State: ANDHRA PRADESH

Agriculture Contingency Plan for District: SPSR NELLORE

1.0 District Agriculture profile					
1.1	**Agro-Climatic/Ecological Zone**				
	Agro Ecological Sub Region (ICAR)	Deccan Plateau, hot arid eco region (7.3, 18.3)			
	Agro-Climatic Region (Planning Commission)	Southern Plateau and Hills Region (X)			
	Agro Climatic Zone (NARP)	Southern Zone (AP-3)			
	List all the districts or part thereof falling under the NARP Zone	Nellore, Chittoor, Dr. Y.S.R Kadapa Districts			
	Geographic coordinates of district	Latitude	Longitude	Altitude	
		13°25' and 15° 55' N	79°9' and 80°14' E		
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Regional Agricultural Research Station, Tirupati, Chittoor District.			
	Mention the KVK located in the district	Krishi Vigyan Kendra, Nellore-524003			
1.2	**Rainfall**	Normal RF(mm)	Normal Rainy days (no)	Normal Onset	Normal Cessation
	SW monsoon (June-Sep):	337	16	1st week of June	2nd week of October
	NE Monsoon(Oct-Dec):	665	21	1st week of October	4th week of December
	Winter (Jan- Feb)	30	0		--
	Summer (Mar-May)	64.0	1	--	--
	Annual	1095.0	38	--	--

1.3	**Land use pattern of the district** (latest statistics)	Geographical Area	Forest area	Land under non-agricultural use	Permanent pastures	Cultivable wasteland	Land under Misc. tree crops and groves	Barren and uncultivable land	Current fallows	Other fallows
	Area ('000 ha)	1307.6	262.8	251.9	73.1	111.4	18.9	138.2	45.0	61.5

1. 4	**Major Soils (common names like shallow red soils etc.,)**	**Area ('000 ha)**	**Percent (%) of total**
	Red Soils	536.1	41
	Coastal Sandy Soils	444.6	34
	Black Cotton Soils	196.1	15
	Alluvial Soils	65.4	5
	Laterite soils	65.4	5
1.5	**Agricultural land use**	Area ('000 ha)	Cropping intensity %
	Net sown area	330.5	123.0
	Area sown more than once	76.1	
	Gross cropped area	406.6	

1.6	**Irrigation**	Area ('000 ha)		
	Net irrigated area	237.4		
	Gross irrigated area	306.5		
	Rainfed area	93.1		
	Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area

	Canals Major projects/reservoirs Medium irrigation projects Streams	332	87.7	35.9
	Tanks	1763	73.8	30.2
	Open wells	31,479	14.9	5
	Bore wells	47,898	73.8	30.2
	Lift irrigation schemes	3,212	11.1	--
	Micro-irrigation		--	--
	Other sources		11.1	3
	Total Irrigated Area		326.4	--
	Pump sets			
	No. of Tractors			
	Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	No. of blocks/ Tehsils/Mandals	(%) area	
	Over exploited	-	-	
	Critical	-	-	
	Semi- critical	6	13	
	Safe	40	87	
	Net water availability and use	264391 ha.m		
	Ground water quality	In general suitable for irrigation		
*over-exploited: ground water utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%				

Area under major field crops and Horticulture, etc., (2008-2009) **(Source: APHU)**

1.7		**Major Field Crops cultivated**	**Area ('000 ha)**					
			Kharif		***Rabi***		**Summer**	**Total**
			Irrigated	***Rainfed***	***Irrigated***	***Rainfed***		
	1	Paddy	64.6	--	191.5	--	--	256.1
	2	Blackgram	0.3	--	--	20.5	--	20.8
	3	Sugarcane	7.8	--	6.3	--	--	14.1
	4	Groundnut	7.1	--	5.5	--	--	12.6
	5	Bengalgram	--	--	--	10.5	--	10.5
	6	Sunflower	3.8	--	--	5.2	--	9.05
	7	Tobacco	6.1	--	0.8	--	--	7.0
	8	Cotton	5.6	--	0.8	--	--	6.4
	9	Sesamum	1.6	--	--	0.6	--	2.2
	10	Greengram	0.08	--	--	2.08	--	2.1
	11	Chilli	0.049	--	1.5	--	--	1.6
	12	Redgram	0.7	--	--	0.3	--	1.04
	13	Maize	--	--	--	--	--	--
		Horticulture crops - Fruits	**Total area**					
	1	Lemon	25.6					
	2	Mango	10.5					
	3	Orange&batavina	5.09					
	4	Cashew	1.1					
	5	Banana	1.1					
	6	**Horticultural crops - Vegetables**	**Total area**					
	7	Chillies	1.6					

	8	Bhendi	0.8		
	9	Brinjal	0.4		
	10	greens	0.4		
		Horticultural crops - Flowers	**Total area**		
	1	Marigold	0.2		
	2	**Plantation and Spice crops**	**Total area**		
		Oil palm	3.4		
	1	Coconut	0.9		
	2	Betelvine	0.5		

1.8	**Livestock**	**Male(number)**	**Female (number)**	**Total (number)**
	Non descriptive Cattle (local low yielding)	73,346	84485	1,57,831
	Crossbred cattle	1,794	11,296	13,090
	Non descriptive Buffaloes (local low yielding)	1,05,339	6,64,105	7,69,444
	Graded Buffaloes			
	Goat			3,65,685
	Sheep			3,65,685
	Others (Camel, Pig, Yak etc.)			12.18
	Commercial dairy farms (Number)			
1.9	**Poultry**	**No. of farms**	**Total No. of birds (number)**	
	Commercial		1084763	
	Backyard		1682956	

