



भारतीय कृषि
ICAR

INDIAN COUNCIL OF
AGRICULTURAL RESEARCH

DISTRICT WISE CONTINGENCY PLAN TO DEAL WITH **EL NIÑO**

PREPAREDNESS | RESPONSE | RESILIENCE



BUILDING A
DROUGHT RESILIENT
TAMIL NADU



PADDY



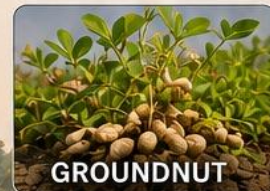
MAIZE



BLACK GRAM



SORGHUM



GROUNDNUT



SUGARCANE



COTTON



RAGI



EARLY WARNING
& MONITORING



WATER
MANAGEMENT



SUSTAINABLE
AGRICULTURE



COMMUNITY
PARTICIPATION

TOGETHER, LET'S BUILD A RESILIENT TAMIL NADU

PREPARE TODAY • PROTECT TOMORROW • PROSPER TOGETHER

Tamil Nadu

Tamil Nadu is one of the agriculturally advanced states of India, characterized by diversified cropping systems and intensive cultivation under both irrigated and rainfed conditions. Agriculture plays a crucial role in the state's economy by providing employment, food security and raw materials for agro-based industries. Although the contribution of agriculture to the Gross State Domestic Product (GSDP) has gradually declined due to industrialization and service sector growth, the sector continues to support nearly 40 per cent of the state's rural population. Agriculture in the state depends on the timely receipt of both the Southwest and Northeast monsoons, making it highly vulnerable to rainfall variability associated with El Niño. Tamil Nadu has diverse agro-climatic zones ranging from the Western Ghats to the coastal plains, enabling cultivation of a wide variety of crops throughout the year. The state is a leading producer of paddy, sugarcane, maize, cotton, pulses, groundnut, coconut, banana, millets and horticultural crops. Unlike most Indian states, Tamil Nadu receives rainfall from both the Southwest Monsoon (June–September) and the Northeast Monsoon (October–December), with nearly 48–50 per cent of the annual rainfall contributed by the Northeast Monsoon. The average annual rainfall ranges from about 900–950 mm although it varies considerably across regions. Agriculture in Tamil Nadu is therefore highly sensitive to the variability of both monsoons making it particularly vulnerable to climatic events such as El Niño.

El Niño-induced delayed monsoon, prolonged dry spells and increased temperatures adversely affect crop establishment, growth and productivity, particularly in rainfed regions. The Nilgiris is identified as a highly vulnerable district, while Perambalur, Dharmapuri, Ramanathapuram, Ariyalur, Virudhunagar, Krishnagiri, Vellore, Namakkal and Tiruchirappalli fall under the medium vulnerability category. Adoption of crop-specific contingency measures, drought-tolerant varieties, water-saving technologies and efficient moisture conservation practices is therefore essential to sustain agricultural productivity during El Niño years.

Historical Impact of El Niño on Tamil Nadu

Tamil Nadu is among the Indian states most affected by El Niño because the phenomenon not only weakens the Southwest Monsoon but can also adversely influence the Northeast Monsoon which is the principal rainy season for the state. During strong El Niño years, Tamil Nadu frequently experiences deficient rainfall, delayed onset of seasonal rains, prolonged dry spells, increased temperatures and depletion of irrigation reservoirs.

Rainfall deficiency during El Niño years results in reduced water availability for irrigation, delayed sowing, moisture stress and lower productivity of major crops. Water-intensive crops such as paddy and sugarcane are particularly vulnerable while rainfed crops including groundnut, pulses, cotton and millets also suffer significant yield losses. Livestock, horticulture and groundwater resources are equally affected during prolonged drought conditions.

Effects on Major Crops

- Paddy: Delayed nursery raising and transplanting, poor tillering, reduced grain filling and lower yields.
- Groundnut: Poor germination, reduced peg formation, moisture stress and lower pod yield.
- Maize: Delayed sowing, reduced cob development and poor grain filling.
- Cotton: Reduced boll formation, flower shedding and increased incidence of sucking pests under dry conditions.
- Pulses (Black gram, Green gram, Pigeon Pea): Poor flowering, flower drop, reduced pod formation and lower seed yield.
- Sugarcane: Reduced cane growth, lower juice content and decline in cane yield due to water scarcity.
- Millets (Pearl millet, Finger millet, Sorghum): Comparatively drought tolerant but experience yield reductions under prolonged moisture stress.
- Coconut: Reduced nut setting, button shedding and decline in productivity under prolonged drought.

Contingency Plans for Major Crops Grown in Tamil Nadu

Crop	El Niño Situation	Recommended Contingency Measures
Paddy	Delayed monsoon or delayed transplanting	Raise community nurseries, adopt direct-seeded rice (DSR), use short-duration varieties, conserve water
	Water scarcity	Alternate Wetting and Drying (AWD), System of Rice Intensification (SRI), life-saving irrigation
Groundnut	Delayed onset of monsoon	Use short-duration drought-tolerant varieties, seed treatment, ridge and furrow planting

	Mid-season drought	Mulching, foliar spray of 1% KCl + micronutrients, protective irrigation
Maize	Delayed sowing	Adopt short-duration hybrids, maintain optimum plant population
	Moisture stress	Earthing up, mulching, foliar spray of 2% KCl
Black gram	Delayed sowing	Shift to early maturing varieties
	Dry spells	Foliar spray of 2% DAP or 1% urea, moisture conservation
Green gram	Late Kharif sowing	Use short-duration varieties
	Drought conditions	Foliar nutrition, mulching, protective irrigation
Pigeon Pea	Delayed monsoon	Use medium-duration cultivars, intercropping with millets
	Moisture stress	Mulching and life-saving irrigation
Cotton	Delayed rainfall	Use drought-tolerant Bt hybrids and recommended spacing
	Dry spells	Mulching, foliar spray of 2% KCl, protective irrigation
Sugarcane	Water deficit	Drip irrigation, trash mulching, wider row spacing
Pearl Millet	Failure of paddy or groundnut sowing	Adopt as contingency drought-resilient crop
Finger Millet	Rainfall deficit	Shift to drought-tolerant varieties, moisture conservation
Sorghum	Severe rainfall deficit	Grow as fodder and grain crop using drought-tolerant varieties

Agriculture continues to be an essential component of Tamil Nadu's economy despite rapid industrial and urban development. However, the state's dependence on both the Southwest and Northeast Monsoons makes its agriculture highly vulnerable to El Niño-induced climatic variability. Deficient rainfall, delayed monsoon onset, prolonged dry spells, depletion of irrigation reservoirs and rising temperatures significantly affect crop productivity, water resources and farmers' livelihoods. The occurrence of El Niño poses significant challenges to agricultural production in Tamil Nadu by affecting the availability and distribution of monsoon rainfall and increasing the frequency of moisture stress. Timely adoption of contingency measures such as short-duration and

drought-tolerant crop varieties, the System of Rice Intensification (SRI), direct seeding, broad bed and furrow planting, seed hardening, mulching, foliar nutrient application, micro-irrigation and supplemental irrigation at critical crop growth stages can substantially reduce the adverse impacts of drought. Strengthening district-level contingency planning, promoting climate-resilient crop varieties, expanding micro-irrigation, improving water-use efficiency and adopting integrated drought management strategies are essential for enhancing the resilience of Tamil Nadu's agriculture against future El Niño events.

Area under major crops

Crop	Area (Lakh ha)
Paddy	21.58
Maize	4.85
Black Gram	3.58
Sorghum	3.39
Groundnut	3.16
Sugarcane	1.31
Cotton	1.02
Ragi	0.64

Districts vulnerable to El Nino

High	Medium	Low
The Nilgiris	Perambalur, Dharmapuri, Ramanathapuram, Ariyalur, Virudhunagar (Kamara*, Krishnagiri, Vellore, Namakkal, Tiruchchirappalli	Madurai, Karur, Salem, Theni, Cuddalore, Sivaganga, Villupuram, Coimbatore, Tiruvannamalai, Pudukkottai, Tiruvallur, Kanchipuram

Actionable Comprehensive Plans for Contingency

State	TAMIL NADU	District	ANNA
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	301.5	More than 19%	Less than 244.215
June	41		
July	49.3		
August	64.7		
September	146.5		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:		Gross irrigated area:	
Net Rainfed area		Gross rainfed area	0

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals		
Wells		
Tanks		
Other sources		

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	5829	5829	0
2	Jowar	5076	238	4838
3	Maize	33092	14561	18531
4	Bajra	361	87	274
5	Ragi	2	2	0

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	223	10	213
2	Groundnut	3576	1889	1687
3	Sesamum	238	10	228
4	Soyabean	-		
5	Sunflower	165	54	111
6	Castor	8		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	3630	1294	2336
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	1679	1644	35
2	Tobacco	331	331	0
3	Guar seed	-		280
4	Other Fodder crops	980	700	280

Crop Plan- Beginning of the season

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delay by 4 weeks (July 1st week)	Deep red and Moderately shallow red soils	Groundnut+ Pulses	No change	Mechanical sowing with tractor drawn seed drill as the sowing window is narrow Seed drill sowing for pulses Seed hardening-(18 hrs. soaking in water followed by 24 hrs. shade drying	Through state department of agriculture

				Thinning to retain one seedling at 30 cm	
Rabi Season					
Delay by 4 weeks (Nov 2 nd week)	Deep red and Moderately shallow red soils	Maize	Co1, CoHM4, CoBC 1	Seed drill sowing for pulses	Through state department of agriculture
		Redgram	APK 1, CoPH 2 AND CoRG 7	Crop residue mulching Spray NAA 40 mg/lit or salicylic acid @ 100mg/lit AT preflowering and 15days thereafter.	
		Blackgram	VBN 1,2,3&4		
		cowpea	CoCT7		
		sunflower	TCSH1, MFSH 17, Co2, Moden	Seed treatment with 3Pkts Azospirillum+ 3Pkts Phosphobacteria or 6 Azophos	

Contingency measures- Mid season

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Crop management	Soil management	Remarks on Implementation
Mid season drought (long dry spell)	Deep red and Moderately shallow red soils	Groundnut	Earthing up, apply Gypsum after receipt of rains 1% KCl spray	Intercultivation (soil mulching) Conservation Furrow Recommended doses of FYM 12.5 t/ha and Coirpith compost 12.5 t/ha	Through state department of agriculture
		Pigeon Pea			
		Black Gram			
		Maize			
	Deep and very deep black soils	Maize	Kaoline spray Water spray Use of microirrigation systems		
		Cowpea			
		Black gram			
	Deep red and Moderately shallow red soils	Groundnut	Life saving irrigation Weeding and Weed mulching 1% Kcl spray 2% DAP spray	—	Farm ponds through DRDA programme Farm ponds through DRDA programme
		Pigeon Pea			
		Black Gram			
		Maize			
	Deep and very deep black soils	Maize			
		Cowpea			

		Black gram	Kaoline spray		
		Redgram	Water spray		

Contingency measures- End of the season

Condition			Suggested Contingency measures		
Terminal drought	Major Farming situation	Crop/cropping system	Crop management	Soil management	Remarks on Implementation
	Deep red and Moderately shallow red soils	Groundnut	Life saving irrigation using microirrigation system	Transplanted rice (October month)	1.Farm ponds through DRDA programme 2.Threshing implements through RKVY 3.Groundnut digger and Stripper through RKVY
		Pigeon Pea			
		Black Gram			
		Maize	Harvest at physiological maturity stage		
	Deep and very deep black soils	Maize			
		Cowpea			
Black gram					

Irrigated situation

Condition			Suggested Contingency measures		
	Major Farming situation	Crop/cropping system	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)	SRI method of rice cultivation Maize Maize: CoRH1, CoHM 4 Sugarcane – sub surface drip fertigation Chillies – drip fertigation	Limited irrigation with mulching Alternate Furrow irrigation Drip irrigation with residue mulching	Seeds through ISOPOM and NFSM
		Groundnut	Groundnut + pigeonpea (6:1) intercropping	Sprinkler irrigation with mulching	

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	Red soils	Groundnut	Sorghum, horsegram recommended	-	Through state department of agriculture

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	Not applicable				

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	Tube well red and black soil	Paddy	Maize, groundnut and vegetables (Chilli and Brinjal)	Limited irrigation Alternate Furrow irrigation Sprinkler irrigation	Seeds through Dept of horticulture, NFSM, NHM and ISOPOM

Actionable Comprehensive Plans for Contingency

State	TAMIL NADU	District	ARIYALUR
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	314.8	More than 19%	Less than 254.988
June	39		
July	53.4		
August	89.2		
September	133.2		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	40036	Gross irrigated area:	52231
Net Rainfed area	57888	Gross rainfed area	65854

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	2027	2283
Wells	36829	48732
Tanks	1180	1216
Other sources	-	-

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	17890	17844	46
2	Jowar	10	5	5
3	Maize	21443	5500	15943
4	Bajra	1167	298	869
5	Ragi	14	8	6

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	114	16	98
2	Groundnut	13325	11720	1605
3	Sesamum	4268	1844	2424
4	Soyabean	-		
5	Sunflower	76	12	64
6	Castor	73		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	5996	883	5113
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	3397	3389	8
2	Tobacco	-		
3	Guar seed	-		61
4	Other Fodder crops	80	19	61

Crop Plan- Beginning of the season

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
Delayed By 4 weeks July 1st week	Red soil	Groundnut	Sesamum (TMV 3, CO1) / Blackgram (VBN 1, VBN2)	Thinning at 15 and 30 DAS	
	Deep black soils	Cotton + Blackgram	Pearl Millet (CO 7, CO 4, COH 4 and BSR 1)	- Seed hardening (2% KCl 5 hr) - Seed treatment - Sowing with seed drill - Moisture conservation measures (BBF) - Cotton / Red gram portray nursery	State Department of Agriculture
		Sorghum + Cowpea	Sunflower CO 4, TCSH 1		
		Maize	CO 1, COH(M)4		

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
		Pulses – Green gram Black gram Redgram	Blackgram (VBN 1, VBN2) Redgram VBN (RG)3	- Run-off harvesting - Seed treatment (mix with wood ash)	

