.9	105.7
	Area sown more than once	17.7	
	Gross cropped area	330.6	

1.6	Irrigation	Area ('000 ha)		
	Net irrigated area	175.4		
	Gross irrigated area	185.8		
	Rainfed area	137.5		
	Sources of Irrigation	Number	Area ('000 ha)	% area
	Canals		47.8	26.7
	Tanks		1.4	0.8
	Tube wells & filter points		26.5	14.8
	Lift irrigation schmes		69.5	62.1
	Reservoirs		1.1	1.0
	Total		147.9	91.1
	Pumpsets (number)		69220 Nos	
	Micro-irrigation			
	Groundwater availability and use	No. of blocks	% area	Quality of water
Over exploited	10	83.3	Salinity level: 58 % good, 33% moderate and 9% poor Residual Sodium Carbonate: 53% good, 46% moderate and 1% poor Sodium Adsorption Ratio:100 % good	
Critical	1	08.3		
Semi- critical	1	08.3		
Safe	-	-		
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	S.No.	Major field crops cultivated	Area ('000 ha)					
			Kharif		Rabi		Summer	Total
			Irrigated	Rainfed	Irrigated	Rainfed		
1	Sorghum	0.8	23.4	0.4	9.8		34.4	
2	Groundnut	0.6	5.5	1.0	1.0		8.2	
3	Maize	2.0	0.3	2.3	1.0		5.6	
4	Cow pea	0.2	3.6	-	0.9		4.8	
5	Rice	1.6		0.9		0.0	2.5	
6	Sugarcane	2.5					2.6	
7	Horsegram	-	0.8	-	1.0		1.9	
8	Bengalgram	-	0.3	-	1.3		1.6	
9	Greengram	-	1129	-	431		1.5	
10	Cotton	0.7	501				1.2	
11	Blackgram	0.0	0.7	0.0	0.3		1.1	
Horticultural Crops – Vegetables Area ('000 ha)								
1	Tomato				3.3			
2	Tapioca				0.8			
3	Onion				0.7			
4	Brinjal				0.4			
5	Bhendi				0.4			
Horticultural Crops – Fruits Area ('000 ha)								
1	Banana				9.8			
2	Mango				2.5			
3	Grapes				0.2			
4	Sapota				0.2			
5	Amla				0.4			
Plantation crops Area ('000 ha)								
1	Coconut				76.9			
2	Coffee				2.3			
3	Tea				11.0			
	Total fodder crop area				2.5			

1.8	Livestock	Male ('000)	Female ('000)	Total ('000)
	Non descriptive Cattle (local low yielding)	15.8	13.7	29.6
	Crossbred cattle	59.3	254.4	313.7
	Non descriptive Buffaloes (local low yielding)	6.5	29.9	36.4
	Graded Buffaloes			
	Goat			230.5
	Sheep			122.8
	Others (Camel, Pig, Yak etc.)			
	Commercial dairy farms (Number)			More than 500
1.9	Poultry	No. of farms	Total No. of birds ('000)	
	Commercial	290	1,779.0	
	Backyard		47.8	

1.10	Fisheries (Data source: Chief Planning Officer)					
A. Capture						
i) Marine (Data Source: Fisheries Department)	No. of fishermen	Boats		Nets		Storage facilities (Ice plants etc.)
		Mechanized	Non-mechanized	Mechanized (Trawl nets, Gill nets)	Non-mechanized (Shore Seines, Stake & trap nets)	
ii) Inland (Data Source: Fisheries Department)	No. Farmer owned ponds		No. of Reservoirs		No. of village tanks	
	-		9		77	
B. Culture						
	Water Spread Area (ha)		Yield (t/ha)		Production ('000 tons)	
i) Brackish water (Data Source: MPEDA/ Fisheries Department)	-		-		-	
ii) Fresh water (Data Source: Fisheries Department)	-		-		-	
Others						

1.11	Production and Productivity of major crops	Kharif		Rabi		Summer		Total	
		Production (t)	Productivity (kg/ha)	Production (t)	Productivity (kg/ha)	Production (t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)
1	Sorghum							34.7	1073
2	Groundnut							21.7	1988
3	Maize							0.7	5386
4	Cowpea							1.0	214
5	Rice	4.0	3448	12.6	4000	3.7	4000	20.4	3816
6	Cotton							7.7	362
Major Horticultural crops									
1	Banana							287.2	39846
2	Tomato							74.8	13827
3	Tapioca							26.7	40360
4	Onion							26.3	11678
5	Brinjal							13.8	19924