1.10	**Fisheries** (Data source: Chief Planning Officer)						
	A. Capture						
	i) Marine (Data Source: Fisheries Department)	**No. of fishermen**	**Boats**		**Nets**		**Storage facilities (Ice plants etc.)**
			Mechanized	Non-mechanized	Mechanized (Trawl nets, Gill nets)	Non-mechanized (Shore Seines, Stake & trap nets)	
		14664	21	2466 / 2677	6 / 54102	0 / 10704	30 / 6
	ii) Inland (Data Source: Fisheries Department)	**No. Farmer owned ponds**		**No. of Reservoirs**		**No. of village tanks**	
		1553		4		417	
	B. Culture						
		Water Spread Area (ha)		**Yield (t/ha)**		**Production ('000 tons)**	
	i) **Brackish water** (Data Source: MPEDA/ Fisheries Department)	3677		0.002		8.530	
	ii) **Fresh water** (Data Source: Fisheries Department)	2221		0.011		24.586	
	Others			0.000		84.150	

1.11	**Production and Productivity of major crops**	**Kharif**		**Rabi**		**Summer**		**Total**	
		Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)

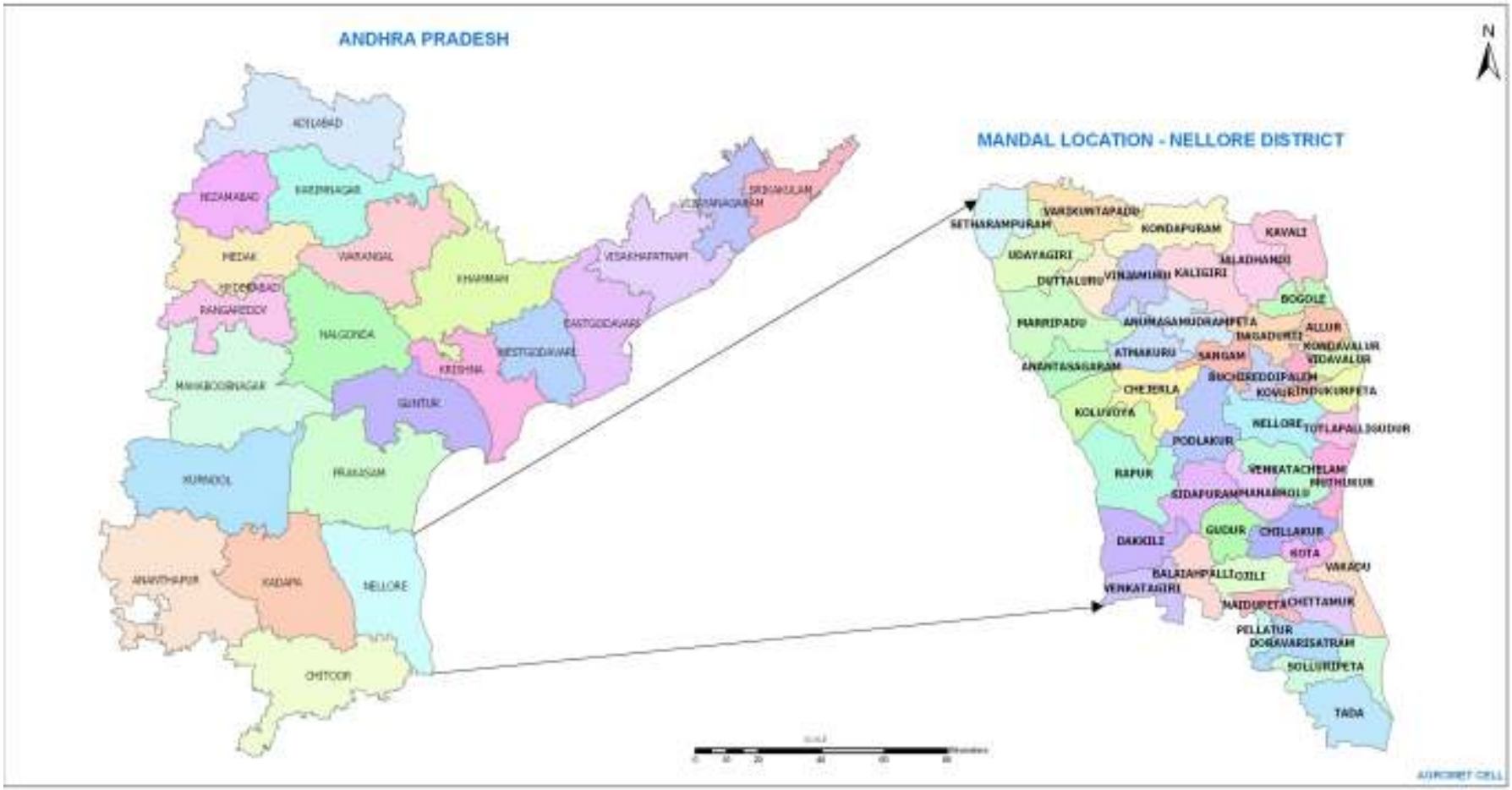
1	Paddy	238.1	3684	719.5	3756	--	--	957.5	3738
2	Groundnut	16.3	2280	12.7	2310	--	--	29.0	2293
3	Blackgram	0.2	580	12.5	610	--	--	12.7	609
4	Sugarcane	781.3	99850	603.9	96580	--	--	1385.2	98215
5	Sunflower	3.6	940	5.1	980	--	--	8.7	960
Major Horticultural crops (Crops to be identified based on total acreage)									
	Horticulture crops - Fruits								
1	Lemon							375.1	14667
2	Mango							86.7	8267
3	Orange & batavian							67.7	133
4	Cashew							0.7	627
5	Banana							33.0	29998
	Horticultural crops - Vegetables								
1	Chillies							4.6	2750
	Plantation and Spice crops								
1	Oil palm							15791	4667