Contingency measures- Mid season

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	Major Farming situation	Crop/cropping system	Crop management	Soil management	Remarks on Implementation
At vegetative stage	Red soil	Groundnut	Life saving Irrigation Groundnut + Redgram – Inter Cropping	Soil mulching	
	Red soil	Sorghum	Thinning out the population Sorghum + Pulses Inter Cropping	-	
	Black soil	Maize	1% KCl foliar spraying Maize + Pulses Inter Cropping	-	
	Shallow / deep black soils	Cotton + Black gram	Alternate rows can be removed	Soil mulching	State Department of Agriculture
		Sorghum + cowpea	Mulch application	Vertical mulching	
		Maize + green gram	Cotton / red gram raising portray nursery for gap filling	Contour sowing	
		Pulses	Foliar nutrition spray 1% urea, 1% DAP, 1% All 19:19:19 Spray 1% KCl		

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	Major Farming situation	Crop/cropping system	Crop management	Soil management	Remarks on Implementation
At reproductive stage	Red soil	Groundnut	Spraying 0.5% KCl at Flowering and Pod development stage	-	-
	Red soil	Sorghum	3% Kaolin spray		
	Black soil	Maize	1% KCl (or) 1% K ₂ SO ₄ Foliar spray		

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	Major Farming situation	Crop/cropping system	Crop management	Soil management	Remarks on Implementation
	Shallow / deep black soils	Cotton + Blackgram	Harvest at physiological maturity	Dust mulching	State Department of Agriculture
		Sorghum + cowpea	Spray 1% KCl / water 1% Kaolin spray	Waste mulching	
		Maize + green gram			
		Pulses			

Contingency measures- End of the season

Condition			Suggested Contingency measures		
Terminal drought	Major Farming situation	Crop/cropping system	Crop management	Rabi Crop planning	Remarks on Implementation
	Red soil	Groundnut	Crop for fodder purpose Mobile sprinkler Irrigation	Sowing of Horse gram	-
	Red soil	Sorghum	Crop for fodder purpose	Sowing of Horse gram	
	Major Farming situation	Crop/cropping system	Crop management	Soil management	Remarks on Implementation
	Shallow / deep black soils	Cotton + Black gram	Harvest at physiological maturity	--	State Department of Agriculture
		Sorghum + cowpea	Spraying growth regulator/ NaCl 1% to hasten maturity		
		Maize + green gram			
		Pulses			

Irrigated situation

Condition			Suggested Contingency measures		
	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delayed/ limited release of water	Canal irrigation Alluvial soils	Kharif	Pulses – Black gram Green gram/ Maize (or) Green Manure crop	1.Seed treatment with Bio fertilizer 2.Potassium basal application 3. DAP @ 2% Foliar spray 4. Spraying Cycocel 1000ppm	

Condition			Suggested Contingency measures		
	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
	Canal irrigation Alluvial soils	Rabi	Direct sown Paddy –ADT 3, ADT 43 and ADT 45,	1.Seed hardening with 1% KCl 2.Pre emergence application of herbicide	

Condition			Suggested Contingency measures		
	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delayed/ limited release of water in canals due to low rainfall	Clayey loam soils	Rice – Rice – Pulse	Green manure – Rice (short duration)	SRI methods of rice cultivation	Do A
		Sugarcane	Sugarcane (Subsurface drip fertigation)	Drip fertigation	
		Vegetables	Vegetables (drip fertigation)		

Condition			Suggested Contingency measures		
	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Non release of water	Canal irrigation Alluvial soils	<i>Kuruvai</i>	Green manure crop sowing	1. Seed treatment with Bio fertilizer 2.Phosphores fertilizer application	-
	Canal irrigation Alluvial soils	<i>Thaladi</i>	Cultivation of short duration rice variety – AD739, AD736	Seed hardening with 1% KCl	
Insufficient groundwater	Tube well Red soils		Aerobic rice, Maize and Vegetable crops	1.Limited irrigation 2.Alternate furrow irrigation	
	Alluvial soils		Maize	Foliar spraying of 1% KCl (or) 1% K ₂ SO ₄	

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	Clayey loam soils	Rice – Rice – Pulse	Green manure – Rice	Daincha, sunhemp	Do A
		Sugarcane	Maize (drip)		
			Pulses	Drip fertigation	

Condition			Suggested Contingency measures		
	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
of monsoon in catchment		Vegetables	Vegetable (drip)		
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	Clayey loam soils	Rice-Rice-Pulse	Green gram Black gram	Short duration pulses Cotton – pro tray nursery Vegetables – precision farming	Do A

Actionable Comprehensive Plans for Contingency

State	TAMIL NADU	District	COIMBATORE
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	689.1	More than 19%	Less than 558.171
June	172		
July	213.7		
August	159.5		
September	143.9		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	118917	Gross irrigated area:	122850
Net Rainfed area	41133	Gross rainfed area	44631

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	15195	15208
Wells	103670	107590
Tanks	-	-
Other sources	52	52

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	211	211	0
2	Jowar	7117	128	6989
3	Maize	2604	1875	729
4	Bajra	134	22	112
5	Ragi	13		13

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	97		97
2	Groundnut	2101	49	2052
3	Sesamum	137		137
4	Soyabean	-		
5	Sunflower	-		
6	Castor	12		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	321	242	79
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	429	380	49
2	Tobacco	2	2	0
3	Guar seed	-		227
4	Other Fodder crops	1389	1162	227

Crop Plan- Beginning of the season

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 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)	➤ 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
	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)	➤ 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	

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
			intercropped with Sesame(4:1), Blackgram (CO 5, VBN 1,2,3, VBN(BG) 4) (4:1) or Cowpea (Co 2, 6 CO(CP) 7, VBN 2, Paiyur 1) (6:1)	In situ SWC measures in fallow: opening up of ridges and furrows	

Contingency measures- Mid season

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	➤ Supplemental irrigation ➤ Rain gun irrigation if available ➤ Mulching for moisture conservation	➤ 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	➤ 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 ➤ Spray anti-transparent Kaolin@ 5%	➤ Thinning or reducing the plant population ➤ Soil dust mulching	

Contingency measures- End of the season

Condition			Suggested Contingency measures		
Terminal drought	Major Farming situation	Normal Crop/cropping system	Crop management	Soil management	Remarks on Implementation
	Red and Black soils	Maize / Pearl millet / Cotton / Sunflower / Sorghum / Groundnut / pulses	➤ Recycling the harvesting rainwater ➤ Inter cultivation and weeding ➤ Harvest and use as fodder	➤ Soil dust mulching	

Irrigated situation

Condition			Suggested Contingency measures		
	Major Farming situation	Crop/cropping system	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 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

Actionable Comprehensive Plans for Contingency

State	TAMIL NADU	District	CUDDALORE
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	355.7	More than 19%	Less than 288.117
June	45.7		
July	68.4		
August	100.8		
September	140.8		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	139591	Gross irrigated area:	194912
Net Rainfed area	70669	Gross rainfed area	118714

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	43384	55306
Wells	93723	135965
Tanks	2484	3641
Other sources	-	-

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	93230	93230	0
2	Jowar	4	4	0
3	Maize	26103	648	25455
4	Bajra	5401	2563	2838
5	Ragi	76	59	17

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	4		4
2	Groundnut	11703	11496	207
3	Sesamum	3469	1587	1882
4	Soyabean	7	7	0
5	Sunflower	-		
6	Castor	4		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	3611	947	2664
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	14957	14936	21
2	Tobacco	-		
3	Guar seed	-		0
4	Other Fodder crops	50	50	0

Crop Plan- Beginning of the season

Condition	Kharif season		Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delay by 4 weeks (Specify month) July 1st week	Laterite and black soils	Maize/Pearl Millet (Jun.-Sep)	Pearl millet Short duration variety like COCU 9	Seed pelleting Conserve soil moisture by mulching	
		Groundnut (June-Sep.)	Groundnut Short duration variety like VRI 3, TMV 7	Apply 0.5 % KCI spray at vegetative stage	

Condition	Major Farming situation	Rabi Season	Suggested Contingency measures		
		Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delay by 4 weeks (Specify month) November 1st week	Laterite and black soils	Groundnut (Oct-Feb)	Sunflower Kodomillet Fodder Sorghum	Seed hardening techniques	
		Gingelly (Oct.-Jan.)		0.5 % KCI spray at vegetative stage	

Contingency measures- Mid season

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

Contingency measures- End of the season

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

Irrigated situation

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

Condition			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	Tankfed areas : Tank alluvium (Heavy clay soils)	Rice/vegetables (Aug.-Jan.) - Gingelly/ Pulses (Feb.-May)	Rice Sesame Fodder legumes	Improved management techniques such as SRI, Direct sown crop for Paddy Short duration crops for fodder purpose Adopt moisture conservation practices in ID crops	
Insufficient groundwater recharge due to low rainfall	Well irrigated areas : Laterite, red and black soils	Rice (June-Sep.) - rice (Oct.-Jan.) - pulses/gingelly (Feb.-May) • Rice (Aug.-Jan.) - pulses/sesame/cotton (Jan.-April) • Maize /vegetables/pulses/sesame/green manure (June-Sep.) - rice (Aug.-Feb.) - pulses (Feb.-May) • Sugarcane (Dec.-Nov.) - ratoon sugarcane (Dec.-Nov.) - rice (Dec.-May) - Groundnut (June-Sep./Oct.) - 3 years rotation	Rice Sorghum Fodder Sorghum Greens	Adopt improved production technologies like SRI, mulching Less water requiring grain/fodder Sorghum preferable Limited irrigation and practice water saving irrigation methods such as alternate wetting and drying in paddy, skip row irrigation in Maize and Sugarcane and sprinkler irrigation in Groudnnut Alternatively go for millets/fodder crops and leafy vegetables with limited irrigation	

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

Actionable Comprehensive Plans for Contingency

State	TAMIL NADU	District	DHARMAPURI
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	380.8	More than 19%	Less than 308.448
June	54.3		
July	64.6		
August	91.3		
September	170.6		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	57512	Gross irrigated area:	106306
Net Rainfed area	110007	Gross rainfed area	144937

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	-	-
Wells	57512	106306
Tanks	-	-
Other sources	-	-

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	17841	17841	0
2	Jowar	29907	2	29905
3	Maize	6354	1916	4438
4	Bajra	176	43	133
5	Ragi	15601	3674	11927

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	12425	10	12415
2	Groundnut	15922	3535	12387
3	Sesamum	320	5	315
4	Soyabean	-		
5	Sunflower	-		
6	Castor	750		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	5046	562	4484
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	4347	4326	21
2	Tobacco	-		
3	Guar seed	-		3
4	Other Fodder crops	78	75	3

Crop Plan- Beginning of the season

Condition	Kharif season		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 4 weeks (July 1 st week)	Red and Black soils	Sorghum	Sorghum + Black gram or green gram or Cowpea	Seed hardening (Soak the seeds in 2% potassium dihydrogen phosphate for 10 hours)	
		Finger millet	No change	Seed hardening: 1. Soak seeds in water for 6 hours. Use one litre water for every kg seed for soaking. 2. Drain the water and keep the seeds in wet cloth bag tightly tied for two days. 3. At this stage, the seeds will show initial signs of germination. 4. Remove seeds from the wet cloth bag and dry them in shade on a dry cloth for 2 days. 5. Use the above hardened seeds for sowing.	
		Sugarcane	No change	--	
		Little millet		--	-
		Tapioca		Sett treatment with 0.5% KCl + FeSO ₄ + ZnSO ₄	

Rabi

Condition	Rabi season		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 4 weeks (November 2 nd week)	Red and Black soils	Sorghum	No change	Seed hardening (Soak the seeds in 2% potassium dihydrogen phosphate for 10 hours)	Department of Agriculture
		Finger millet		Seedlings can be used	
		Little millet			
		Tapioca		Sett treatment with 0.5% KCl + FeSO ₄ + ZnSO ₄	

Contingency measures- Mid season – both *Kharif* and *rabi* seasons

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
Mid season drought			Crop management	Soil management	Remarks on Implementation
long dry spell, consecutive 2 weeks rainless (>2.5 mm) period At vegetative stage	Red and Black soils	Sorghum	- Top dressing of fertilizer if sufficient rainfall after 3-5 weeks dry spell - Thinning of 35-50% population - Antitranspirant spray - Life saving irrigation from rain water harvest ponds, - Weeding and Weed mulching - Harvesting partly to leave ratoon - Harvesting for fodder	Forming ridges and furrows to conserve the expected rain	
		Finger millet Little millet			
		Tapioca	Reduction of green leaves	Providing life irrigation Forming ridges and furrows for <i>in situ</i> rainwater conservation	

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
Mid season drought			Crop management	Soil management	Remarks on Implementation

long dry spell, consecutive 2 weeks rainless (>2.5 mm) period At reproductive stage	Red and Black soils	Sorghum	Harvesting partly to leave ratoon	Forming ridges and furrows to conserve rainwater	
		Finger millet	Harvesting for fodder		
		Little millet	Harvesting for fodder		
		Tapioca	Reduction of green leaves	Life saving irrigation	

Contingency measures- End of the season

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Crop management	Soil management	Remarks on Implementation
long dry spell, consecutive 2 weeks rainless (>2.5 mm) period At reproductive stage	Red and Black soils	Sorghum	Harvesting partly to leave ratoon	Forming ridges and furrows to conserve rainwater	

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	Red & black soils	Paddy	No change	Prefer short duration varieties: ADT 49 Direct seeding using seed drum	
		Sugarcane		Trash mulching Alternate furrow irrigation	
		Tapioca		Protective irrigation	

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 & black soils	Paddy	Finger millet / groundnut	Deep ploughing	
		Sugarcane	Tapioca / Maize		
		Tapioca	Finger millet / Pulses		

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
		Paddy	Fallow	Sow pulses (Blackgram, VBN1, VBN2,	-

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	Irrigated Red & black soils			VBN3, VBN(Bg)4); Green Gram CO4, CO6, Paiyur1, VBN1, VBN(Gg)2)/or Green manure(Sunhemp)	
		Sugarcane	Fallow		-
		Tapioca			-

Actionable Comprehensive Plans for Contingency

State	TAMIL NADU	District	KANCHIPURAM
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	472	More than 19%	Less than 382.32
June	66.5		
July	105.7		
August	125.9		
September	173.9		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	40375	Gross irrigated area:	60469
Net Rainfed area	0	Gross rainfed area	151

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	30	41
Wells	14733	20982
Tanks	25612	39446
Other sources	-	-

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	13749	13749	0
2	Jowar	-	-	
3	Maize	0		
4	Bajra	1	1	0
5	Ragi	7	7	0

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	3	3	0
2	Groundnut	1319	1319	0
3	Sesamum	243	243	0