1.12	Sowing window for 5 major crops (start and end of sowing period)	Sorghum	Groundnut	Maize	Rice	Cotton
	Kharif- Rainfed	June 1 st week to July 1 st week	May 2 nd week – June 2 nd week		----	June 4 th week – July 2 nd week
	Kharif-Irrigated	---	May - June	July 1 st FN to Aug 1 st week	July 1 st week – 3 rd week	Aug 1 st week - 4 th week
	Rabi- Rainfed	Sep 3 rd week – Oct 2 nd week		Oct 2 nd week to Nov 1 st week	-----	Sep 4 th week – Oct 2 nd week
	Rabi-Irrigated	January 4 th week- Feb. 2 nd week	Dec 2 nd week – Jan 1 st week	Nov 2 nd week – Dec 4 th week	Sep. 1 st week – 3 rd week	

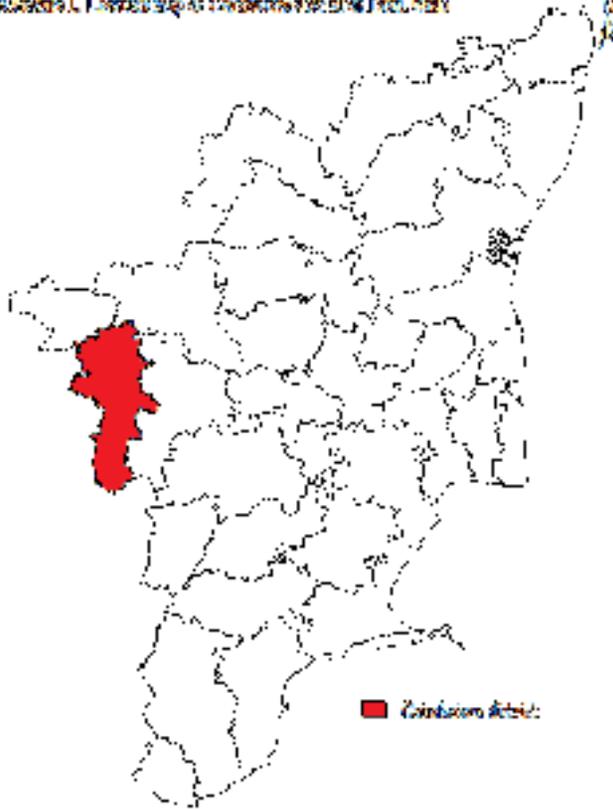
1.13	What is the major contingency the district is prone to? (Tick mark and mention years if known during the last 10 year period)	Regular	Occasional	None
	Drought	√		
	Flood			√
	Cyclone			√
	Hail storm			√
	High intense storms		√	
	Heat wave			√
	Cold wave			√
	High wind	√		
	Frost			√
	Sea water intrusion			√
	Pests and diseases	√		
	Sorghum	Shoot fly, Stem borer, Ear head bug , Ergot Leaf spot, Mite, Rust, Head mould, Downy mildew	Ear head caterpillar, Grain midge, Charcoal rot	
	Groundnut	Leaf minor, Thrips, Pod borer, Root rot, Tikka leaf spot, Rust	Red hairy caterpillar, Millipede	
	Maize	Stem borer, Aphid, Downy mildew	Cob borer, Shoot fly, Leaf spot	
	Cowpea	Apid, stem fly, Pod borer, Rust		

	Rice	Stem borer, Leaf folder, Thrips, Brown plant hopper Ear head bug, Blast,	Sheeth rot, sheeth blight, Bacterial leaf blight, Brown spot, Rice Thungro Virus	
	Cotton	Sucking pests (Thrips, Aphid, Leaf hopper, White flies), Stem weevil, Boll rot Wilt, Mealy bug	Root rot, Alternaria leaf spot	

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 Coimbatore district and the blocks