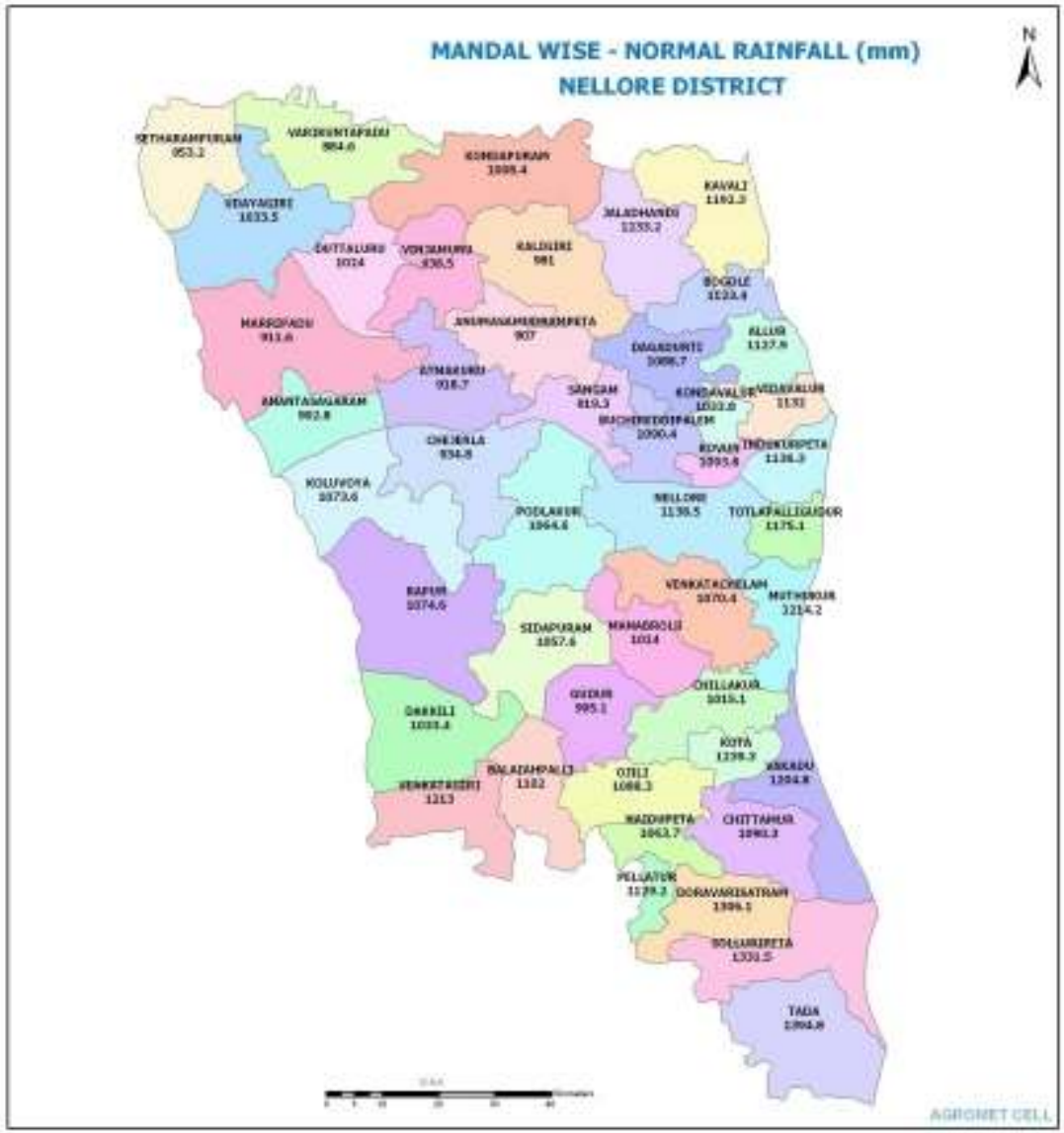
1.12	**Sowing window for 5 major field crops (start and end of normal sowing period)**	Paddy	Blackgram	Groundnut	Sugarcane	Sunflower
	Early Kharif	April - May	--	--	--	--
	Kharif	August - September	--	May - June	--	June
	Rabi	October - November	October	December – January 1st FN	December - February	November – December