4	Soyabean	-		
5	Sunflower	-		
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	-		
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	620	620	0
2	Tobacco	-		
3	Guar seed	-		0
4	Other Fodder crops	5	5	0

Crop Plan- Beginning of the season

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delay by 4 weeks (July 1st week)	Red and black soils	Pearl millet (June-Sep) Groundnut (Oct – Feb) Gingelly(June-Sep)-G.Nut (Oct-Feb) Groundnut (June-Sep)-Pulses (Dec-Mar) Groundnut (June-Sep) – Ragi (Nov-Feb) Groundnut (June-Sep)-Gingelly (Dec-Mar)	Maize+Pulses (July-Dec) –Pulses (Jan-April)	Making field free f weeds Strengthen the field bunds for <i>in situ</i> moisture conservation	--

Contingency measures- Mid season

Condition			Suggested Contingency measures		
			Crop management	Soil management	Remarks on Implementation
Mid season drought (long dry spell)	Major Farming situation	Crop/cropping system			
At vegetative stage	Lateritic, red and black soils	Pearl millet G.Nut Gingelly-G.Nut G.Nut -Pulses G.Nut – Ragi	- Thinning, Grazing leaf tips, postponement of top dressing Life saving irrigation	Intercultivation (soil mulching) Conservation Furrow	Supply of inter cultural implements Awareness creation on construction of Farm ponds
	Lateritic, red and black soils	Pearl millet G.Nut Gingelly-G.Nut G.Nut -Pulses G.Nut – Ragi	Earthling up, apply Gypsum after receipt of rains Life saving irrigation Spraying of anti transpirants	Intercultivation (soil mulching) Conservation Furrow Mulching	
At reproductive stage	Lateritic, red and black soils	Pearl millet Groundnut Gingelly-G.Nut Groundnut -Pulses Groundnut – Ragi	Thinning Life saving irrigation Weeding and Weed mulching Spray urea @ 20 gm/litre of water in 35,45 and 65 days after sowing for better yield	---	Awareness creation on rain water harvesting Construction of percolation ponds

Contingency measures- End of the season

Condition			Suggested Contingency measures		
			Crop management	Rabi Crop planning	Remarks on Implementation
Terminal drought	Major Farming situation	Crop/cropping system			
	Lateritic, red and black soils	Pearl millet Groundnut Gingelly- Groundnut Groundnut -Pulses Groundnut – Ragi	Life saving irrigation through mobile sprinkler Harvest at physiological maturity stage	Tied ridges to conserve rainwater during kharif for regular sowing of rabi	

Irrigated situation

Condition			Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Major Farming situation	Crop/cropping system				
Delayed/ limited release of water in canals due	Tankfed areas- Heavy clay and laterite	Paddy (sub merged condition)	Paddy	Adoption of Rajarajan 1000 method of cultivation to save water	1.Seeds through NFSM
Condition			Suggested Contingency measures		

Condition			Suggested Contingency measures		
	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
	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	-	-	-	-	-
Condition			Suggested Contingency measures		
	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
	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	Heavy clay and laterite soils	Paddy	Black gram	Fields should be properly leveled	
		-	-	Irrigation at critical stages i.e one at sowing,flowering and pod formation	
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	Heavy clay black soils and laterite red soils	Paddy	Maize and vegetables(lab lab, cluster beab and Brinjal)	1.Limited irrigation 2. Alternate Furrow irrigation 3. Drip irrigation	
			Pulses	Irrigation at critical stages i.e one at sowing,flowering and pod formation	
Any other condition (specify) Well irrigated areas	Laterite, red and black soils	Sugarcane	Vegetables/sunflower/maize/green manure Vegetables/maize/sunflower/groundnut	Irrigation at critical stages Sprinkler irrigation for vegetables Drip irrigation with micro sprinklers Drip irrigation with fertigation Wider inter row Intercultivation Intercropping	To be linked up with micro irrigation project

Actionable Comprehensive Plans for Contingency

State	TAMIL NADU	District	KARUR
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	201.6	More than 19%	Less than 163.296
June	20.5		
July	28.7		
August	42.2		
September	110.2		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	42062	Gross irrigated area:	44793
Net Rainfed area	32968	Gross rainfed area	33649

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	4336	4448
Wells	37726	40345
Tanks	-	-
Other sources	-	-

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	8182	8182	0
2	Jowar	4545	1939	2606
3	Maize	1022	758	264
4	Bajra	382	168	214
5	Ragi	48	32	16

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	919	65	854
2	Groundnut	2671	2152	519
3	Sesamum	2832	443	2389
4	Soyabean	12	12	0
5	Sunflower	856	830	26
6	Castor	41		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	653	398	255
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	1375	1366	9
2	Tobacco	1	1	0
3	Guar seed	-		1280
4	Other Fodder crops	1774	494	1280

District: Karur

Rainfed condition

Crop Plan- Beginning of the season

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 July 1 st week		Groundnut + Pigeon pea (6 :1 ratio) Ground nut (sole crop)	No change	1. Deep tillage to conserve soil moisture 2. Mechanical sowing with tractor drawn seed drill 3. Application of composted coir pith @ 10 t ha ⁻¹ to conserve soil moisture. 4. Seed hardening with 1 % KH ₂ PO ₄ (Soak the seeds in solution for 24 hours and decant the solution. Shade dry the seeds and sowing)	

Contingency measures- Mid season

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
Mid season drought (long dry spell, > 2 consecutive weeks rainless (>2.5 mm) period) At vegetative stage	Red soils	Groundnut + Pigeon pea (12 :1 ratio) Sorghum + Red gram (mixed)	Reduce the plant population to the extent of 25 to 40 per cent. Postponement of top dressing Spraying of 0.5 % KCl to mitigate water stress. Spray kaoline @ 6 % will reduce the transpirational loss of water.	Inter cultivation to control weeds and use of soil mulch. Efficient use of stored water for life saving irrigation (micro sprinkler or sprinkler)	Hiring inter cultural implements from the Dept. of Agrl. Eng. Farm ponds through IWSP programme
Mid season drought (long dry spell) At reproductive stage	Red soils	Groundnut + Pigeon pea (12 :1 ratio) Sorghum + Red gram (mixed)	Foliar spray of 2 % DAP plus 1 % KCl during flowering and pod formation stages Spraying antitranspirant like kaoline Harvest for fodder purpose	Life saving irrigation Weeding and Weed mulching	Farm ponds through IWSP programme

Contingency measures- End of the season

Condition			Suggested Contingency measures		
Early season drought	Major Farming situation	Normal Crop/cropping system	Crop management	Soil management	Remarks on Implementation
Terminal drought	Red soils	Groundnut + Pigeon pea (12 :1 ratio) Sorghum + Red gram (mixed)	Harvest Pigeonpea for vegetable purpose Harvest groundnut at physiological maturity stage (or) harvest for fodder	Life saving supplemental irrigation (or) Plan for Rabi crop Sunflower, Horsegram (Sep-October month)	Groundnut harvester and decorticator implements through the Dept. of Agrl. Eng.

Rabi season

Crop Plan- Beginning of the season

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 Nov. 2 nd week	Red soils	Groundnut + Pigeon pea (6: 1 ratio) Ground nut (sole crop)		Deep tillage to conserve soil moisture Mechanical sowing with tractor drawn seed drill Application of composted coir pith @ 10 t ha ⁻¹ to conserve soil moisture. Seed hardening with 1 % KH ₂ PO ₄ (Soak the seeds in solution for 24 hours and decant the solution. Shade dry the seeds and sowing)	Hiring Seed drills from the Dept. of Agrl. Eng. Supply of seeds through ISOPOM project Supply of biofertilizers and other inputs through State Department of Agriculture
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Contingency measures- Mid season

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Crop management	Soil management	Remarks on Implementation
Mid season drought (long dry spell, > 2 consecutive weeks rainless (>2.5 mm) period) At vegetative stage	Red soils	Groundnut + Pigeon pea (12: 1 ratio) Sorghum + Red gram (mixed)	1. Reduce the plant population to the extent of 25 to 40 per cent. 2. Postponement of top dressing 3. Spraying of 0.5 % KCl to mitigate water stress.	1. Inter cultivation to control weeds and use of soil mulch. 2. Efficient use of stored water for life saving irrigation (micro sprinkler or sprinkler)	Hiring inter cultural implements from the Dept. of Agrl. Eng. Farm ponds through IWSM programme
Mid season drought (long dry spell) At reproductive stage	Red soils	Groundnut + Pigeon pea (12: 1 ratio) Sorghum + Red gram (mixed)	1. Foliar spray of 2 % DAP plus 1 % KCl during flowering and pod formation stages 2. Spraying antitranspirant like kaolin 3. Could be harvested for fodder purpose	1. Life saving irrigation 2. Weeding and Weed mulching	Farm ponds through IWSM programme

Contingency measures- End of the season

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Crop management	Soil management	Remarks on Implementation
Terminal drought	Red soils	Groundnut + Pigeon pea (12: 1 ratio) Sorghum + Red gram (mixed)	1. Pigeon pea harvested for vegetable purpose 2. Harvest the groundnut crop at physiological maturity stage (or) Harvest it for fodder purpose	1. Life saving supplemental irrigation (or) Plan for Rabi crop Sunflower, Horse gram (Sep-October)	Groundnut harvester and decorticator implements through the Dept. of Agrl. Eng.

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	Canal water irrigated low lands /Bore well water irrigated low lands with alluvial soils	Paddy Paddy – Pulses Paddy – Oil seeds Paddy - Banana	Paddy Sunflower	Paddy 1. Direct seeding of sprouted seeds in line with recommended NPK 2. Use of cyclic submergence and drying to save water 3. Bunch planting (4-5 seedlings/hill) Deep planting. Sunflower 1. Drip irrigation	Supply of seeds through ISOPOM project Hiring drum seeder from the Dept. of Agrl. Eng. Supply of accessories for drip irrigation
Non release of water in canals under delayed onset of monsoon in catchment	Canal water irrigated low lands with alluvial soils	Paddy	Raise paddy as rainfed crop then convert to low land crop after the water is released Sorghum, pulses, and gingelly are recommended as rainfed crops.	Crops are grown with available soil moisture	
Lack of inflows into tanks due to insufficient /delayed onset of	Canal water irrigated low lands with alluvial soils	Paddy	Sorghum and gingelly are recommended as rainfed crops.	Crops are grown with available soil moisture	
Insufficient groundwater recharge due to low rainfall	Bore well water irrigated red and brown soils	Paddy	Sunflower Sorghum as rainfed crop Gingelly	1. Light life saving irrigation 2. Micro irrigation (Drip/ sprinkler)system 3.Available water may be applied economically by following alternate skip furrow method. 4. Intercultural operations to break soil capillaries for checking surface moisture loss.	1. Supply of accessories for drip irrigation through precision farming

Actionable Comprehensive Plans for Contingency

State	TAMIL NADU	District	KRISHNAGIRI
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	356.2	More than 19%	Less than 288.522
June	47.6		
July	60		
August	86.5		
September	162.1		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	70670	Gross irrigated area:	100191
Net Rainfed area	95291	Gross rainfed area	139970

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	566	570
Wells	62465	90894
Tanks	7639	8727
Other sources	-	-

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	15035	15035	0
2	Jowar	3636	-	
3	Maize	1444	1377	67
4	Bajra	327	74	253
5	Ragi	37772	6378	31394

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	8721		8721
2	Groundnut	12555	1133	11422
3	Sesamum	328	11	317
4	Soyabean	-		
5	Sunflower	-		
6	Castor	973		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	2025	42	1983
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	465	401	64
2	Tobacco	-		
3	Guar seed	-		1323
4	Other Fodder crops	1804	481	1323

District: Krishnagiri

Rainfed condition

Crop Plan- Beginning of the season

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Early season drought					
Delay by 4 weeks (Aug 2 nd 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	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Early season drought	Shallow marginal and sub marginal red non calcareous soils	Samai (Little millet) – Horse gram	Varieties- Paiyur 2, Co-2 and Co-3	Application of FYM Seed hardening	ICDP, SVP, ATMA
	Shallow marginal and sub marginal red non calcareous soils	Samai – Horsegram	Skipping of kharif crop and raising rabi crop Horsegram		

Mid-season drought

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

Terminal drought

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Crop management	Rabi crop planning	Remarks on Implementation
Terminal drought	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 – Horse gram	-
	Shallow marginal and sub marginal red non calcareous soils	Samai – Horsegram			

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		-
Any other condition (specify)	-	-	-	-	-

Actionable Comprehensive Plans for Contingency

State	TAMIL NADU	District	MADURAI
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	296.1	More than 19%	Less than 239.841
June	39.4		
July	53.8		
August	68.1		
September	134.8		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	63554	Gross irrigated area:	71285
Net Rainfed area	51435	Gross rainfed area	51652

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	9389	10154
Wells	41704	48180
Tanks	12461	12951
Other sources	-	-

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	19151	19151	0
2	Jowar	6020	47	5973
3	Maize	21252	322	20930
4	Bajra	335	17	318
5	Ragi	88	5	83

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	1690	2	1688
2	Groundnut	1956	1100	856
3	Sesamum	596	71	525
4	Soyabean	-		
5	Sunflower	11	11	0
6	Castor	23		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	6344	436	5908
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	2088	1934	154
2	Tobacco	-		
3	Guar seed	-		358
4	Other Fodder crops	792	434	358

District: Madurai

Rainfed condition

Crop Plan- Beginning of the season

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
Early season drought (delayed onset)			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delay by 4 weeks (July 1 st week)	Shallow / deep black soils	Cotton + Blackgram	Pearl Millet CO7, Co Cu 9,	Seed hardening (2% KCl 5 hr)	State Department of Agriculture
		Sorghum + Cowpea	Sunflower CO4, TCSH1, Morden	Seed treatment	
		Maize	CO MH5	Sowing with seed drill	
		Pulses – Greengram Blackgram Redgram	VBN 1, VBN 2, VBN 3	Moisture conservation measures (BBF) Cotton / Red gram portray nursery Run-off harvesting Seed treatment (mix with wood ash)	