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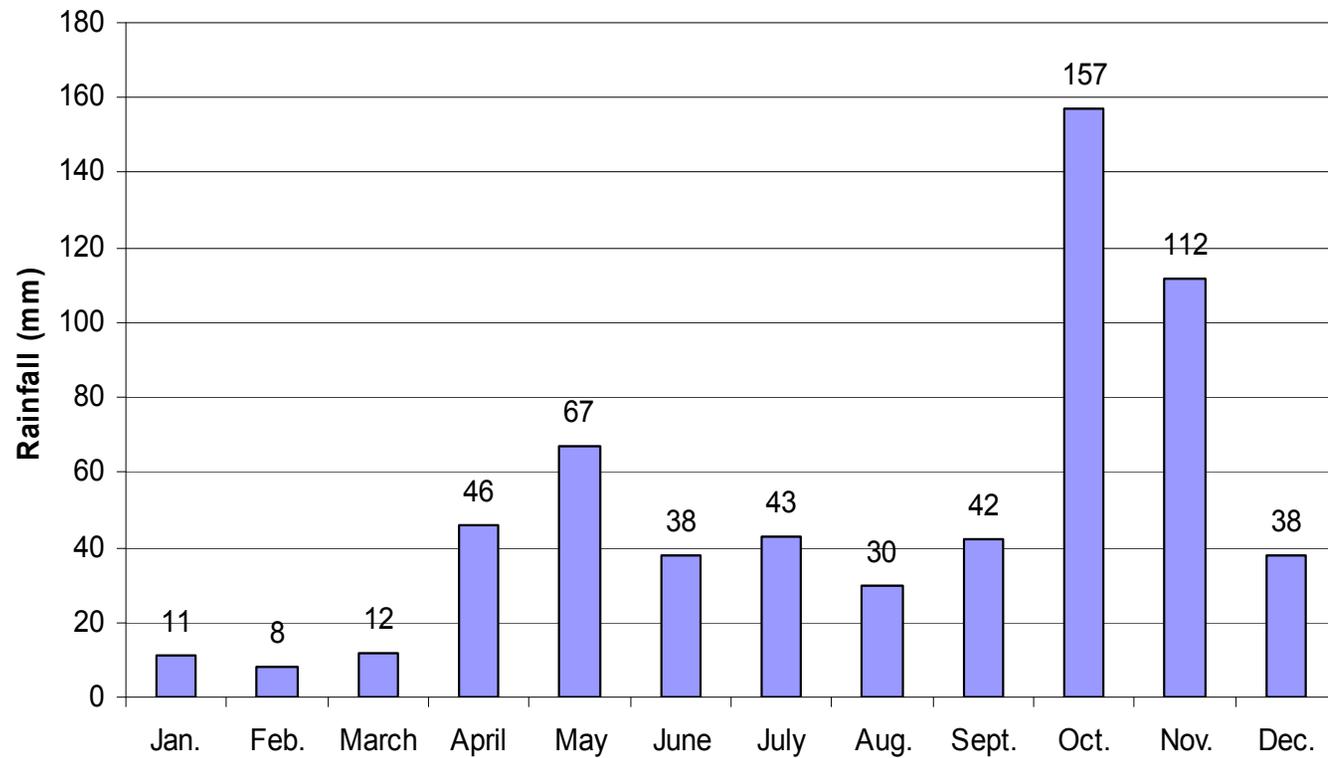
Coimbatore District