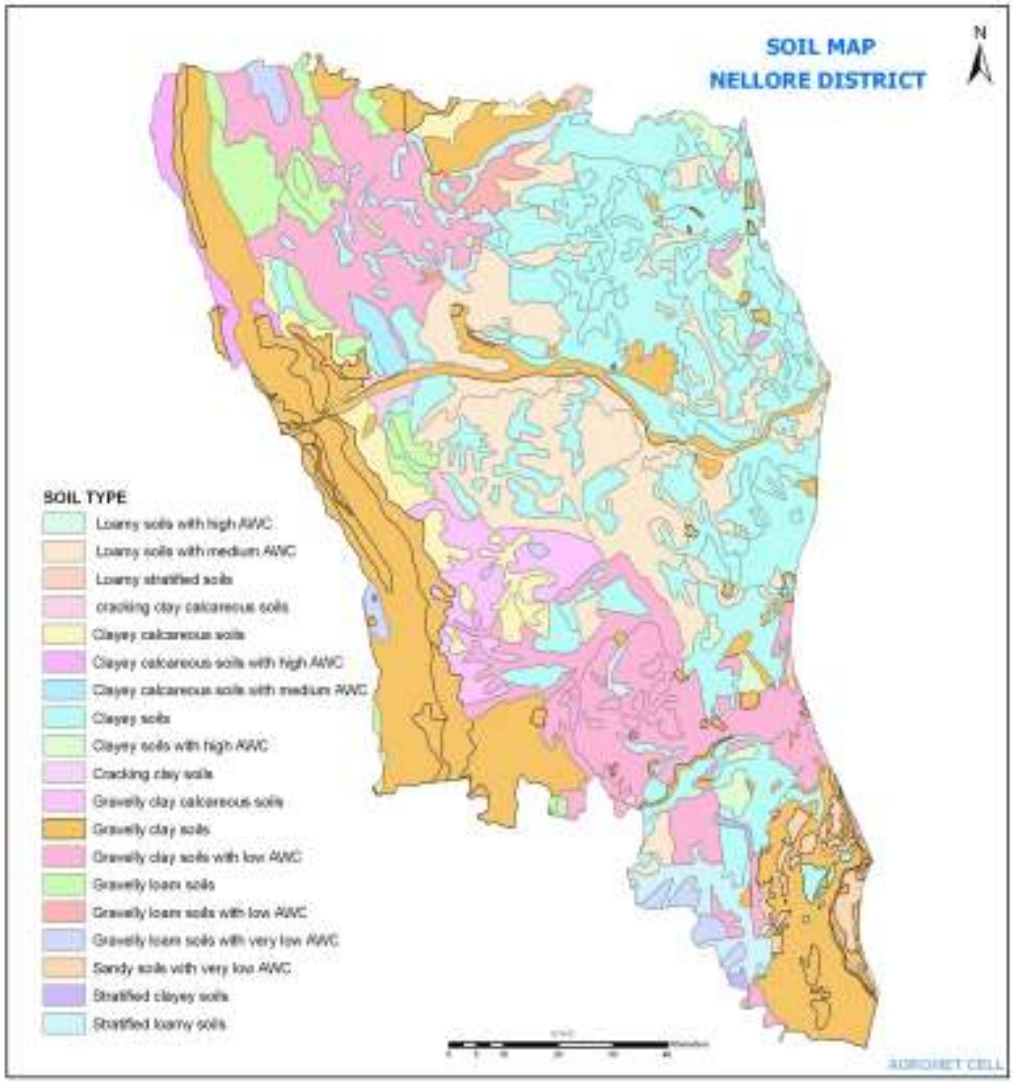
1.13	**What is the major contingency the district is prone to? (Tick mark and mention years if known during the last 10 year period)**	Regular	Occasional	None
	Drought			√
	Flood		√	
	Cyclone	√		
	Hail storm			√
	Heat wave			√
	Cold wave			√
	Frost			√
	Sea water intrusion		√	
	Snow fall			√
	Land slides			√
	Earth quake			√
	Pests and diseases outbreak (specify) Rice	Blast (Rabi) Mite (Early Kharif) Sheath blight (Kharif /Rabi) Leaf folder(Kharif /Rabi) Stem bore (Kharif /Rabi)) Bacterial leaf blight (Rabi)	Stem rot Gall midge Brown Plant Hopper	
	Blackgram	Leaf spots Maruka pod borer Spodoptera	Yellow mosaic virus Powdery mildew	--

	Groundnut	Collar/crown rot Spodoptera Sclerotium stem rot	Leaf miner Bud necrosis Tikka leaf spot	--
	Sugarcane	Early shoot borer Inter nodal borer	Whip smut Red rot	--
	Sunflower	Helicoverpa	Bud necrosis	--
	Others	--	--	--

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


ANDHRA PRADESH
MANDAL LOCATION - NELLORE DISTRICT
N
ADILABAD
KARIMNAGAR
NIZAMABAD
MEDAK
WARANGAL
KHAMMAM
VISAKHAPATNAM
SRIKAKULAM
VIZIANAGARAM
RANGAREDDY
NALGONDA
EASTGODAVARI
WESTGODAVARI
KRISHNA
MAHABOOBNAGAR
GUNTUR
KURNOOL
PRAKASAM
ANANTHAPUR
KADAPA
NELLORE
CHITOOR
SETHARAMPURAM
VARIKUNTAPADU
KONDAPURAM
KAVALI
UDAYAGIRI
ALLADHANDI
DUTTALURU
VINJAMURU
KALIGIRI
BOGOLE
MARRIPADU
ANUMASAMUDRAMPETA
ALLUR
INGADURU
KONDAVALUR
VIDAVALUR
ATMAKURU
SANGAM
ANANTASAGARAM
BUCHIREDDIPALEM
CHEJERLA
KOVUR
KINDUKURPETA
KOLUVOYA
NELLORE
TUTLAPALLIGUDUR
PODALKUR
VENKATACHELAM
RAPUR
MUTHUKUR
SIDAPURAMNANABHOLU
GUDUR
CHILLAKUR
DAKKILI
KOTA
VARADU
BALAIAHPALLI
OTILI
VENKATAGIRI
NAIDUPETA
CHETTAMUR
PELLATUR
DORAVARISATRAM
SULLURPETA
TADA