Mid-season drought

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
Mid season drought (long dry spell)			Crop management	Soil management	Remarks on Implementation
At vegetative stage	Shallow / deep black soils	Cotton + Black gram	Alternate rows can be removed	Soil mulching	State Department of Agriculture
		Sorghum + Cowpea	Mulch application	Vertical mulching	
		Maize + Greengram	Cotton / Redgram raising portray nursery for gap filling	Contour sowing	
		Pulses	Foliar nutrition spray 1% urea, 1% DAP, 1% KCl Spray All 19:19:19		
At reproductive stage	Shallow / deep black soils	Cotton + Black gram	Harvest at physiological maturity	Dust mulching	State Department of Agriculture
		Sorghum + Cowpea	Spray 1% KCl water	Waste mulching	
		Maize + Greengram			
		Pulses	1% Kaolin spray		

Terminal drought

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures			
Terminal drought			Crop management	Soil management	Remarks on Implementation	
		Shallow / deep black soils	Cotton + Blackgram	Harvest at physiological maturity	--	State Department of Agriculture
			Sorghum + Cowpea			
			Maize + Green gram	Spraying growth regulator /		
	Pulses		1% NaCl to hasten maturity			

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	Clayey loam soils	Rice – Rice – Pulse	Green manure – Rice (short duration)	SRI methods of rice cultivation	State Department of Agriculture
		Sugarcane	Sugarcane (Subsurface drip fertigation)	Drip fertigation	
		Vegetables	Vegetables (drip fertigation)		

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	Clayey loam soils	Rice – Rice – Pulse	Green manure – Rice	Daincha, Sunhemp Drip fertigation	State Department of Agriculture
		Sugarcane	Maize (drip) Pulses		
		Vegetables	Vegetable (drip)		

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	Clayey loam soils	Rice-Rice-Pulse	Green gram Black gram	Short duration pulses Cotton – pro tray nursery Vegetables – precision farming	State Department of Agriculture
		Sugarcane	Maize Sun flower / cotton		
		Vegetables	Vegetables (drip irrigation)		

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	Vegetables	Vegetables in precision farming	Micro-irrigation	State Department of Agriculture
		Cotton		Drip fertigation	
	Red loam soils	Jasmine		Run-off harvesting & recycling	

Actionable Comprehensive Plans for Contingency

State	TAMIL NADU	District	NAMAKKAL
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	331.8	More than 19%	Less than 268.758
June	39.4		
July	59.3		
August	85.7		
September	147.4		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	72829	Gross irrigated area:	102036
Net Rainfed area	76494	Gross rainfed area	105590

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	5323	6136
Wells	65880	93495
Tanks	-	-
Other sources	1626	2405

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	3925	3925	0
2	Jowar	34208	6332	27876
3	Maize	12677	11633	1044
4	Bajra	101	29	72
5	Ragi	356	12	344

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	283	4	279
2	Groundnut	29335	5526	23809
3	Sesamum	795	444	351
4	Soyabean	-		
5	Sunflower	26	24	2
6	Castor	1604		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	2799	1631	1168
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	11183	11183	0
2	Tobacco	-		
3	Guar seed	-		1850
4	Other Fodder crops	2336	486	1850

District: Namakkal

Rainfed condition

Crop Plan- Beginning of the season

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

		Tapioca (June-May)	Tapioca – CO2 variety	Raising polybag nursery <i>Azotobacter</i> 2 kg/ha – soil application after receipt of shower along with 20 kg FYM and 20 kg soil Mulching with polythene or crop mulch	
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Mid-season drought

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

Irrigated situation

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			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	

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
				seed propagation (40 days nursery)	

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	Not applicable				

Condition	Major Farming situation	Normal 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	Not applicable				

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

Promising Climate Resilient Technologies for low-risk prone districts of Tamil Nadu (Namakkal and Thiruvavur)

1. Farm ponds and check dams for utilization of water for onion, sorghum, groundnut and vegetable crops during Kharif and Rabi season
2. Farm bunding in groundnut crop to harvest the runoff and moisture availability for longer period
3. In-situ ploughing of green manure crop to improve soil fertility
4. Alternate Wetting and Drying irrigation method in paddy
5. Desilting of Rayapuram canal to augment water storage potential in the village
6. Water saving technology with System of Rice Intensification

7. Groundnut + red gram intercropping system
8. Flood tolerant paddy varieties – CR1009 Sub 1, Swarna Sub 1
9. Short duration black gram varieties – ADT5 to escape drought with improved yields
10. Multi-cut fodder sorghum COFS31 and Cumbu Napier hybrid grass CO5 for green fodder availability
11. Establishment of silage units, feed availability during the lean period
12. Supplementation of area specific mineral mixture during lean season for milch animals to reduce any mineral deficiency

Actionable Comprehensive Plans for Contingency

State	TAMIL NADU	District	PERAMBALUR
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	277.8	More than 19%	Less than 225.018
June	33.4		
July	38.1		
August	73.4		
September	132.9		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	25238	Gross irrigated area:	31825
Net Rainfed area	74674	Gross rainfed area	75505

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	-	-
Wells	25238	31825
Tanks	-	-
Other sources	-	-

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	3869	3869	0
2	Jowar	59	10	49
3	Maize	71654	5587	66067
4	Bajra	194	167	27
5	Ragi	7	7	0

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	244	23	221
2	Groundnut	1852	1704	148
3	Sesamum	606	438	168
4	Soyabean	-		
5	Sunflower	65	65	0
6	Castor	106		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	7948	248	7700
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	3475	3472	3
2	Tobacco	-		
3	Guar seed	-		625
4	Other Fodder crops	1069	444	625

District: Perambalur Rainfed condition

Crop Plan- Beginning of the season

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
Early season drought (delayed onset)			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delayed by 4 weeks July 1 st week	Black soil	Cotton	Maize + Pulses/ Redgram (Long duration)/ Groundnut	Wider spacing Broad Bed Furrow System, Mulching	State department of Agriculture and Department of Agricultural Engineering

Mid-season drought

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)			Crop management	Soil management	Remarks on Implementation
At vegetative stage	Black soil	Cotton	Cotton intercrop with legumes	Mulching with crop residues. Inter cultivation and earthing up operations.	
		Maize	Weeding and thinning out population	Mulching	
		Groundnut	Supplementary irrigation using micro sprinkler	Polythene mulching	
At reproductive stage	Black soil	Cotton	KCl foliar spraying @ 0.3% Kaolin foliar spraying @ 1.25%	Top dressing with potash fertilizer	
		Maize	Fodder purpose	-	
		Groundnut	Foliar spraying of 0.5% KCl and 2% Kaolin spray	-	

Terminal drought

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
Terminal drought			Crop management	Rabi Crop planning	Remarks on Implementation
	Black soil	Cotton	Foliar spraying multi K @ 2% (or) Poly feed @ 2% Foliar spraying of NAA 40 ppm	-	-
		Maize	Insitu incorporation in the same field	-	-
		Groundnut	Crop for Fodder purpose	-	-

Irrigated Situation (Tankfed /well irrigation)

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agonomic measures	Remarks on Implementation
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	1.Black soil Tank fed irrigation	Rice (Oct - Jan) – Pulses (Feb - April)	Cucumber (Jan - April)	Pit method of sowing	-

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	-Black soil -upland -well -irrigation	Rice (Aug - Jan)/ Groundnut/ Gingelly(Feb-May)	Cotton (Aug-Feb) -Fallow	Ridges and furrow Alternate furrow irrigation Foliar spraying of nutrients	
		Sugarcane (Dec - Nov) - 2year rotation	Maize (Sep-Dec) – Sunflower (Dec - March)	Ridges and furrow Alternate furrow irrigation Foliar spraying of nutrients	

Promising Climate Resilient Technologies for high-risk prone districts of Tamil Nadu (Ramanathapuram, Perambalur and Villupuram)

1. Farm ponds and check dams for water harvesting and supplemental irrigation to kharif and rabi crops
2. In-situ moisture conservation: Poly mulching in vegetables, summer deep ploughing in groundnut, green gram and black gram to improve water use efficiency
3. In-situ moisture conservation technologies such as BBF, ridge and furrow and mulching to conserve moisture for longer period
4. Alternate Wetting and Drying method of irrigation using Pani Pipe for paddy cultivation to manage drought
5. Resilient Intercropping Systems of groundnut + red gram (TMV13 + VBN3) (6:1)
6. Crop diversification with finger millet CO15 to overcome the dry spells with assured income
7. Short duration mung bean, Yellow Mosaic Virus resistant black gram variety VBN11 and green gram variety Co-8
8. TNAU crop booster application @ 2kg acre⁻¹
9. Brinjal varietal diversification with PLR2
10. Establishment of silage units with COBN5 for availability of feed during lean season
11. Improved poultry breed Nandanam-2 rearing with enhanced net income
12. Supplementation of mineral and vitamin mixture during lean season to reduce vitamin deficiency and increase milk production

Actionable Comprehensive Plans for Contingency

State	TAMIL NADU	District	PUDUKKOTTAI
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	294.8	More than 19%	Less than 238.788
June	38.7		
July	56.2		
August	79.6		
September	120.3		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	118462	Gross irrigated area:	129061
Net Rainfed area	15872	Gross rainfed area	16039

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	915	915
Wells	63225	73126
Tanks	54293	54991
Other sources	29	29

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	82460	75071	7389
2	Jowar	68	68	0
3	Maize	2197	2197	0
4	Bajra	31	31	0
5	Ragi	57	56	1

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	73	48	25
2	Groundnut	10399	8860	1539
3	Sesamum	1805	1356	449
4	Soyabean	-		
5	Sunflower	2	2	0
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	262	262	0
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	1923	1804	119
2	Tobacco	-		
3	Guar seed	-		36
4	Other Fodder crops	222	186	36

District: Pudukottai

Rainfed condition

Crop Plan- Beginning of the season

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
Delayed by 4 weeks (2 nd week of July)	Laterite and red soils	Groundnut + Cowpea	Groundnut (VRI 2, TMV 7) Cowpea CoCP 7	* Intercropping with CoCP 7 and Mixed sowing of Bajra - to control Leaf minor *Border cropping of Castor TMV-5	

Mid-season drought

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	Major Farming situation	Crop/cropping system	Crop management	Soil management	Remarks on Implementation
At vegetative stage	Red sandy soils	Pigeonpea + Maize	Applying planofix to avoid flower droppings 2% KCl spray	Mulching with organic amendments	-
	Laterite and red soils	Groundnut + Redgram	water spray twice in a week to meet out the transpiration loss	Broad bed deep furrow system – at the time of sowing.	* As soon as rainfall received, Gypsum distribution at 50% subsidy * 2% DAP spray
At Reproductive stage	Laterite and red soils	Groundnut + Redgram	Topping in Redgram Irrigation through Mobile sprinkler from nearby water resources	-	ISOPOM scheme

Terminal drought

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Crop management	Soil management	Remarks on Implementation
Terminal drought	Laterite and red soils	Groundnut + Redgram	Topping in Redgram Irrigation through Mobile sprinkler from nearby water resources	Short duration Castor as relay crop	ISOPOM scheme (Oilseeds)

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	Black soil, Red Sandy soil	Rice-Rice-Pulse Rice-Rice-Maize Rice-Rice-Gingelly Rice-Cotton	Direct sown short duration rice (September-December) Groundnut, Gingelly (December-March), Maize-ragi	*Wider Spacing (SRI cultivation of Rice). *Line sowing of Pulses/Maize. *DAP spray for Pulses	-
Non release of water in canals under delayed onset	Black soil, Red Sandy soil	Rice-Rice-Pulse Rice-Rice-Maize Rice-Rice-Gingelly	Maize-ragi Clusterbean, Fodder maize/fodder cowpea	*Wider Spacing (SRI cultivation of Rice). *Line sowing of Pulses/Maize.	-

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
of monsoon in catchment		Rice-Cotton		*DAP spray for Pulses	
Lack of inflows into tanks due to insufficient /delayed onset of monsoon		Paddy	Maize can be introduced	High yielding maize hybrids with drainage channels	ISOPOM
Insufficient groundwater recharge due to low rainfall	Tube well irrigation	Paddy	Aerobic Rice, Maize and vegetables (Tomato, Chilli and Brinjal) Direct sown rice	Limited irrigation Alternate Furrow irrigation Drip irrigation	NFSM (Paddy and Pulses)
	Red soils				

Actionable Comprehensive Plans for Contingency

State	TAMIL NADU	District	RAMANATHAPURAM
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	132.1	More than 19%	Less than 107.001
June	15.2		
July	24.5		
August	29.8		
September	62.6		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	66046	Gross irrigated area:	69559
Net Rainfed area	118523	Gross rainfed area	122419

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	-	-
Wells	11846	13652
Tanks	54200	55907
Other sources	-	-

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	139667	54547	85120
2	Jowar	64	-	
3	Maize	313	14	299
4	Bajra	726	2	724
5	Ragi	169	21	148

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	1		1
2	Groundnut	1983	80	1903
3	Sesamum	882	145	737
4	Soyabean	-		
5	Sunflower	169	1	168
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	9280	3267	6013
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	2908	211	2697
2	Tobacco	-		
3	Guar seed	-		267
4	Other Fodder crops	280	13	267

District: Ramanathapuram

Rainfed condition

Crop Plan- Beginning of the season

Condition	Major Farming situation	Normal Crop /cropping system	Suggested Contingency measures		
Early season drought (delayed onset)			Change in crop /cropping system	Agronomic measures	Remarks on Implementation
Delay by 4 weeks (Nov 1 st week)	Red, black and laterite soils	Rice	Sowing with short duration varieties (PMK 3, Anna 4, RMD(R)1, ADT 36, ADT 43, ADT 45)	Seed treatment with 1% KCl or 3% NaCl for 16 hours followed hours shade drying Line sowing using seed drill FYM enriched (750kg) recommended phosphorous application (25 kg P) Thinning is essential.	Linkage with State Department of Agriculture and Horticulture for supply of seeds and seed drills
		Groundnut	Short duration varieties (TMV 7, VRI 2)	Seed hardening with 0.5% CaCl ₂ Seed treatment using Rhizobium 500g Line sowing using seed drill /gorru Supplemental irrigation using Mini mobile sprinkler	

Condition	Major Farming situation	Normal Crop /cropping system	Suggested Contingency measures		
Early season drought (delayed onset)			Change in crop /cropping system	Agronomic measures	Remarks on Implementation
		Chilli	Sowing of Local Mundu variety	Dry sowing in line 8-10 days before rains with 15-20% higher seed rate Broad bed furrow system of planting Sowing with broad bed former cum seed drill	