Blocks

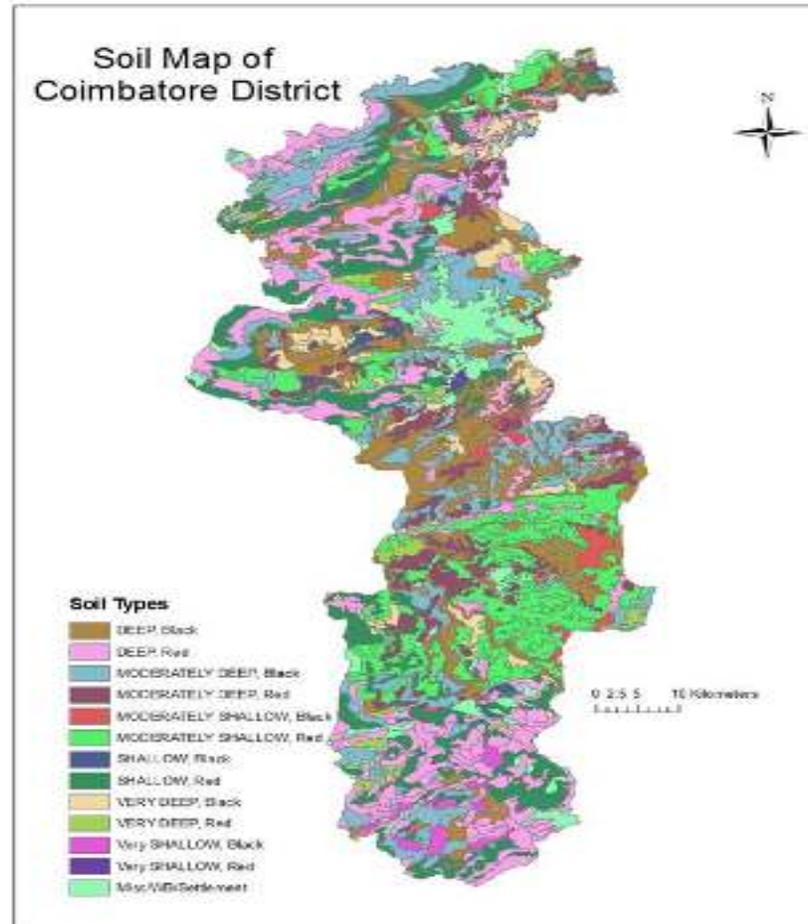


(Map Not to Scale)
Digital Map Source : TWAD Board, Chennai
Web Design : NIC, TNSC

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



Annexure 3. Soil map of Coimbatore district of Tamil Nadu



2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation

Condition			Suggested Contingency measures for Kharif		
Early season drought (delayed onset)	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delay by 2 weeks (4 th week of June)	Red and Black soils	Groundnut / sorghum /maize / sunflower / Pearl millet	No change	<ul style="list-style-type: none"> ➤ Mechanical sowing with tractor drawn seed drills to speed up the sowing to capture moisture for germination ➤ Seed hardening Sorghum – 2% KH₂PO₄ (Dissolve 20 g KH₂PO₄ in one litre of water) or 500ppm CCC(1ml in 1 litre of water) for 6 hours and shade dry – use 350 ml for 1kg seeds Groundnut - 0.5% KCL for 6 hours Sunflower – 2% ZnSO₄ for 12 hours (20g in one litre of water) shade dry and used for sowing ➤ Supplemental irrigation ➤ In situ SWC measures in fallow: opening up of ridges and furrows ➤ Broad bed furrow 	Linkage with NREGA for SWC measures
Delay by 4 weeks (2 nd week of July)	Red and Black soils	Groundnut / sorghum / maize / sunflower / Pearl millet	No change Groundnut (CO 2, VRI 2, VRIGn5, ALR 3, COGn 5, TMV 7) / Sorghum (CO 26, CO(S) 28, BSR 1, COH 4) / Maize (CO 1, COH(M) 4, 5, COBC 1) / Sunflower (CO 4, Morden, TCSH 1, KBSH 1, KBSH 44, PHC 1091, MSFH 1) / Pearl millet (CO 9, CO 13CO(Ra) 14, Paiyur 1)	<ul style="list-style-type: none"> ➤ Mechanical sowing ➤ Seed hardening Sorghum – 2% KH₂PO₄ (Dissolve 20g KH₂PO₄ in one litre of water) or 500ppm CCC(1ml in 1 litre of water) for 6 hours and shade dry – use 350 ml for 1kg seeds Groundnut - 0.5% KCL for 6 hours Sunflower – 2% ZnSO₄ for 12 hours (20g in one litre of water) shade dry and used for sowing ➤ Following weather based agro advisory for harvesting ➤ Using rain gun or supplemental irrigation if available ➤ In situ SWC measures in fallow: opening up of ridges and furrows 	Linkage with NREGA for SWC measures

Condition	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Suggested Contingency measures for Kharif	
				Agronomic measures	Remarks on Implementation
Early season drought (delayed onset) Delay by 6 weeks (4 th week of July)	Red and Black soils	Groundnut / maize / cotton / sunflower	Pure crop of Sorghum (CO 26, CO(S) 28, BSR 1, COH 4) / Pearl millet (CO 9, CO 13CO(Ra) 14, Paiyur 1)/ Horse gram (Co 1, Paiyur 1, 2)	<ul style="list-style-type: none"> ➤ Sowing along the contour ➤ In situ SWC measures in fallow: opening up of ridges and furrows ➤ Adopt Broad bed furrow system 	
Delay by 8 weeks (2 nd week of August)	Red and Black soils	Groundnut / maize / cotton / sunflower	Advanced rabi season crop cultivation -	----	