MANDAL WISE - NORMAL RAINFALL (mm)
NELLORE DISTRICT
N
SETHARAMPURAM
953.2
VARIKUNTAPADU
884.6
KONDAPURAM
1008.4
KAVALI
1162.3
VENKATAGIRI
1033.5
JALADANKI
1233.2
DUTTALURU
1024
VONIMIRU
936.5
KALIGIRI
981
BOGOLU
1122.4
MARRIPADU
911.6
ANUMASAMUDRAMPETA
907
ALLUR
1127.6
DAGADARTI
1096.7
ATMAKURU
918.7
SANGAM
819.3
KONDAVALUR
1033.0
VEDAYALUR
1192
AMARTAMAGARAM
982.8
BUCHIREDDIPALEM
2000.4
CHEJERLA
934.8
RAPUR
1093.6
INDUKURPETA
1136.3
KOLUVORU
1073.6
PODALAKUR
1064.6
NELLORE
1138.5
TOTLAPALLIGUDUR
1175.1
VENKATACHELAM
1070.4
MUTHUKUR
1214.2
RAPUR
1074.6
SIDAPURAM
1057.6
MANAGOLLU
1014
CHILLAKUR
1015.1
GUDUR
995.1
OBBILI
1033.4
KOTA
1239.3
KAKADU
1294.8
VENKATAGIRI
1213
RALAVAMPALLI
1102
OTILI
1088.3
NAIDUPETA
1063.7
CHITTAMUR
1091.3
PELLATUR
1129.2
GONAVARISATRAM
1106.1
SULLURPETA
1331.5
TADA
1304.0
AGRONET CELL


SOIL MAP
NELLORE DISTRICT
N
SOIL TYPE
Loamy soils with high AWC
Loamy soils with medium AWC
Loamy stratified soils
cracking clay calcareous soils
Clayey calcareous soils
Clayey calcareous soils with high AWC
Clayey calcareous soils with medium AWC
Clayey soils
Clayey soils with high AWC
Cracking clay soils
Gravelly clay calcareous soils
Gravelly clay soils
Gravelly clay soils with low AWC
Gravelly loam soils
Gravelly loam soils with low AWC
Gravelly loam soils with very low AWC
Sandy soils with very low AWC
Stratified clayey soils
Stratified loamy soils
AGRONET CELL

2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delay by 2 weeks (October 3rd wk)*	Black soils – Rainfed	Blackgram	No change	Prefer varieties, LBG-645, LBG-648, LBG-20, LBG-623, LBG-752, PBG-1, PBG-107.	-
		Tobacco		Prefer varieties: G-11, ITC varieties.	
	Red soils - Rainfed	Blackgram		Prefer varieties: LBG- 645, LBG-623, T-9, PBG-1.	
		Greengram,		Prefer varieties : LGG-407, LGG-410, LGG-450, LGG-460, ML-267.	
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 (November 1st wk)	Black soils – Rainfed	Blackgram	No change	Prefer early maturing blackgram varieties: LBG-623, LBG-20, LBG-752.	

	Red soils - Rainfed	Greengram		Prefer varieties : LGG-407, LGG-410, LGG-450, LGG-460, ML-267. Adopt recommended practices	
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 Implement ation**
Delay by 6 weeks (November 3rd wk)	Black soils – Rainfed	Bengalgram	No change	Measures similar to 4 weeks delay	
	Red soils - Rainfed	Greengram			

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delay by 8 weeks (December 1st wk)	Black soils – Rainfed	Bengal gram	No change	As above in delay by 4 weeks	
	Red soils - Rainfed	Greengram		Prefer greengram varieties: LGG-407, LGG-410, LGG-460, ML-267. Adopt recommended practices.	

Condition			**Suggested Contingency measures**		
Early season drought **(Normal onset)**	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conser-vation measures**	**Remarks on Implementation**

Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	Black soils – Rainfed	Blackgram	Plant protection against flea beetles, thrips and white fly (YMV)	spray 0.5% KNO3 . Spray 2% urea Adopt recommended practices.	
	Red soils - Rainfed	Blackgram	Plant protection against flea beetles, thrips and white fly (YMV)	spray 0.5% KNO3 . Spray 2% urea	
		Greengram			
Condition			**Suggested Contingency measures**		
Mid season drought (long dry spell, consecutive 2 weeks /more	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**
At vegetative stage	Black soils – Rainfed	Blackgram	Plant protection against thrips and whitefly/YMV	spray 0.5% KNO3 . Spray 2% urea	
		Tobacco	Plant protection against white fly	Spray 2% urea	
	Red soils - Rainfed	Blackgram	Plant protection against thrips and whitefly/YMV	spray 0.5% KNO3 . Spray 2% urea Adopt recommended practices.	
		Greengram			
Condition			**Suggested Contingency measures**		
Mid season drought (long dry spell)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**
At reproductive stage	Black soils – Rainfed	Blackgram	Plant protection against thrips and white fly/YMV, Maruca pod borer and Tobacco caterpillar	spray 0.5% KNO3 . Spray 2% urea Adopt recommended practices.	--
	Red soils - Rainfed	Blackgram	Plant protection against thrips and white fly/YMV, Maruca pod borer and Tobacco caterpillar	spray 0.5% KNO3 . Spray 2% urea Adopt recommended practices.	--
		Greengram			--
Condition			**Suggested Contingency measures**		