Mid-season drought

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
Mid season drought (long dry spell)			Crop management	Soil management	Remarks on Implementation
At vegetative stage	Red, black and laterite soils	Rice	Foliar spray of Kaolin 3% or KCl 1% to overcome moisture stress Spraying Cycocel 1000 ppm under water deficit situation to mitigate ill effects Supplemental irrigation through farm ponds	Opening of conservation furrows at an interval of 15-20 m to conserve soil moisture. Soil mulching	Farm ponds through DRDA programme
		Groundnut	Supplemental irrigation through farm pond using mini mobile sprinkler		
		Chilli	Thinning Supplemental irrigation through farm pond		
At reproductive stage	Red, black and laterite soils	Rice	Supplemental irrigation through farm pond	Soil mulching Opening of conservation furrows at an interval of 15-20 m Earthing up Application of gypsum after receipt of rains	Farm ponds through DRDA programme
		Groundnut	do		
		Chilli	do		

Terminal drought

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Crop management	Kharif Crop planning	Remarks on Implementation
Terminal drought	Red, black and laterite soils	Rice	Supplemental irrigation if possible through farm pond Harvest at physiological maturity stage	—	Farm ponds through DRDA programme Harvesting and threshing implements through Dept of Agriculture
		Groundnut			
		Chilli			

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	Not applicable				

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	Not applicable				

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	Tankfed areas with heavy clay soils	Rice-cotton/ Rice - chilli	No change	Direct sowing using seed drill Supplemental irrigation through farm pond	

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	Not applicable				

Promising Climate Resilient Technologies for high-risk prone districts of Tamil Nadu (Ramanathapuram, Perambalur and Villupuram)

13. Farm ponds and check dams for water harvesting and supplemental irrigation to kharif and rabi crops
14. In-situ moisture conservation: Poly mulching in vegetables, summer deep ploughing in groundnut, green gram and black gram to improve water use efficiency
15. In-situ moisture conservation technologies such as BBF, ridge and furrow and mulching to conserve moisture for longer period
16. Alternate Wetting and Drying method of irrigation using Pani Pipe for paddy cultivation to manage drought
17. Resilient Intercropping Systems of groundnut + red gram (TMV13 + VBN3) (6:1)
18. Crop diversification with finger millet CO15 to overcome the dry spells with assured income
19. Short duration mung bean, Yellow Mosaic Virus resistant black gram variety VBN11 and green gram variety Co-8
20. TNAU crop booster application @ 2kg acre⁻¹
21. Brinjal varietal diversification with PLR2
22. Establishment of silage units with COBN5 for availability of feed during lean season
23. Improved poultry breed Nandanam-2 rearing with enhanced net income
24. Supplementation of mineral and vitamin mixture during lean season to reduce vitamin deficiency and increase milk production

Actionable Comprehensive Plans for Contingency

State	TAMIL NADU	District	SALEM
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	406.4	More than 19%	Less than 329.184
June	57.2		
July	77.6		
August	102.9		
September	168.7		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	118948	Gross irrigated area:	175914
Net Rainfed area	91384	Gross rainfed area	132508

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	806	1046
Wells	118142	174868
Tanks	-	-
Other sources	-	-

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	12058	11843	215
2	Jowar	34844	7508	27336
3	Maize	51987	42894	9093
4	Bajra	568	141	427
5	Ragi	6022	2146	3876

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	1560	325	1235
2	Groundnut	22219	7361	14858
3	Sesamum	1426	1181	245
4	Soyabean	129	123	6
5	Sunflower	3	3	0
6	Castor	502		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	6605	4784	1821
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	6427	6281	146
2	Tobacco	292	292	0
3	Guar seed	-		1103
4	Other Fodder crops	3747	2644	1103

District: Salem
Rainfed condition

Crop Plan- Beginning of the season

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Early season drought (delayed onset) Delay by 4 weeks <i>Kharif season</i> (July 1 st week)	Shallow red soils	- Groundnut + Red gram + Castor - Sorghum / maize / ragi / pearl millet - Groundnut + castor - Rainfed tomato	Spreading groundnut (TMV 2, TMV 7, VRI 2) / Sunflower (CO 4, Morden) / Castor (TMV 5, TMV 6) / Red gram (SA1, VBN2) / Cowpea (Paiyur 1, CO(CP)7) / Sorghum (CO 26) / Cumbu (CO 7, CO(Cu)9, ICMV 221)	1. Mulching - (In-situ moisture conservation) 2. Conservation furrow 3. Drought tolerant varieties are selected 4. Intercultivation 5. 0.5 % Kcl foliar spray for drought tolerant 6. 0.5% KH ₂ PO ₄ for seed treatment in sorghum for drought tolerant	1. Seed drills under RKVY 2. Supply of seeds through NFSM 3. Awareness creation about seed treatments for drought tolerance 4. Farmers has to take up water conservation measures and mulching
	Black soil	- Maize - Red gram - Cotton	Fodder sorghum (CO 27, COFS 29) / Maize (CO 1, COH (M) 4) + Green gram (CO 6, Paiyur 1) / Pearl millet (CO 7, ICMV 221) / Sorghum (CO 26, CO (S) 28, BSR 1, Paiyur 1 & 2)		

Mid-season drought

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
Mid season drought (long dry spell)			Crop management	Soil management	Remarks on Implementation
At vegetative stage	Shallow red soils	• Groundnut + Redgram + Castor – Ragi • Ragi – Groundnut	1. Supplementary irrigation through rain gun, siphon irrigation 2. Water spraying 3. Spraying of drought tolerance chemicals/ growth regulators	1. Intercultivation 2. Conservation furrow 3. Split fertilizer application after receipt of rains	1. Supply of intercultural implements through RKVY 2. Supply of seeds through NFSM
At reproductive stage	Shallow red soils	Not applicable			
	Black soils				

Terminal drought

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Crop management	Rabi Crop planning	Remarks on Implementation
			Not applicable		

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. Borewell irrigated Red soils 4. Borewell irrigated Black soils 5. Tankfed areas	- Rice - Rice - Sugarcane - Rice – Cotton / Gingelly / Groundnut - Turmeric - fallow	Green manure / Pulses - Rice Millets / Pulses - Rice Gingelly / Maize / Sorghum	1. Alternate wetting and drying 2. Adopting moisture conservation practices 3. Selecting suitable short duration varieties	1. Supply of seeds through NFSM

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	1. Canal irrigated Red soils 2. Canal irrigated Black soils 3. Tankfed areas	- Rice - Rice - Sugarcane - Rice – Cotton / Gingelly / Groundnut - Turmeric - fallow	Gingelly / Sorghum / Maize Fodder sorghum / Pearl millet / Pulses	1. Mulching 2. Adopting moisture conservation practices 3. Selecting suitable short duration varieties	1. Awareness creation through mass media 2.State Department of Agriculture and Agriculture Engineering

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	1. Tankfed Red soils 2. Tankfed black soils	Rice	Gingelly / Sorghum / Maize Fodder sorghum / Pearl millet / Pulses	1. Mulching 2. Adopting moisture conservation practices	1.Package of practices of new crops may be given to the farmers

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	Borewell irrigated red soils and black soils	Groundnut / Gingelly / Sunflower	Sorghum / Pearl millet / Fodder sorghum	1. Mulching 2. Water harvesting and Recycling	1.Package of practices of new crops may be given to the farmers

Actionable Comprehensive Plans for Contingency

State	TAMIL NADU	District	SIVAGANGA
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	316.7	More than 19%	Less than 256.527
June	45.4		
July	72.4		
August	77.8		
September	121.1		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	73944	Gross irrigated area:	74859
Net Rainfed area	31915	Gross rainfed area	32144

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	7	7
Wells	21204	21421
Tanks	52733	53431
Other sources	-	-

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	76147	51159	24988
2	Jowar	9	9	0
3	Maize	48	46	2
4	Bajra	6		6
5	Ragi	182	50	132

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	10	5	5
2	Groundnut	1670	923	747
3	Sesamum	182	48	134
4	Soyabean	-		
5	Sunflower	3	3	0
6	Castor	2		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	631	410	221
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	3012	2993	19
2	Tobacco	-		
3	Guar seed	-		114
4	Other Fodder crops	199	85	114

District: Sivaganga
Rainfed condition

Crop Plan- Beginning of the season

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 (July 1st week)	Deep and very deep red soils	Groundnut	Groundnut + Pigeon pea intercropping (6:1) Groundnut: TMV-7, JL-24, VRI-2, VRI3 Pigeon pea : VBN3 Groundnut based cropping system Continued up to July 30 th	- Seed hardening of rice with 0.2 % KNO₃ - Basal application of Rhizobium and Azospirillum 2kg/h a - Thinning to retain one seedling at 30 cm and crop	Groundnut: Breeder seeds supply- ARS Virudhachalam and Thindivanam F1 seeds supply – Dept of agriculture Linkage with State Dept of agriculture and engineering for supply of seeds and Seed drills

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
	Deep and very deep black soils	Sesame	No change	residue mulching	
		Rice	No Change Prefer varieties like ADT36, ADT37, PMK3 ,ADT43, ADT45, MDU5, ASD16		

Mid-season drought

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	Major Farming situation	Crop/cropping system	Crop management	Soil management	Remarks on Implementation
At vegetative stage	Deep and very deep red soils	Groundnut, Sesame, Groundnut:TMV-7,JL-24,VRI-2, VRI3	- Supplemental irrigation if possible from harvested water 2% DAP spray 1% KCl spray - Kaolin spray - Water spray	- Intercultivation (soil mulching) - Opening of conservation furrows at an interval of 15-20 m - Earthing up, apply Gypsum after receipt of rains	Linkage with State Agriculture engineering dept for Seed drills and seeds supply Farm ponds through DRDA programme
	Deep and very deep black soils	Sesame: TMV5, TMV-7, SVPR1,2			
		Rice : ADT36, ADT37, PMK3 ,ADT43, ADT45, MDU5, ASD16			

Terminal drought

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Crop management	Rabi Crop planning	Remarks on Implementation
Terminal drought	Deep and very deep red soils	Groundnut, Sesame, Groundnut: TMV-7 JL-24, VRI-2, VRI3	- Supplemental irrigation if possible from harvested water - Harvest at physiological maturity stage	Transplanted rice (October 2 nd week)	Groundnut digger and Stripper can be supplied through Dept of Agriculture Threshing implements through Dept of Agriculture
	Deep and very deep black soils	Sesame: TMV5, TMV-7, SVPR1,2 Rice : ADT36, ADT37, PMK3 ,ADT43, ADT45, MDU5, ASD16			

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 tanks due to low rainfall	Low land tube well tank irrigated Deep and very deep red soils	Transplanted rice	SRI method of rice cultivation Rice: ADT36, ADT39, ADT 45 Sesame: TMV5, TMV7, SVPR1,2	25kg/ha ZnSO₄ basal application - FYM enriched recommended phosphate application - Limited irrigation with mulching - Alternate Furrow irrigation - Zero tillage - Residue mulching - Sprinkler irrigation with mulching	Seeds and micro irrigation systems can be supplied through State Seed farm or seed corporation / Agri. Dept. /Agri.Eng
	Upland land tube well tank irrigated Deep and very deep red soils	Groundnut	Groundnut + Pigeonpea (6:1) intercropping Groundnut: TMV7, VRI2, VRI3 Pigeonpea: VBN 3, APK1	Sprinkler irrigation with Residue mulching	

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		- Not applicable -			

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		- Not applicable -			

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 Deep and very deep red soils and Deep and very deep black soils	Transplanted rice : ADT36, ADT37, PMK3 ,ADT43, ADT45, MDU5, ASD16 Groundnut	Groundnut :VRI2, TMV7, VRI3, JL 24 Sesame: TMV5, TMV7, SVPR1,2 No change	1. Sprinkler irrigation with mulching 2. crop residue mulching	1.Seeds can be supplied through Dept of Agriculture /Horticulture

Actionable Comprehensive Plans for Contingency

State	TAMIL NADU	District	THE NILGIRIS
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	842.4	More than 19%	Less than 682.344
June	195.7		
July	238		
August	205.7		
September	203		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	5186	Gross irrigated area:	8179
Net Rainfed area	67164	Gross rainfed area	67260

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	-	-
Wells	5112	8117
Tanks	-	-
Other sources	74	62

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	78	0	
2	Jowar	-	-	
3	Maize	7	7	0
4	Bajra	-		
5	Ragi	-		

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	-		
2	Groundnut	-		
3	Sesamum	-		
4	Soyabean	-		
5	Sunflower	-		
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	-		
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	-		
2	Tobacco	-		
3	Guar seed	-		0
4	Other Fodder crops	3	3	0

District: Nilgiris
Rainfed condition

Crop Plan- Beginning of the season

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Early season drought (delayed onset)					
Delay by 4 weeks (July 1st week)	Shallow red soils	Potato – Carrot – Potato	Beetroot / Radish / Cauliflower – Carrot – Potato Varieties : Beetroot: Ooty - 1. Crimson globe and redball Radish: Japanese long, Pusa rashmi and Arka nishant Cauliflower: Ooty 1, Swarna,		

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
Early season drought (delayed onset)			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
			Sandoz Hybrid. Pusadapoli and Snow mistique		
		Cabbage – Potato - Carrot	Beetroot / Radish / Caluliflower – Carrot – Potato Varieties : Beetroot: Ooty - 1. Crimson globe and redball Radish: Japanese long, Pusa rashmi and Arka nishant Cauliflower: Ooty 1, Swarna, Sandoz Hybrid. Pusadapoli and Snow mistique		

Mid-season drought

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
Mid season drought (long dry spell)			Crop management	Soil management	Remarks on Implementation
At vegetative stage	Shallow red soil	Potato – Carrot – Potato	Thinning of crop	Earthing up	Plastic sheet for mulching may be supplied with subsidy.
		Cabbage – Carrot – Potato	Life saving irrigation Anti transparent spray with kaoline	Mulching with pine leaves Mulching with plastic sheets Rain water harvesting by pond lining	Plastic sheets for pond lining may be supplied with subsidy.