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 (4 th week of October)	Red and Black soils	Groundnut / maize/ Sunflower/ rabi pulses	No change	<ul style="list-style-type: none"> ➤ Pre-monsoon sowing on 38th to 40th week. location wise details are given in crop production guide ➤ Seed hardening Groundnut - 0.5% KCL for 6 hours Sunflower – 2% ZnSO₄ for 12 hours (20g in one litre of water) shade dry and used for sowing ➤ Summer ploughing ➤ Supplemental irrigation especially for maize 	Implement through State Dept. of Agriculture
Delay by 4 weeks (2 nd week of November)	Red and Black soils	Sorghum / ground nut /Pulses	Pearl millet (CO 9, CO 13CO(Ra) 14, Paiyur 1) raised as intercrop Groundnut (CO 2, VRI 2, VRIGn5, ALR 3, COGn 5, TMV 7) intercropped with Sesame(4:1), Blackgram (CO 5, VBN	<ul style="list-style-type: none"> ➤ Early maturing varieties ➤ Supplemental irrigation ➤ Wider row spacing. ➤ 15% Higher seed rate Sorghum – 17.25 kg/ha Groundnut – 160 kg/ha (kernels) Pulses – 23 kg/ha ➤ In situ SWC measures in fallow: opening up of ridges and furrows 	

			1,2,3, VBN(BG) 4) (4:1) or Cowpea (Co 2, 6 CO(CP) 7, VBN 2, Paiyur 1) (6:1)		
Delay by 6 weeks (4 th week of November)	Red and Black soils	Groundnut Bengal gram	Pure crop of Sorghum (CO 26, CO(S) 28, BSR 1, COH 4) / Pearl millet (CO 9, CO 13CO(Ra) 14, Paiyur 1)/ Horse gram (Co 1, Paiyur 1, 2)	<ul style="list-style-type: none"> ➤ Sowing along the contour ➤ In situ SWC measures in fallow: opening up of ridges and furrows 	Linkage with NREGA for SWC measures
Delay by 8 weeks 2 nd week of December	Red and Black soils	Groundnut Bengal gram	Raising summer season crop early Sorghum (CO 26, CO(S) 28, BSR 1, COH 4) / Maize (CO 1, COH(M) 4, 5, COBC 1) / Sunflower (CO 4, Morden, TCSH 1, KBSH 1, KBSH 44, PHC 1091, MSFH 1) / Pearl millet (CO 9, CO 13CO(Ra) 14, Paiyur 1)	----	

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		Remarks on Implementation
			Crop management	Soil management	
15-20 days dry spell after sowing leading to poor germination/crop stand etc.)	Red and Black soils	Maize / Pearl millet / Cotton / Sunflower /Sorghum / Groundnut / pulses	<ul style="list-style-type: none"> ➤ Seed hardening with chemicals ➤ Initial drought of 15-20 days will not affect germination / crop stand. It actually helps groundnut crop for profuse and synchronous flowering 	<ul style="list-style-type: none"> ➤ Sowing along the contour ridging after three weeks ➤ Compartmental bunding, Ridge and Furrows, Tied ridges to conserve rain water during kharif for regular sowing of rabi crops 	Seeds supply through State Dept. of Agriculture by utilizing various schemes like ISOPOM, minikit, etc.

Condition			Suggested Contingency measures		
Early season drought (Normal onset)	Major Farming situation	Normal Crop/cropping system	Crop management	Soil management	Remarks on Implementation
			➤ Going for alternate crops		

Condition			Suggested Contingency measures		
Mid season drought (long dry spell, > 2 consecutive weeks rainless (>2.5 mm) period)	Major Farming situation	Normal Crop/cropping system	Crop management	Soil management	Remarks on Implementation
At vegetative stage	Red and Black soils	Maize / Pearl millet / Cotton / Sunflower / Sorghum / Groundnut / pulses	<ul style="list-style-type: none"> ➤ Supplemental irrigation ➤ Rain gun irrigation if available ➤ Mulching for moisture conservation 	<ul style="list-style-type: none"> ➤ Sowing along the contour and ridging after three weeks. ➤ Thinning or reducing the plant population ➤ Opening of conservation furrows at an interval of 15-20 m 	

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	Major Farming situation	Normal Crop/cropping system	Crop management	Soil management	Remarks on Implementation
At reproductive stage	Red and Black soils	Maize / Pearl millet / Cotton / Sunflower / Sorghum / Groundnut / pulses	<ul style="list-style-type: none"> ➤ Severe drought years, crop will be harvested for fodder purpose. ➤ Supplemental irrigation with harvested rain water in ponds (10 mm depth.) ➤ Ratooning of sorghum and bajra ➤ spraying cycocel 	<ul style="list-style-type: none"> ➤ Thinning or reducing the plant population ➤ Soil dust mulching 	