Terminal drought	Major Farming situation	Normal Crop/cropping system	Crop management	Rabi Crop planning	Remarks on Implementation
	Black soils – Rainfed	Blackgram	Harvest at physiological maturity		
		Bengalgram			
		Tobacco	Harvest matured leaves		
	Red soils - Rainfed	Blackgram	Harvest at physiological maturity		
		Greengram			

2.1.2 Irrigated situation

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delayed release/receipt of water in canals/tanks due to low rainfall	Irrigated wet lands – supplemented with bore wells, filter points and canals under sandy clay loams and deltaic alluvials, costal lands	Early Kharif Paddy	No change (under bore wells/filter points.)	Prefer short duration varieties : Bharani, Somasila, MTU-1010, NLR-34242, NLR-34449, JGL-1798.	
		Kharif Paddy	No change	Prefer long/mid duration varieties: NLR-9674, NLR-33892, NLR-28523, BPT-5204, CR-1009.	

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
		Rabi Paddy		Prefer medium/short duration varieties: Swathi, Deepti, BPT-5204, JGL-384, NLR-34449, NDLR-7, 8, Vijetha, ADT-37, Swarna mukhi, Sravani, Somasila, NLR-33636, NLR-33671, MTU-1010. Prefer green manure crop after harvest of Early Kharif Rice. Adopt recommended practices.	
		Sugarcane		Prefer early/mid late maturing varieties: 85 A 261, 87 A 298, 83 V 15. Adopt recommended practices.	

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
	Irrigated uplands under wells and bore wells – Red loams, sandy clay loams	Rabi Paddy	No change	Prefer medium/short duration varieties: Swarna Mukhi, Swathi, Deepthi, BPT-5204, JGL-384, MTU-1010, Vijetha, Sravani, Apoorva, ADT-37, NLR-34449. Grow green manure crop before Rabi rice. Adopt SRI cultivation.	
		Groundnut		Prefer varieties: TPT-4, Narayani, Kalahasthi, K-6, Vemana, K-4, TAG-24, Abhaya, Greeshma. Adopt recommended practices	
		Sesamum		Prefer Varieties : Gowri, Madhavi, YLM-11,17. Adopt recommended practices	

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
		Cotton	No change	Prefer NHH-44, H-8, Ajith-11, BT cottons. Adopt recommended practices	
		Sunflower		Prefer hybrids Adopt recommended practices.	
	Irrigated wet lands Under Tanks - Red loams, Sandy clay loams, coastal sands	Rabi Paddy		Prefer medium/short duration varieties: Swarna Mukhi, Swathi, Deepthi, BPT-5204, JGL-384, MTU-1010, Vijetha, Sravani, Apoorva, ADT-37, NLR-34449. Semi- dry Rice Direct sowing Recommended chemical weed control. Adopt recommended practices.	

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Limited release/receipt of water in canals/tanks due to low rainfall	Irrigated wet lands – supplemented with bore wells, filter points and canals under sandy clay loams and deltaic alluvials, costal lands	Early Kharif Paddy	No change (under bore wells/filter points.) Replace rice crop with Maize, summer pulses, etc,. under canals.	Prefer short duration varieties : Bharani, Somasila, MTU-1010, NLR-34242, NLR-34449, JGL-1798. SRI cultivation. Adopt recommended practices.	
		Rabi Paddy	No change	Prefer short duration varieties: NLR-34449, Vijetha, ADT-37, MTU-1010. SRI cultivation Adopt recommended practices	
	Irrigated uplands under wells and bore wells – Red looms, sandy clay loams	Rabi Paddy		Prefer short duration varieties: NLR-34449, Vijetha, ADT-37, MTU-1010. Adopt SRI cultivation.	

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
		Groundnut	No change	Prefer varieties: TPT-4, Narayani, Kalahasthi, K-6, Vemana, K-4, TAG-24, Abhaya, Greeshma. Adopt recommended practices	
		Sunflower		Prefer hybrids Adopt recommended practices.	
		Sesamum		Prefer Varieties : Gowri, Madhavi, YLM-11,17. Adopt recommended practices	
		Cotton		Prefer NHH-44, H-8, Ajith-11, BT cottons. Adopt recommended practices	

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
	Irrigated wet lands Under Tanks - Red loams, Sandy clay loams, coastal sands	Rabi Paddy	No change	Prefer short duration varieties: NLR-34449, Vijetha, ADT-37, MTU-1010. Adopt SRI cultivation. Direct sowing with chemical weed control. Aerobic rice Adopt recommended practices.	