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
Mid season drought (long dry spell)			Crop management	Soil management	Remarks on Implementation
At reproductive stage	Shallow red soil	Potato – Carrot – Potato	Thinning Life saving irrigation Anti transparent spray with kaoline	Earthing up Mulching with pine leaves Mulching with plastic sheets Rain water harvesting by pond lining	Subsidy may be granted for forming rain water harvesting ponds. Plastic sheet for mulching may be supplied with subsidy. Plastic sheets for pond lining may be supplied with subsidy.
	Shallow red soil	Cabbage – Carrot – Potato	Thinning Life saving irrigation Incase of severe drought, Potato and carrot may be harvested in earlier date. The produce can be sold as table vegetables.	Earthing up Mulching with pine leaves Mulching with plastic sheets Rain water harvesting by pond lining	

Terminal drought

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
Terminal drought			Crop management	Rabi Crop planning	Remarks on Implementation
	Shallow red soil	Cabbage – Carrot – Potato Potato – Carrot – Potato	Life saving irrigation In case of severe drought, Potato and carrot may be harvested in earlier date. The produce can be sold as table vegetables. Harvest at physiological maturity stage	--	--

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			Not applicable		

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			Not applicable.		

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
onset of monsoon in catchment					

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			Not applicable.		

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 soil	Paddy	Maize and vegetables (Potato, Carrot, Beetroot, Radish, Beans)	1.Limited irrigation by alternate crops. 2. Alternate Furrow irrigation 3. Drip irrigation	-
Any other condition (specify)	-	-	-	-	-

Actionable Comprehensive Plans for Contingency

State	TAMIL NADU	District	THENI
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	237.9	More than 19%	Less than 192.699
June	31.2		
July	49.4		
August	50.9		
September	106.4		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	62981	Gross irrigated area:	72528
Net Rainfed area	41071	Gross rainfed area	41913

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	10960	14667
Wells	48420	54129
Tanks	3601	3732
Other sources	-	-

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	5206	5206	0
2	Jowar	1061	84	977
3	Maize	6379	4747	1632
4	Bajra	856	69	787
5	Ragi	9		9

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	735	9	726
2	Groundnut	1485	261	1224
3	Sesamum	607	13	594
4	Soyabean	-		
5	Sunflower	3	3	0
6	Castor	141		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	2925	827	2098
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	2568	2550	18
2	Tobacco	8	8	0
3	Guar seed	-		71
4	Other Fodder crops	896	825	71

District: Theni
Rainfed condition

Crop Plan- Beginning of the season

Condition	Major Farming situations	Normal Crop / cropping systems	Suggested contingency measures		
Early season drought (Delayed onset)			Change in crop/cropping system	Agronomic measures	Remarks on implementation
Kharif season Delay by 4 weeks (1 st week of July)	Red soils	Pulses/ Sorghum	Short duration pulses Black gram: VBN 1,2,3, Co5 Red gram : CoRG 7, Co6	Seed drill sowing for pulses Seed hardening-(18 hrs. soaking in water followed by 24 hrs. shade drying	Linkages with NFSM for seed supply of pulse crops
	Black soils	Pulses/ Maize	Cowpea: CoCT7	2% DAP spray	

Mid-season drought - NA

Terminal drought – NA

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, Horse gram 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

Actionable Comprehensive Plans for Contingency

State	TAMIL NADU	District	TIRUCHCHIRAPPALLI
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	276.3	More than 19%	Less than 223.803
June	28.5		
July	44.6		
August	69		
September	134.2		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	65416	Gross irrigated area:	81637
Net Rainfed area	68045	Gross rainfed area	69523

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	14334	18416
Wells	48772	60672
Tanks	2310	2549
Other sources	-	-

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	31866	31860	6
2	Jowar	18119	279	17840
3	Maize	20964	1650	19314
4	Bajra	101	64	37
5	Ragi	10	8	2

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	1011	193	818
2	Groundnut	6270	1686	4584
3	Sesamum	1735	1490	245
4	Soyabean	-		
5	Sunflower	350	164	186
6	Castor	480		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	9625	562	9063
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	1694	1668	26
2	Tobacco	-		
3	Guar seed	-		1096
4	Other Fodder crops	1412	316	1096

District: Tiruchirapalli
Rainfed condition

Crop Plan- Beginning of the season

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Early season drought (delayed onset)	Red, Black and laterite soils	Groundnut (TMV 7, VRI 2, CO 2) + redgram (APK 1, VBN (RG) 3)	No change	In situ SWC measures in fallow: opening up of ridges and furrows Spraying 0.5% Potassium chloride during flowering and pod development stages will aid to mitigate the ill effects of drought.	Linkage with NREGA for SWC measures; Agro industry Schemes for Ridger, bund former, MB plough through state Department of Agriculture
		Cluster bean / Bhendi	No change		

Mid-season drought

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Crop management	Soil nutrient and moisture conservation measures	Remarks on Implementation
At vegetative stage	Red, Black and laterite soils	Groundnut (TMV 7, VRI 2, CO 2) + redgram (APK 1, VBN (RG) 3)	Thinning of 33-50 % population	Opening of conservation furrows at an interval of 15-20 m	
		Cluster bean / Bhendi	Repeated intercultivation and weeding	Mulching	
		Sorghum / millets + pulses/ gingelly/ cucurbits		Antitranspirant spray (Spraying 1 % KCl)	
		Fodder sorghum / minor millets / fodder / coriander			
At reproductive stage	Red, Black and laterite soils	Groundnut (TMV 7, VRI 2, CO 2) + redgram (APK 1, VBN (RG) 3)	Thinning, Life saving irrigation from rain water harvest ponds, Weeding and Weed mulching Harvest for fodder purpose Anti transpirant spray Harvesting at physiological maturity	1 % KCl spray will give drought tolerance	Opening of farm ponds through IWMP and NREGS as a long term drought proofing measure.
		Cluster bean / Bhendi	Life saving irrigation if available. Weeding and Weed mulching Harvest for fodder purpose	Mulching Antitranspirant spray Spraying 1 % KCl	Opening of farm ponds through IWMP and NREGS as a long term drought proofing measure.
		Sorghum / millets + pulses/ gingelly/ cucurbits	Harvest for fodder purpose and rationing with subsequent rains		
		Fodder sorghum / minor millets / fodder / coriander	Could be harvested for fodder purpose		

Terminal drought

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
Terminal drought			Crop management	Soil nutrient and moisture conservation measures	Remarks on Implementation
	Red, Black and laterite soils	Groundnut (TMV 7, VRI 2, CO 2) + redgram (APK 1, VBN (RG) 3)	Life saving irrigation if available Harvest at physiological maturity stage		Opening of farm ponds through IWMP and NREGS as a long term drought proofing measure.
		Cluster bean / Bhendi	Life saving irrigation		
		Sorghum / millets + pulses/ gingelly/ cucurbits			
		Fodder sorghum / minor millets / fodder / coriander			

Irrigated situation

Condition					Suggested Contingency measures				
	Major Farming situation	Crop/cropping system			Change in crop/cropping system			Agronomic measures	Remarks on Implementation
Delayed/ limited release of water in canals due to low rainfall	Alluvial soils	Kharif	Rabi	Summer	Kharif	Rabi	Summer	1.Limited irrigation 2. Alternate furrow irrigation/ drip irrigation for upland crops In case of aged rice seedling, to encourage the tiller production, enhance the basal N application by 50% from the Recommended and thereafter follow the normal schedule recommended for other stages. In canal command area, conjunctive use of surface and ground water may be resorted to for	1.Seeds through NSC and NFSM
		Rice ADT 36, IR 50, IR 64, ASD 16, ADT 37, ASD 18, ADT 42, ADT 43, CO 47, ADT (R) 45 TRY (R)2*, ADTRH 1, ADT (R) 47	Rice IR20, White Ponni, ADT39, CO43, TRY1, ASD19, ADT(R)46,	pulses / gingelly	Maize (CO 1, COH (M) 4, COH (M) 5, COBC 1/ Pulses (Black gram T 9, VBN 1, VBN 2, VBN 3, VBN(Bg) 4) (Green Gram CO 4, CO 6, KM 2, Paiyur 1, VBN 1, VBN(Gg) 2)/ Vegetables	Rice IR20, White Ponni, ADT39, CO43, TRY1, ASD19, ADT(R)46	Pulses/ cotton (MCU 7, SVPR 3, Anjali)/ gingelly (TMV 3, TMV 4, TMV 6, CO 1, VRI(SV) 1, SVPR 1, VRI(SV) 2)/ sunflower		

Condition					Suggested Contingency measures				
	Major Farming situation	Crop/cropping system			Change in crop/cropping system			Agronomic measures	Remarks on Implementation
								Judicious use of water. For cotton, KCI 1% spray, twice on 50 and 70 DAS for delayed sowing (first fortnight of March) of summer irrigated cotton	
		Sugarcane- ratoon sugarcane (Two years rotation) (varieties based on factories requirements)			No change			Alternate Furrow irrigation Drip irrigation Trash mulching	-

Condition	Major Farming situation	Crop/cropping system			Suggested Contingency measures				
Non release of water in canals under delayed onset of monsoon in catchment					Change in crop/cropping system			Agronomic measures	
	Alluvial soils	Kharif	Rabi	Summer	Kharif	Rabi	Summer	1.Limited irrigation 2.Alternate furrow irrigation/ drip irrigation for upland crops 3.In canal command area, conjunctive use of surface and ground water may be resorted to for judicious use of water.	1.Seeds through NSC and NFSM
		Rice	Rice	pulses / gingelly	Maize / vegetables/ pulses/ sesame/ green manures	Rice / upland rice	Pulses / senna		
		-	Rice / groundnut	Gingelly	Coleus / Vincea rosea/ senna		1Limited irrigation 2 Alternate furrow irrigation/ drip irrigation for upland crops 3. For groundnut Sprinkler irrigation will save water to the tune of about 30%.Borderstrip irrigation is recommended in command areas in light textured soils. Composted coir pith increases moisture availability and better drainage in heavy textured soil.		

		Sugarcane- ratoon sugarcane (Two years rotation)	No change	Soak the setts in lime solution (80 kg Kiln lime in 400 lit) for one hour. ii. Plant in deep furrows of 30 cm depth. iii. Spray potash and urea each at 2.5 per cent during moisture stress period at 15 days interval. iv. Spray Kaolin (60 g in 1 ltr. of water) to alleviate the water stress. v. Under water scarcity condition, alternate furrow and skip furrow method of irrigation is advised.. vi. Apply 125 kg of MOP additionally at 120 day of planting. vii. Basal incorporation of coir waste @ 25 tonnes/ha at the time of last ploughing. viii. Removal of dry trash at 5th month and leave it as mulch, in the field. ix. Mulching x. Antitranspirant spray	-
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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	Alluvial soils	Kharif	Rabi	Summer	Kharif	Rabi	Summer	1.Limited irrigation 2. Alternate furrow irrigation/ drip irrigation for upland crops 4. For rice, 3.Spray Cycocel 1000 ppm (1 ml of commercial product in one lit. of water) under water deficit situations to mitigate ill-effects. 4.Foliar spray of Kaolin 3% or KCl 1% to overcome moisture stress at different physiological stages of rice.	1.Seeds through NSC and NFSM
		Rice	Rice	pulses / gingelly	Fallow	Rice / upland rice	Pulses / senna		
		-	Rice / groundnut	Gingelly	Coleus / <i>Vincea rosea</i> / senna			1Limited irrigation 2. Alternate furrow irrigation/ drip irrigation for upland crops 3.Trash mulching Composted coir pith increases moisture availability and better drainage in heavy textured soil.	Do
		Sugarcane- ratoon sugarcane (Two years rotation)			No change			Soak the setts in lime solution (80 kg Kiln lime in 400 lit) for one hour. ii. Plant in deep furrows of 30 cm depth. iii. Spray potash and urea each at 2.5 per cent during moisture stress period at 15 days interval. iv. Spray Kaolin (60 g in 1 ltr. of water) to alleviate the water stress.	-

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
				v. Under water scarcity condition, alternate furrow and skip furrow method is beneficial. vi. Apply 125 kg of MOP additionally at 120 day of planting. vii. Basal incorporation of coir waste @ 25 tonnes/ha at the time of last ploughing. viii. Removal of dry trash at 5th month and leave it as mulch, in the field.	

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	Well/ Tube well red, laterite, black and alluvial soils	• Rice (Aug. – Jan.)- Groundnut (Jan- April) • Vegetables (June – Sep.)- rice (Oct. – Feb.) • Banana (Jan- Dec.)- Ratoon banana (Jan- Dec) – rice (Dec. – April) • Vegetables / onion (June- sep.) – rice (Oct. – Jan.)- maize/ pulse (Feb- April) • Rice (Aug. – Jan.) - Groundnut (Jan.- April)	• Maize (Aug.-Dec.) – Sesame / soybean (Dec. – Mar.) • Fodder / pulses/ Green manure (Aug. – Dec.)- Gingelly / groundnut/ sunflower/ sorghum / pearl millet (Dec. – Mar.) • Clusterbean/Lab-Lab/ Bhendi(July- Dec.) – Water melon/ cluster bean / Cucumber (Jan- April)	1.Limited irrigation 2. Alternate Furrow irrigation 3. Drip irrigation 4. Mulching 5. Antitranspirant spray	-
Any other condition (specify)					

Actionable Comprehensive Plans for Contingency

State	TAMIL NADU	District	TIRUVALLUR
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	463.7	More than 19%	Less than 375.597
June	71.8		
July	103.9		
August	123.4		
September	164.6		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	85779	Gross irrigated area:	146503
Net Rainfed area	1788	Gross rainfed area	1788

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	14	14
Wells	76107	132805
Tanks	9658	13684
Other sources	-	-

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	50845	50845	0
2	Jowar	1	1	0
3	Maize	6	6	0
4	Bajra	352	352	0
5	Ragi	166	166	0

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	3	3	0
2	Groundnut	6272	6272	0
3	Sesamum	2604	2604	0
4	Soyabean	71	71	0
5	Sunflower	-		
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	-		
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	4425	4425	0
2	Tobacco	-		
3	Guar seed	-		0
4	Other Fodder crops	1	1	0

District: Tiruvallur
Rainfed condition

Crop Plan- Beginning of the season

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delay by 4 weeks July 1st week	Laterite and red soil	Dry rice (June-Aug) Ground nut (June-Sep) Gingelly (Oct –Feb)	Maize/sunflower/groundnut Tapioca+ Groundnut Groundnut/Gingelly	Making field free of weeds for full utilization of water and nutrient Adopt higher seed rate Adopt Seed hardening	