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Crop management	Soil management	Remarks on Implementation
Mid season drought (long dry spell)			<ul style="list-style-type: none"> ➤ Spray anti-transparent Kaolin@ 5% 		

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Crop management	Soil management	Remarks on Implementation
Terminal drought	Red and Black soils	Maize / Pearl millet / Cotton / Sunflower / Sorghum / Groundnut / pulses	<ul style="list-style-type: none"> ➤ Recycling the harvesting rainwater ➤ Inter cultivation and weeding ➤ Harvest and use as fodder 	<ul style="list-style-type: none"> ➤ Soil dust mulching 	

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	1.Canal irrigated red soils 2.Canal irrigated black soils 3.Lift irrigated red soils 4.Lift irrigated black soils	Rice based cropping systems Groundnut based cropping systems Maize based cropping systems Sugarcane Banana	Less water required crops like ground nut/ sunflower/ sesame /pulses/ maize/ Tapioca	1. Direct seeding of short duration rice varieties 2. Short duration drought tolerant varieties 3.Irrigation at critical stages 4. Adopting micro irrigation systems drip/sprinkler 5. Mulching	1. Weed problem in direct seeded rice 2. High initial investment for micro irrigation

Condition	Suggested Contingency measures				
	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Non release of water in canals under delayed onset of monsoon in catchment	1.Canal irrigated red soils 2.Canal irrigated black soils 3.Lift irrigated red soils 4.Lift irrigated black soils	Rice/Maize/Groundnut/Vegetables	Maize/sorghum (grain and fodder)/ pearl millet / pulses during October as rainfed crops.	1. Drought tolerant variety 2. Intercropping with pulses 3. Supplemental irrigation 4. Mid term corrections like mulching, spraying anti-transparent Kaolin@ 5%	

Condition	Suggested Contingency measures				
	Major Farming situation	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	-	-	-	-	-

Condition	Suggested Contingency measures				
	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Insufficient groundwater recharge due to low rainfall	Lift irrigated red soils and black soils	Cotton, maize, sugarcane, vegetables and fruit crops	Growing less water required crops like sorghum, cumbu, sunflower, pulses instead of high water required crops	1. Restricted crop activity 2. Timely sowing is advised 3. Adopting Micro irrigation systems 4. Irrigation at critical stages 4. Skip furrow / alternate furrow irrigation 5. Mulching	High initial investment for micro irrigation

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				
Sorghum	-	Suitable plant protection measures to control pest and diseases Drain excess water	Drain excess water and Weather based advisory to be followed for harvesting.	Immediately after harvesting drying of produce by mechanical drier
Maize	Adjust top dressing of N	Timely plant protection measures are to be taken against sucking pests and downy mildew	Proper drainage facility	Use Combined harvester / Mechanical threshing
Ground nut	Drainage	Plant protection Delayed top dressing	Provision of drainage	

2.3 Floods - Not applicable

2.4 Extreme events: Heat wave / Cold wave / Frost / Hailstorm / Cyclone – Not applicable

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	<p>As the district is moderately prone to draught, all the available crop residues especially sorghum straw, groundnut haulms, paddy straw, and sugarcane tops should be stored properly in the farm of hay at individual farmer level.</p> <p>Training to farmers on silage, Azolla cultivation</p> <p>Promoted creation of fodder models with Guinea grass, stylo, desmanthus, kolukkattai grass (<i>Cenchrus spp.</i>) etc. at village level</p> <p>Creation of tree fodder models with Subabul, Glyricidia, Agathi, Prosopis etc. at village level</p> <p>Encourage fodder production with Sorghum – stylo- Sorghum on rotation basis and also to cultivate short-term fodder crops like sunhemp.</p> <p>Top dressing of CPRs with N in 2-3 split doses @ 20-25 kg N/ha during the monsoon to get more biomass</p> <p>Planting of fodder trees in village CPRs</p> <p>Chopping of fodder should be made as mandatory in every village through supply and establishment of good quality crop cutters.</p> <p>Creation of permanent fodder, feed and fodder seed banks in all drought prone villages</p> <p>Capacity building and preparedness of the stakeholders and official staff for the unexpected events</p>	<p>Promotion of cultivation of Horse gram as contingent crop and harvesting it at vegetative phase as fodder</p> <p>Harvest and use all the failed crop (Sorghum, Groundnut, Maize, cow pea, Paddy, Bengal gram, Green gram, Black gram) material as fodder.</p> <p>Harvest all the top fodder available (Neem, Subabul, Acasia, Pipol etc) and feed the LS during drought</p> <p>In severe drought don't allow for grazing and try to stall fed the animals</p> <p>Silage / hay, UMMB and mineral mixture should be supplied on subsidy to the farmers having high productive livestock</p> <p>All the hay should be enriched with 2% Urea molasses solution or 1% common salt solution and fed to LS</p> <p>Use of unconventional and locally available cheap feed ingredients for feeding livestock.</p> <p>Supplementation of probiotics – Yeast culture (3 g/day) to milch cows.</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 & 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, GAIN T 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.</p> <p>Flushing the stock to recoup</p> <p>Replenish the feed and fodder banks</p>