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Non release /receipt of water in canals/tanks under delayed onset of monsoon in catchment	NA				
Condition			**Suggested Contingency measures**		

	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	NA				
Insufficient groundwater recharge due to low rainfall	NA				

2.2 Unusual rains (untimely, unseasonal *etc*) (for both rainfed and irrigated situations)

Condition - Continuous high rainfall in a short span leading to water logging				
Crop	**Suggested contingency measure**			
	Vegetative stage	**Flowering stage**	**Crop maturity stage**	**Post harvest**
Rice	1. Drain out excess water 2. Apply booster dose of 20-25 kg urea + 15 kg MOP /acre.to hasten the establishment and promote more tillering 3. Survived hills are to be split into individual tillers and used for gap filling. 4. Take up plant protection measures against leaf folder, stem borer , cut worm, sheath blight and stem rot.	1. Drain out excess water 2. Take up plant protection measures against leaf folder, cut worm, BPH, sheath blight , neck blast and stem rot.	1. Drain out excess water 2. Harvest at physiological maturity.	1. Drain out water and spread sheaves loosely in field or field bunds where there is no water stagnation 2. Spray common salt at 5% on sheaves to prevent germination and spoilage of straw from moulds 3. Thresh after drying the sheaves properly
Blackgram	1. Drain out water 2. Spray 2% urea. 3. Spray fungicides like Copper oxy chloride 3 g or Carbendazim 1g or	1. Drain out water 2. Spray 2% urea. 3. Spray fungicides like Copper oxy chloride 3 g or Carbendazim 1g or	1. Drain out water 2. Allow the crop to dry completely before harvesting 3. Protect crop from moulds.	1. Spread the bundles on field bunds or drying floors to quicken the drying 2. Thresh the bundles after they are dried properly

	Mancozeb 2.5g/ lit of water. 4. Take up plant protection measures against *Spodoptera* etc.	Mancozeb 2.5g/ lit of water. 4. Take up plant protection measures against *Spodoptera* etc.		
Groundnut	1. Drain out water 2. Take up plant protection measures against *Spodoptera* etc.	1. Drain out water 2. Take up plant protection measures against *Spodoptera* etc.	1. Drain out water 2. Take up plant protection measures against *Spodoptera* and Tikka leaf spot.	1. Shifting of produce to safer place 2. Stripping of pods immediately after harvest of groundnut crop
Sugarcane	1. Drain out water	1. Drain out water	1. Drain out water	1.Transport immediately after harvest to factory
Sunflower	1. Drain out water	1. Drain out water 2. Protect crop from Helicoverpa and Spodoptera.	1. Drain out water 2. Protect crop from Helicoverpa and Spodoptera. 3. Protect from parrots	1.Shifting of produce to safer place
Horticulture				
Lemon	• Drain the excess water as soon as possible. • Spray 1% KNO3 or Urea 2% solution 2-3 times. • Foliar spray of micronutrient mixture is also to be taken up. • Sand casting around the tree trunks should be removed up to the collar region of the tree to prevent fungal infections. • If the tree age is above eight years a booster dose of 500 g of Urea and 750 g MOP per tree should be applied.	• Drain the excess water as soon as possible. • Spray 1% KNO3 or Urea 2% solution 2-3 times. • Foliar spray of micronutrient mixture is also to be taken up. • Sand casting around the tree trunks should be removed up to the collar region of the tree to prevent fungal infections. • If the tree age is above eight years a booster dose of 500 g of Urea and 750 g MOP per tree should be applied. • Plant protection measures may be taken for control of insect vectors and diseases.	• Drain the excess water as soon as possible. • Harvest the mature fruits in a clear sunny day.	• Store the fruits in well ventilated place temporarily before it can be marketed. • Market the fruits as soon as possible.

Mango	• Drain the excess water as soon as possible • Spray 1% KNO3 or Urea 2% solution 2-3 times.	• Drain the excess water as soon as possible • Spray 1% KNO3 or Urea 2% solution 2-3 times.	Same as above	Same as above
Orange & Batavian	• Drain the excess water as soon as possible. • Spray 1% KNO3 or Urea 2% solution 2-3 times. • Foliar spray of micronutrient mixture is also to be taken up. • Sand casting around the tree trunks should be removed up to the collar region of the tree to prevent fungal infections. • If the tree age is above eight years a booster dose of 500 g of Urea and 750 g MOP per tree should be applied. •	• Drain the excess water as soon as possible. • Spray 1% KNO3 or Urea 2% solution 2-3 times. • Foliar spray of micronutrient mixture is also to be taken up. • Sand casting around the tree trunks should be removed up to the collar region of the tree to prevent fungal infections. • If the tree age is above eight years a booster dose of 500 g of Urea and 750 g MOP per tree should be applied.	Same as above	Same as above
Cashew	• Drain the excess water as soon as possible • Spray 1% KNO3 or Urea 2% solution 2-3 times.	• Drain the excess water as soon as possible • Spray 1% KNO3 or Urea 2% solution 2-3 times.	Same as above	Same as above
Banana	• Drain the excess water as soon as possible • Inter-cultivate the soil with gorru for aeration. • Spray 0.5 % KNO3 or Urea 2% solution 2-3 times. • Topdressing of booster dose of 80 g MOP + 100 g Urea per plant	• Drain the excess water as soon as possible • Spray 0.5 % KNO3 or Urea 2% solution 2-3 times. • Topdressing of booster dose of 80 g MOP + 100 g Urea per plant at two to three times intervals. • If the age the plant is more than	Same as above	Same as above