Contingency measures- Mid season

Condition			Suggested Contingency measures		
Early season drought (Normal onset, followed by 15-20 days dry spell after sowing leading to poor germination /crop stand etc.)	Major Farming situation	Crop/cropping system	Crop management	Soil management	Remarks on Implementation
	Laterite and red soil	Dry rice (June-Aug)	Timely weeding		
		Groundnut (June-Sep) Gingelly (Oct –Feb)	Re -sowing	Frequent Interculture	
Mid season drought (long dry spell)	Major Farming situation	Crop/cropping system	Crop management	Soil management	Remarks on Implementation
Vegetative stage	Laterite and red soils	Paddy	Three splits 25kg N and 12.5 kg K at 22-25, 40-45 and -65 day can be adopted Regular monitoring of the crop for pest and disease Timely weed management to conserve soil moisture	Keep the field bund clean to minimize pest and disease attack	Awareness creation on crop/soil management techniques

		Groundnut+ Redgram (7:1) intercropping system	Protection from Thrips transmitted BND and PSND	Mulching with groundnut shells (1ton/acre)	
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Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	Major Farming situation	Crop/cropping system	Crop management	Soil management	Remarks on Implementation
At reproductive stage	Laterite and red soils	Paddy	Foliar spray of 1% urea + 2% DAP + 1% KCL at panicle initiation and 10days later may be taken up for enhancing the rice field, if sufficient soil moisture is ensured		
		Groundnut+ Redgram (7:1)	Regular monitoring of the crop for pest and disease Spray Urea @ 20g/litre of water at 35,45 and 65days after sowing Repeated inter cultivation		

Contingency measures- End of the season

Condition			Suggested Contingency measures		
Terminal drought	Major Farming situation	Crop/cropping system	Crop management	Rabi Crop planning	Remarks on Implementation
	Laterite and red soils	Paddy	Harvest the crop when 80% of the panicles are ripened	Tied ridges to conserve rainwater during <i>kharif</i> for regular sowing of <i>rabi</i> crops	
		Groundnut+ Red gram intercropping system	Use mobile sprinkler to maintain optimum soil moisture		

Irrigated situation

Condition			Suggested Contingency measures
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	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	Tank fed red soils and Tank fed black soils	paddy	Blackgram and Greengram are	Irrigation at critical stages Field should be properly leveled for uniform distribution of water	Linkage with NFSM /ISOPOM for seed supply
		Paddy	Short duration varieties	-	-
		Groundnut (Jan- April) TMV Pollachi red+ Redgram (LRG 30) intercropping (7 :1) Pearl Millet	Normal Season cropping system TMV 2 POL 1 TAG 24 Normal season cropping system KM 2, ICMU 221	Normal sowing are done Soil Test based fertilizer recommendation Normal sowing - broadcast	Under ISOPOM project certified seed of groundnut varieties can be sourced from ORS, Tindivanam/state department supply Under ICDP project certified seeds of pearl millet can be sourced from department

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	Bore well irrigated red soils and black soils	Groundnut and Sunflower	No change	Wherever economically viable, mulching should be practiced in between crop rows using locally available mulch material	-

Actionable Comprehensive Plans for Contingency

State	TAMIL NADU	District	TIRUVANNAMALAI
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	450.5	More than 19%	Less than 364.905
June	60.4		
July	90.7		
August	121.4		
September	178		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	189658	Gross irrigated area:	290912
Net Rainfed area	42805	Gross rainfed area	53833

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	-	-
Wells	178968	274088
Tanks	10690	16824
Other sources	-	-

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	75979	75979	0
2	Jowar	12	8	4
3	Maize	3609	3504	105
4	Bajra	1786	453	1333
5	Ragi	2203	2018	185

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	832	489	343
2	Groundnut	61724	42099	19625
3	Sesamum	1308	1298	10
4	Soyabean	-		
5	Sunflower	21	21	0
6	Castor	3		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	750	750	0
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	16045	16045	0
2	Tobacco	-		
3	Guar seed	-		0
4	Other Fodder crops	53	53	0

District: Tiruvannamalai
Rainfed condition

Crop Plan- Beginning of the season

Condition	Major Farming situation	Normal Crop /cropping system	Suggested Contingency measures		
Early season drought (delayed onset)			Change in crop/cropping system	Agronomic measures	Remarks on Implementation

Delayed by 4 weeks (July 1st week)	Red, laterite and heavy clay soils	- Groundnut / Maize (June-Sep.) - Gingelly (June-Sep.)	Pearl millet / horsegram / minor millets	<u>Pearl millet</u> Use short duration drought resistant varieties Seed hardening with 2 % potassium chloride Dust mulching by inter cultivation operations If failure of Maize/pearl millet, sesame may be sowing Re-sowing with fodder (fodder can be harvested at any stage keeping in view sowing of the next season)	-
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Rabi season

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
Early season drought (delayed onset of NE Monsoon)			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delayed by 4 weeks November 1 st week	Red, laterite and heavy clay soils	- Groundnut / Pulses / F ingermillet (Oct.-Feb.) - Gingelly (Oct.-Feb.) - Groundnut (Oct.-Feb.)	Pearl millet / Horsegram /minor Millets / Pulses (Oct.- Jan.)	<u>Pearl millet</u> Usage of short duration drought resistant varieties Seed hardening with 2 % potassium chloride Dust mulching by intercultivation In case of failure of Maize/ Pearl millet, Sesamum may be sown <u>Pulses</u> Seed hardening with 100 ppm of Zinc Sulphate and 100 ppm of Manganese Sulphate (Blackgram and Greengram) Seed hardening with 100ppm of Zinc Sulphate (Red gram) Seed hardening with 1% Potassium Dihydrogen Phosphate (Bengalgram) Re-sowing with fodder (fodder can be harvested at any stage keeping in view sowing of the next season)	Linkage with NFSM for supply of seed

Contingency measures- Mid season

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Crop management	Soil management	Remarks on Implementation
Early season drought (Normal onset, followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.)	Red, laterite and heavy clay soils	Groundnut / Maize (June-Sep) Groundnut (June-Sep.) Gingelly (June-Sep.)	Re-sow with subsequent rain rather than allowing sub-optimal poor plant stand or Gap filling	In-situ moisture conservation with locally available materials	Linkage with NFSM for supply of seed
Mid season drought (long dry spell) At vegetative stage			Anticipating the prolonged dry spell Follow Intercropping (Companion cops – green gram, cowpea) Foliar spraying of nutrient / top dressing with fertilizer	Frequent inter culture operation to facilitate effect of loose soil as dust mulch Irrigation with rain gun or mobile sprinklers from farm ponds	
Mid season drought (long dry spell) At reproductive stage			Thinning	Frequent interculture operation to facilitate effect of loose soil as dust mulch Irrigation with rain gun or mobile sprinklers with available water	
Terminal drought			If necessary, harvest at physiological maturity	Supplemental irrigation if available	

Rabi Season

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Crop management	Soil management	Remarks on Implementation
Early season drought (Normal onset, followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.)	Red, laterite and heavy clay soils	- Groundnut / pulses /finger millet (Oct.-Feb.) - Gingelly (Oct.-Feb.)	Re-sow with subsequent rain rather than allowing sub-optimal poor plant stand to persist	In-situ moisture conservation with locally available materials Irrigation with rain gun or mobile sprinklers with available water	-
Mid season drought (long dry spell) At vegetative stage			Anticipating the prolonged dry spell follow Inter-row cropping (Companion – green gram, cowpea) Foliar spraying of nutrient/ top dressing with fertilizer is done	Frequent inter culture operation to facilitate effect of loose soil as dust mulch Irrigation with raingun or mobile sprinklers with available water	
Mid season drought (long dry spell) At reproductive stage			Reduction of moisture stress by thinning the crops	Frequent inter culture operation to facilitate effect of loose soil as dust mulch	
Terminal drought			-	Supplemental irrigation to save crop	

Contingency measures- End of the season

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Crop management	Soil management	Remarks on Implementation
Terminal drought	Red, laterite and heavy clay soils	Groundnut / Maize (June-Sep) Groundnut (June-Sep.) Gingelly (June-Sep.)	If necessary, harvest at physiological maturity	Supplemental irrigation if available	Linkage with NFSM for supply of seed

Rabi Season

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Crop management	Soil management	Remarks on Implementation
Terminal drought	Red, laterite and heavy clay soils	• Groundnut / pulses /finger millet (Oct.-Feb.) • Gingelly (Oct.-Feb.)	-	Supplemental irrigation to save crop	-

Irrigated situation

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures	
			Changes in Crop/Cropping system	Agronomic measures

Delayed/ limited release of water in canals due to low rainfall	Command areas (Sathanur) Heavy clay and sandy soils	Rice/Maize (Aug.-Jan) – Pulses/Gingelly (Jan. –Apr.)	Groundnut/Maize (Aug. – Dec.) – Pulses (Jan.- Apr.)	<u>Rice</u> Use of short duration drought resistant varieties Upland rice/aerobic rice/SRI/Semi-dry rice cultivation Use of pre-emergence herbicide Additional dosage (25%) of recommended N Spray of potassium chloride <u>Pulses</u> Seed hardening with 100ppm of Zinc Sulphate and 100 ppm of Manganese sulphate (Black gram and green gram) Seed hardening with 100ppm of Zinc Sulphate (Red gram) Seed hardening with 1% Potassium Dihydrogen Phosphate (Bengal gram) <u>Groundnut</u> Seed treatment with 0.5 % Calcium chloride Irrigation at pegging, flowering and pod development stage 0.5 % potassium chloride spray during flowering and pod development stages to alleviate water stress Apply composted coir pith to soil for better water retention <u>Maize</u> Irrigation at 75 % available soil moisture Depletion (ASMD) Irrigation at critical stages (40 to 65 DAS) Skip irrigation at seedling, knee high and dough stages under water scarce situation Gingelly Life saving irrigation at 7DAS Irrigation at critical stages of moisture requirement - flowering stage (35-45 DAS)
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Non release of water in canals under delayed onset of monsoon in catchment		Rice/Maize (Aug.-Jan) – Pulses/Gingelly (Jan. –Apr.)	Pearl millet/Sorghum/fodder (Oct.-Jan.) Cluster bean/Vegetable beans (Oct.-Jan.) in heavy soils	<u>Rice</u> Use of short duration drought resistant varieties Upland rice/aerobic rice/SRI/Semi-dry rice cultivation Perfect leveling of main field Shallow water depth at the time of planting (2cm) Use of pre-emergence herbicide Additional dosage (25%) of recommended N to make good volatilization loss of N Top dressing of Potassium <u>Maize</u> Irrigation scheduled at 75 % available soil moisture Depletion (ASMD) Irrigation done during the critical phase (40 to 65 DAS) Skipping irrigation at seedling, Knee high and dough stages followed under water scarce situation <u>Pearl millet</u> Use of short duration drought resistant varieties Seed hardening with 2 % potassium chloride Irrigation at crop critical growth phases (Heading and flowering) Dust mulching by intercultivation operations If failure of Maize/pearl millet, sesame may be sown (low seed requirement) <u>Sorghum</u> Seed hardening with 2 % potassium chloride <u>Vegetables</u> Drip irrigation and fertigation Mulching soil surface with organic materials and clean cultivation Growing vegetable such as cluster bean, cowpea, lab lab bean, radish, peas which can sustain with less amount of water Enhancing cucurbitaceous vegetables by raising nursery in Polythene bags followed by transplanting in order to save 2-3 irrigations Sowing/planting cucurbitaceous vegetable adopting hill and channel system to economise water <u>Fodder crop</u> Life irrigation Raingun can be effectively used for irrigation with a water saving of 25-30%
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Lack of inflows into tanks due to insufficient /delayed onset of monsoon		Rice/Maize (Aug.-Jan) – Pulses/Gingelly (Jan. –Apr.)	Pearl millet/Sorghum/fodder (Oct.-Jan.) Cluster bean/vegetable beans (Oct.-Jan.) in heavy soils	-do-
Insufficient groundwater recharge due to low rainfall	Red and laterite soils (Well irrigated areas)	• Rice (Aug.-Jan.) - groundnut (Feb.-April) - gingelly (Apr. - June) • Sugarcane (Dec.-Jan.) - ratoon sugarcane (Jan.-Nov.) - rice (Dec.-May) - groundnut (June-Sep.) – 3 years rotation • Vegetables (June-Oct.) - maize (Oct.-Jan.) - cotton / pulses (Feb.-May) • Maize (June-Sep.) – marigold (Oct.-Feb.) - pulses (Feb.-May) • Vegetables (Jun.-Sept.) – sugarbeet (Sept.-Feb) – pulses (Feb-May) • Groundnut (Jun-Sept) – sugarbeet (Sept.-Feb) – Sweet sorghum* (Feb-May) • Groundnut (Jun-Sept.) –	- Vegetables (May-July) - Maize/Sunflower (Aug.-Dec.) - Pearl millet / Groundnut / Gingelly/ (Jan.-April) • Groundnut (Jun-Sept) – (Sept. sowing) • Maize (Jun-Sept) – Sugarbeet (Sept.-Feb) – pulses (Feb-Apr) • Pearl millet / Sorghum / <i>Periwinkle</i>/ Senna (July-Oct.) - Wheat (Nov.-Feb.) - Cluster bean / lab lab / Bhendi / Water melon (Feb.-May)	<u>If Sugarcane is still taken up, follow:</u> Drip irrigation & fertigation (25-30 % water saved) Planting setts at 150cm (super factory model) Alternate furrow irrigation and broad bed furrow method Skip furrow irrigation (clay and loam soils) Sugarcane trash mulching/dust mulching through inter cultivation operation Alternate furrow should be skipped and may be converted to ridges having a wider bed. Short duration crops like pulses can be raised in wider bed without excessive irrigation Intercultural operations may be undertaken to create dust mulch Irrigation at critical stages of crop growth Weed control through herbicides/weeds may be cut and used as surface mulch to conserve soil moisture Earthing up operation also could be taken If poor growth main crop can be harvested and maintained as ratoon (harvested crop may used seed cane) Spray of 2.5 % urea with 2.5 % KCl or MOP may be useful in areas where some soil moisture is available. This will impart drought tolerance to plants <u>Rice</u> Seed treatment with seed hardening chemicals Upland rice/aerobic rice/SRI/Semi-dry rice cultivation Additional dosage (25%) of recommended N Top dressing of potassium Spray anti-transpirants Spray of potassium chloride <u>Vegetables</u> Drip irrigation and fertigation Mulching soil surface with organic materials and clean cultivation Growing vegetable such as cluster bean, cowpea, lab lab bean, radish, peas which can sustain with less amount of water Enhancing cucurbitaceous vegetables by raising nursery in Polythene bags followed by transplanting in order to save 2-3 irrigations Sowing/planting cucurbitaceous vegetable adopting hill and channel system to economise water <u>Maize</u> Irrigation will be scheduled at 75 % available soil moisture Depletion (ASMD) Irrigation will be done during the critical phase (40 to 65 DAS)