High intensity storms	<p>All the stock must be immunized for the following mentioned diseases to prevent epidemics</p> <p>July:</p> <p>1. Foot and Mouth Disease – Pollachi South Block.</p> <p>August:</p> <p>1. Foot and Mouth Disease – Thondamuthur Block.</p> <p>2. Anthrax- Madukkarai Block.</p> <p>October:</p> <p>1. Foot and Mouth Disease – Pollachi South Block.</p> <p>2. Anthrax- S.S. Kulam Block.</p> <p>Don't allow the animals for grazing if severe storms are forewarned</p> <p>Keep stock of bleaching powder and lime</p> <p>Carry out Butax spray for control of external parasites</p>	<p>Transportation of animals to elevated areas</p> <p>Proper hygiene and sanitation of the animal shed</p> <p>In severe storms, un-tether or let loose the animals</p> <p>Avoid soaked and mould infected feeds / fodders to livestock</p> <p>Emergency outlet establishment for required medicines or feed in each village</p> <p>Spraying of fly repellants in animal sheds</p>	<p>Repair of animal shed</p> <p>Bring back the animals to the shed</p> <p>Cleaning and disinfection of the shed</p> <p>Bleach (0.1%) drinking water / water sources</p> <p>Deworming with broad spectrum dewormers</p> <p>Proper disposal 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</p> <p>Drying the harvested crop material and proper storage for use as fodder.</p>
Cyclone	NA		
Floods	NA		
Heat & Cold wave	NA		
Health and Disease management	<p>Procure and stock emergency medicines and vaccines for important endemic diseases of the area</p> <p>All the stock must be immunized for endemic diseases</p> <p>February:</p> <p>1. Anthrax- S.S.Kulam Block</p> <p>March:</p> <p>1. Foot and Mouth Disease-Madukkarai Block</p> <p>2. PPR –Thondamuthur Block.</p> <p>May:</p> <p>1. Sheep pox - Pollachi North Block</p> <p>2. Foot and Mouth Disease- Polachi North and Madukkarai Blocks.</p> <p>June:</p> <p>1. Enterotoxaemia - Pollachi South Block</p> <p>2. Foot and Mouth Disease- P.N. Palayam and Madukkarai Blocks.</p> <p>Surveillance and disease monitoring network to be established at Joint Director (Animal Husbandry) office in the district</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>

	Adequate refreshment training on draught management to be given to VAS, Jr.VAS, LI with regard to health & management measures. Procure and stock multivitamins & area specific mineral mixture		
Insurance	Encouraging insurance of livestock	Listing out the details of the dead animals	Submission for insurance claim and availing insurance benefit Purchase of new productive animals
Drinking water	Identification of water resources Desilting of ponds Rain water harvesting and create water bodies/watering points (when water is scarce use only as drinking water for animals) Construction of drinking water tanks in herding places/village junctions/relief camp locations Community drinking water trough can be arranged in shandies /community grazing areas	Restrict wallowing of animals in water bodies/resources	Bleach (0.1%) drinking water / water sources Provide clean drinking water

Vaccination schedule in small ruminants (Sheep & Goat)

Disease	Season
Foot and mouth disease (FMD)	Preferably in winter / autumn
PPR	All seasons, preferably in June-July
Black quarter (BQ)	May / June
Enterotoxaemia (ET)	May
Haemorrhagic septicaemia (HS)	March / June
Sheep pox (SP)	December / march

Vaccination programme for cattle and buffalo:

Disease	Age and season at vaccination
Anthrax	In endemic areas only, Feb to May
HS	May to June
BQ	May to June
FMD	November to December

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, bajra etc, Culling of weak birds	Supplementation only for productive birds with house hold grain Supplementation of shell grit (calcium) for laying birds	Supplementation to all
Drinking water	Rain water harvesting	Sanitation of drinking water	Give sufficient water as per the bird's requirement
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	Hygienic and sanitation of poultry house Disposal of dead birds by burning / burying with lime powder in pit
High intensity storms			
Shortage of feed ingredients	In case of EFW, shift the birds to safer place Storing of house hold grain like maize, broken rice, bajra etc, Culling of weak birds	Use stored feed as supplement Don't allow for scavenging	Routine practices are followed
Drinking water	Provide clean drinking water	Sanitation of drinking water	Sanitation of drinking water
Health and disease management	In case of EFW, add antibiotic powder in drinking water to prevent any disease outbreak	Sanitation of poultry house Treatment of affected birds Prevent water logging surrounding the sheds Assure supply of electricity Sprinkle lime powder to prevent ammonia accumulation due to dampness	Disposal of dead birds by burning / burying with lime 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 :

	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	<ul style="list-style-type: none"> • Harvesting large individuals • Increased Stocking-density in smaller/confined areas 	<ul style="list-style-type: none"> • Harvesting large individuals • Disposable of unwanted excess stock • Stocking of desirable/special individuals in brood stock ponds 	<ul style="list-style-type: none"> • Proper management of the local environment
(ii) Changes in water quality	Negligible changes in water quality	Negligible changes in water quality	Negligible changes in water quality
(iii) Any other			
B. Aquaculture			
(i) Shallow water in ponds due to insufficient rains/inflow	<ul style="list-style-type: none"> • Harvesting of the stock 	<ul style="list-style-type: none"> • Harvesting of the stock • Transferring of smaller fishes to artificial ponds (if available) for tiding over the drought 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Harvesting of the stock 	<ul style="list-style-type: none"> • 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) 	<ul style="list-style-type: none"> • Steps to improve the quality of stocked fishes, via feed management water quality management
(iii) Any other			
2) Floods			
A. Capture	-	-	-
Marine	-	-	-
Inland	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • In extreme conditions, controlled draining of flooded ponds • Thinning of stock by harvesting of larger individuals 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> Negligible changes 	<ul style="list-style-type: none"> Flood water can bring parasites, and increased turbidity – repair/correct drainage to improve quick drainage of flood waters 	<ul style="list-style-type: none"> Turbid waters may be flushed off with fresh borewell/well water
(vi) Health and diseases	-	-	-
B. Aquaculture			
(i) Inundation with flood water	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> In extreme conditions, controlled draining of flooded ponds Thinning of stock by harvesting of larger individuals 	<ul style="list-style-type: none"> Repair damaged bundhs Collect and preserve existing stock
(ii) Water continuation and changes in water quality	<ul style="list-style-type: none"> Negligible changes 	<ul style="list-style-type: none"> Water can become turbid due to flood waters, reduce stock to prevent mortality 	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> Negligible changes 	<ul style="list-style-type: none"> Harvesting of stock Shift reserve of brood stock to ponds at elevated levels 	<ul style="list-style-type: none"> Selling remaining stock and inundated equipment immediately to minimize losses
(v) Infrastructure damage (pumps, aerators, huts etc)	<ul style="list-style-type: none"> Dismantling of pumps, aerators and other equipment and shifting to safer zones 	<ul style="list-style-type: none"> Salvaging of inundated pumps, aerators and other equipment and shifting to safer zones 	<ul style="list-style-type: none"> Selling remaining stock and inundated equipment immediately to minimize losses
(vi) Any other			
3. Cyclone / Tsunami	-	-	-
4. Heat wave and cold wave	-	-	-
A. Capture	-	-	-
Marine	-	-	-
Inland	-	-	-
B. Aquaculture		-	-
(i) Changes in pond environment (water quality)	<ul style="list-style-type: none"> Strengthening of pond bundh to prevent seepage Shifting of stock to a more sheltered pond 	<ul style="list-style-type: none"> Shifting of stock to a more sheltered pond Improve aeration and water recycling 	<ul style="list-style-type: none"> Shifting of stock to normal ponds to ensure proper growth
(ii) Health and Disease management	-	-	-
(iii) Any other	-	-	-