		Jatropha* (Sept. sowing)		Skipping irrigation at seedling, Knee high and dough stages may be followed under water scarce situation <u>Pearl millet</u> Usage of short duration drought resistant varieties Seed hardening with 2 % potassium chloride Irrigation at crop critical growth phases (Heading and flowering) Dust mulching by intercultivation operations If Maize / Pearl millet fail, Sesame may be sown (low seed requirement) <u>Sorghum</u> Seed hardening with 2 % potassium chloride <u>Groundnut</u> Irrigation at critical stages pegging, flowering and pod development stage 0.5 % potassium chloride spray during flowering and pod development stages will aid to mitigate the ill effects of water stress Coir pith compost increase moisture availability and better drainage in heavy textured soil is required Seed treatment with 0.5 % Calcium chloride <u>Gingelly</u> Life saving irrigation at 7DAS Critical stages for moisture requirement is flowering phase (35-45 DAS) <u>Sunflower</u> Skip/alternate furrow irrigation under water scarce condition Seed treatment with 2% of potassium chloride solution
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Actionable Comprehensive Plans for Contingency

State	TAMIL NADU	District	VELLORE
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	431.3	More than 19%	Less than 349.353
June	64.9		
July	94.3		
August	105.7		
September	166.4		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	21937	Gross irrigated area:	32355
Net Rainfed area	28574	Gross rainfed area	32944

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	1	1
Wells	21930	32348
Tanks	6	6
Other sources	-	-

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	2644	2644	0
2	Jowar	2733	-	
3	Maize	393	392	1
4	Bajra	239		239
5	Ragi	1195	1067	128

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	3290		3290
2	Groundnut	15544	2566	12978
3	Sesamum	6	3	3
4	Soyabean	-		
5	Sunflower	-		
6	Castor	16		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	26		26
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	1247	1242	5
2	Tobacco	-		
3	Guar seed	-		151
4	Other Fodder crops	235	84	151

District: Vellore
Rainfed condition

Crop Plan- Beginning of the season

Condition	Kharif season		Suggested Contingency measures		
	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Early season drought (delayed onset) Delay by 4 weeks July 1st week	Red and laterite soils	Pearl millet / Sorghum (June-Sep.) Gingelly (June-Sep.) Groundnut (June-Sep.)	Ragi/ Maize / Sunflower/ Groundnut	Seed hardening Wider spacing Inter cultivation Thinning Maize Spraying of Potash (0.25%) during early stage of the crop	NFSM for seed supply

Mid-season drought

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Crop management	Soil management	Remarks on Implementation
Mid season drought (long dry spell)					
At vegetative stage	Red and laterite soils	Pearl millet / Sorghum (June-Sep.) Gingelly (June-Sep.) Groundnut (June-Sep.)	Supplementary Irrigation through rain gun, siphon irrigation Water spraying Spraying of Drought tolerance chemicals/ growth regulators	Mulching Weeding	IEC materials may be issued to the farming community
At reproductive stage	Red and laterite soils	Pearl millet / Sorghum (June-Sep.) Gingelly (June-Sep.) Groundnut (June-Sep.)	Grain crop may be converted into fodder crop	-	Farmers may be advised to take suitable measures during mid-season drought through radio

Terminal drought

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Crop management	Rabi Crop planning	Remarks on Implementation
Terminal drought					
		Pearl millet / Sorghum (June-Sep.) Gingelly (June-Sep.) Groundnut (June-Sep.)	Crop can be used as fodder	Crop residues may be ploughed back for the next crop	IEC materials may be issued on terminal drought management. Mass media may be used

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	Heavy clay and red soils	Paddy	Black gram / Green gram/ Maize SRI Paddy Cultivation	Alternate wetting and drying and Inter cultivation	

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	Heavy clay and red soils	Black gram Green gram	No change	Mulching / Inter cultivation	ISOPOM / NFSM for seed supply

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	Heavy clay and red soils	Rice/ Vegetables (Aug. – Jan.)- Pulses (Dec-Jan.)	Wheat/ Fodder (November – Feb.) Pulses/Ragi/maize (Feb-May)	Mulching and Inter cultivation	Awareness creation through mass media

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	Bore well irrigated red and laterite soils	Groundnut (June-Sept) Maize (June-Sept) Vegetables (June-Oct)	Sorghum / Pearl Millet / Ragi / senna (July-Oct)-Wheat (Nov-Feb)-Vegetables (Feb-Mar)	Mulching Water harvesting and Recycling	-
Any other condition (specify)	-	Maize (Oct-Jan) – Pulses (Feb-Mar) Rice (Aug-Jan)- Groundnut (Feb-April)- Sesame/Pulses/maize (April-June)	-	-	-

Actionable Comprehensive Plans for Contingency

State	TAMIL NADU	District	VILLUPURAM
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	395	More than 19%	Less than 319.95
June	52.7		
July	81.6		
August	115		
September	145.7		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	128706	Gross irrigated area:	161477
Net Rainfed area	51165	Gross rainfed area	61290

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	870	907
Wells	109261	140233
Tanks	18575	20337
Other sources	-	-

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	57528	56138	1390
2	Jowar	48	46	2
3	Maize	981	962	19
4	Bajra	9042	1345	7697
5	Ragi	227	226	1

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	-		
2	Groundnut	24856	11930	12926
3	Sesamum	1869	1318	551
4	Soyabean	4	4	0
5	Sunflower	-		
6	Castor	18		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	135	127	8
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	14740	14719	21
2	Tobacco	-		
3	Guar seed	-		0
4	Other Fodder crops	7	7	0

District: Villupuram
Rainfed condition

Crop Plan- Beginning of the season

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delay by 4 weeks (July 1 st week)	Red and Red loamy soils	Groundnut – Blackgram and Pearl millet - Gingelly	1) Raising Short duration varieties Groundnut - TMV (Gn) 13, VRI 2 & TMV 7 Blackgram – VBN 4 & VBN 5 and Gingelly - TMV 6 & TMV 3	1.Spray 0.5 % KCI spray during flowering and pod development stage 2.Mechanical sowing with tractor drawn seed drills. 3. Intercropping 4. Thinning 5. Mulching 6.Soil and moisture conservation practices for Rabi sowing 7. Spray anti-transpirants.	Awareness through mass media like Television, Newspaper and Radio

Contingency measures- Mid season

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
Mid season drought (long dry spell)			Crop management	Soil management	Remarks on Implementation
At vegetative stage	Red and Red loamy soils	Groundnut – Blackgram Pearl millet - Gingelly	No Change	1. Inter cultivation 2. Conservation Furrow 3.Thinning	Awareness through mass media like Television, Newspaper and Radio
At reproductive stage					

Contingency measures- End of the season

Condition			Suggested Contingency measures		
Terminal drought	Major Farming situation	Crop/cropping system	Crop management	Rabi Crop planning	Remarks on Implementation
	Red and Red loamy soils	Groundnut – Blackgram and Pearl millet - Gingelly	Supplementary Irrigation through mobile sprinkler or rain gun	Timely raising of rabi crops	Awareness through mass media like Television, Newspaper and Radio

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	Clay and clayey loam soils	Paddy – Paddy Paddy - Sugarcane	1) Short duration ADT 42 & ADT 39 2) Raising Pulses particularly Blackgram – VBN 4 & VBN 5 3) Sugarcane – Decline in Area of cultivation and raising pulses particularly Blackgram - VBN 4 & VBN 5	Paddy: 1. Raise Rice crop in semi dry condition 2. Spray Cycocel @ 1000 ppm 3. Foliar spray of Kaolin 3 % or KCl 1 %. 4. Split application of K ie. 50 % at basal and 25 % each at tillering and panicle initiation stage. Sugarcane: 1. Soaks setts in ethereal 200 ppm or lime solution for an hour 2. Spray Potash and Urea each at 2.5 % during stress period at 15 days interval 3. Spray Kaolin General: a) Skip row irrigation b) Microirrigation c) Limited area irrigation d) Mulching	Awareness through mass media like Television, Newspaper and Radio

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	Clay and clayey loam soils	Paddy – Paddy	Raising Pulses particularly Blackgram - VBN 4 & VBN 5	Spray 2 % DAP at the time of flowering and	Awareness through mass media like Television,

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
delayed onset of monsoon in catchment		Paddy - Sugarcane		second spray 15 days after first spray & 2. Spray NAA 40 PPM twice (First appearance of flowering and after a fortnight)	Newspaper and Radio

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	Clay and clayey loam soils	Paddy – Paddy	Raising Green Manure crops like Daincha, Sunhemp and Kolingi	In situ residue mulching	In tie up with the Dept. of Agriculture and Dept. of Agricultural Engineering
		Paddy - Sugarcane			

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	Clayey loam soils	Paddy – Paddy	Raising Green Manure crops like Daincha, Sunhemp and Kolingi	In situ residue mulching	In tie up with the Dept. of Agriculture and Dept. of Agricultural Engineering
		Paddy - Sugarcane			

Promising Climate Resilient Technologies for high-risk prone districts of Tamil Nadu (Ramanathapuram, Perambalur and Villupuram)

1. Farm ponds and check dams for water harvesting and supplemental irrigation to kharif and rabi crops
2. In-situ moisture conservation: Poly mulching in vegetables, summer deep ploughing in groundnut, green gram and black gram to improve water use efficiency
3. In-situ moisture conservation technologies such as BBF, ridge and furrow and mulching to conserve moisture for longer period
4. Alternate Wetting and Drying method of irrigation using Pani Pipe for paddy cultivation to manage drought
5. Resilient Intercropping Systems of groundnut + red gram (TMV13 + VBN3) (6:1)
6. Crop diversification with finger millet CO15 to overcome the dry spells with assured income

7. Short duration mung bean, Yellow Mosaic Virus resistant black gram variety VBN11 and green gram variety Co-8
8. TNAU crop booster application @ 2kg acre⁻¹
9. Brinjal varietal diversification with PLR2
10. Establishment of silage units with COBN5 for availability of feed during lean season
11. Improved poultry breed Nandanam-2 rearing with enhanced net income
12. Supplementation of mineral and vitamin mixture during lean season to reduce vitamin deficiency and increase milk production

Actionable Comprehensive Plans for Contingency

State	TAMIL NADU	District	VIRUDHUNAGAR(KAMARA*)
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	196.4	More than 19%	Less than 159.084
June	20.2		
July	35.4		
August	43		
September	97.8		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	56805	Gross irrigated area:	64729
Net Rainfed area	79143	Gross rainfed area	80471

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	-	-
Wells	31196	33876
Tanks	25609	30853
Other sources	-	-

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	23827	21908	1919
2	Jowar	1748	250	1498
3	Maize	38288	8418	29870
4	Bajra	1439	25	1414
5	Ragi	24	3	21

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	399		399
2	Groundnut	3074	560	2514
3	Sesamum	1352	38	1314
4	Soyabean	-		
5	Sunflower	2815	19	2796
6	Castor	71		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	16339	1290	15049
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	1246	920	326
2	Tobacco	-		
3	Guar seed	-		1250
4	Other Fodder crops	1612	362	1250

District: Viruthunagar
Rainfed condition

Crop Plan- Beginning of the season

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 (1 st week of July)	Vertisols	Cotton + Pulses	Cotton (KC 3)	Seed hardening- (18 hrs. soaking in water followed by 24 hrs. shade drying) Sowing with Seed drill	Linkage with state Department of Agriculture
	Alfisols	Sorghum + Cowpea/lablab	Pearlmillet (CO (Cu) 9)		

Contingency measures- Mid season

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
Mid season drought (long dry spell)			Crop management	Soil management	Remarks on Implementation
At vegetative stage	Vertisols	Cotton + Pulses/Lablab Red gram, Black gram, Green gram Fodder sorghum/ Sorghum + Red gram / lablab	Life saving irrigation using microirrigation system 1% KCl spray 3% Kaolin spray 100ppm Salicylic acid Water spray	Intercultivation (soil mulching) Conservation Furrowat intervals Tied ridging Recommended doses of FYM 12.5 t/ha and Coirpith compost 12.5	Linkage with state Department of Agriculture
	Alfisols	Groundnut + Redgram Maize			

Mid season drought (long dry spell)	Major Farming situation	Normal Crop/cropping system	Crop management	Soil management	Remarks on Implementation
At reproductive stage	Vertisols	Cotton + Pulses/Lablab Redgram (Co5, Co6, Black gram (Co5, Co6, VBN 3, VBN 4, K1) Green gram (VBN 4, Co 6) Fodder sorghum/ Sorghum + Redgram/lablab	Life saving irrigation using microirrigation system 1% KCl spray 3% Kaolin spray 100ppm Salicylic acid Water spray	—	Linkage with state Department of Agriculture
	Alfisols	Groundnut + Redgram Maize			

Contingency measures- End of the season

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
Terminal drought			Crop management	Soil management	Remarks on Implementation
	Vertisols	Cotton + Pulses/Lablab Redgram (Co5, Co6, Black gram (Co5, Co6, VBN 3, VBN 4, K1) Green gram (VBN 4, Co 6) Fodder sorghum/ Sorghum + Redgram/lablab	Life saving irrigation using microirrigation system Harvest at physiological maturity stage	-	Linkage with state Department of Agriculture
	Alfisols	Groundnut + Redgram Maize			

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 tank/tube well / black soil	Paddy (sub merged condition)	SRI method of rice cultivation Maize Chillies	Alternate wetting and drying method of irrigation Limited irrigation with mulching Drip irrigation with residue mulching	Linkage with state Department of Agriculture
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	Low land tank/ tube well/ canal irrigated black soil	Paddy (sub merged condition)	Green manure (Sunnhemp) Horsegram	-	Linkage with state Department of Agriculture

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	Low land tank/ tube well canal irrigated black soil	Paddy (sub merged condition)	Rainfed maize, pulses and greenmanure	2% DAP spray for pulses Conservation Furrow Thinning Soil test based integrated nutrient management Recommended doses of FYM 12.5 t/ha and Coir pith compost 12.5 t/ha	Linkage with state Department of Agriculture

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 and open well black soil	Paddy	Maize, pulses,vegetables (Chilli, tomota and Brinjal)	Limited irrigation Alternate Furrow irrigation	Linkage with state Department of Agriculture
	Tube and open well red soil	Chillies	Pulses Chillies	Drip irrigation	