	at two to three times intervals. • Gap filling may be taken up if the plants are two weeks old and sowing window is still available for the crop. • If the age of the plant is less than three months and submergence up to three feet better to replant the garden.	three months and less than seven months allow one sword sucker for ratoon and take up fertilization at monthly intervals for four months. • Staking with bamboos to prevent further lodging.		
Horticultural crops - Vegetables				
Chillies	• Drain the excess water as soon as possible • Spray Urea 2% solution 2-3 times. • Topdressing of booster dose of 15 kg MOP + 30 kg Urea per acre as soon as possible. • Gap filling may be taken up if the plants are two weeks old and sowing window is still available for the crop. • In case of severe damage (considered as complete economical loss), and the contingency period is between June to August, sowing of best alternative crop must be taken up.	• Drain the excess water as soon as possible • Spray Urea 2% solution 2-3 times. • Topdressing of booster dose of 15 kg MOP + 30 kg Urea per acre as soon as possible. •	• Drain the excess water as soon as possible • Harvest the matured fruits in a clear sunny day.	• Dry the pods on concrete floor immediately after the appearance of sunlight (or). • Use poly house solar driers for quick drying • Grade the pods and market as soon as possible. • Do not store such produce for long periods.
Spices &Plantation crops				
Oil palm	• Planting should be done on mounts or bunds • Drainage system, suited to local conditions may be provided to remove surplus water from root zone	• Drain the excess water as soon as possible • Apply booster dose of NPK fertilizers	• Drain the excess water as soon as possible • Apply booster dose of NPK fertilizers • Harvest the mature bunches as	• Market the bunches to nearby factories for oil extraction.

	• Relief drains [shallow] channels are opened at places where water accumulates and connected with main drain to remove water from the surface		soon as possible.	
Condition - Heavy rainfall with high speed winds in a short span				
Rice	1. Drain out excess water 2. Apply booster dose of 20-25 kg urea + 15 kg MOP /acre.to hasten the establishment and promote more tillering 3. Survived hills are to be split into individual tillers and used for gap filling. 4. Take up plant protection measures against leaf folder, stem borer , cut worm, sheath blight and stem rot.	1. Drain out excess water 2. Take up plant protection measures against leaf folder, cut worm, BPH, sheath blight , neck blast and stem rot.	1. Drain out excess water 2. Harvest at physiological maturity.	1. Drain out water and spread sheaves loosely in field or field bunds where there is no water stagnation 2. Spray common salt at 5% on sheaves to prevent germination and spoilage of straw from moulds 3. Thresh after drying the sheaves properly
Blackgram	1. Drain out water 2. Spray 2% urea. 3. Spray fungicides like Copper oxy chloride 3 g or Carbendazim 1g or Mancozeb 2.5g/ lit of water. 4. Take up plant protection measures against *Spodoptera* etc.	1. Drain out water 2. Spray 2% urea. 3. Spray fungicides like Copper oxy chloride 3 g or Carbendazim 1g or Mancozeb 2.5g/ lit of water. 4. Take up plant protection measures against *Spodoptera* etc.	1. Drain out water 2. Allow the crop to dry completely before harvesting 3. Protect crop from moulds.	1. Spread the bundles on field bunds or drying floors to quicken the drying 2. Thresh the bundles after they are dried properly
Groundnut	1. Drain out water 2. Take up plant protection measures against *Spodoptera* etc.	1. Drain out water 2. Take up plant protection measures against *Spodoptera* etc.	1. Drain out water 2. Take up plant protection measures against *Spodoptera* and Tikka leaf spot.	1. Shifting of produce to safer place 2. Stripping of pods immediately after harvest of groundnut crop

Sugarcane	1. Drain out water 2. Wrapping and propping.	1. Drain out water	1. Drain out water	1.Transport immediately after harvest to factory
Sunflower	1. Drain out water	1. Drain out water 2. Protect crop from Helicoverpa and Spodoptera.	1. Drain out water 2. Protect crop from Helicoverpa and Spodoptera. 3. Protect from parrots	1.Shifting of produce to safer place
Horticulture				
Lemon	• Drain the excess water as soon as possible. • Spray 1% KNO3 or Urea 2% solution 2-3 times.	• Drain the excess water as soon as possible. • Spray 1% KNO3 or Urea 2% solution 2-3 times. • Foliar spray of micronutrient mixture is also to be taken up. • Sand casting around the tree trunks should be removed up to the collar region of the tree to prevent fungal infections. • If the tree age is above eight years a booster dose of 500 g of Urea and 750 g MOP per tree should be applied.	• Drain the excess water as soon as possible • Spray 1% KNO3 or Urea 2% solution 2-3 times.	• Drain the excess water as soon as possible. • Harvest the mature produce as soon as possible. • Store the produce in well ventilated place temporarily before it can be marketed. • Market the produce as soon as possible.
Mango	Same as above	Same as above	Same as above	Same as above
Orange & Batavian	Same as above	Same as above	Same as above	Same as above
Cashew	Same as above	Same as above	Same as above	Same as above
Banana	Same as above	Same as above	Same as above	Same as above
Horticultural crops - Vegetables				
Chillies	• Drain the excess water as soon as	• Drain the excess water as soon as	• Drain the excess water as soon	• Drain the excess water

	possible	possible • Spray Urea 2% solution 2-3 times. • Topdressing of booster dose of 15 kg MOP + 30 kg Urea per acre as soon as possible. • Gap filling may be taken up if the plants are two weeks old and sowing window is still available for the crop.	as possible • Spray Urea 2% solution 2-3 times. • Topdressing of booster dose of 15 kg MOP + 30 kg Urea per acre as soon as possible.	as soon as possible. • Dry the pods on concrete floor/ tarpaulins. • Spray any drying oil after the pods are free from surface moisture for quick drying. • Use poly house solar driers for quick drying • Remove the pest and disease infected pods. • Market the produce as soon as possible .
Spices & Plantation crops				
Oil palm	• Planting should be done on mounts or bunds • Drainage system, suited to local conditions. may be provided to remove surplus water from root zone • Relief drains [shallow] channels are opened at places where water accumulates and connected with main drain to remove water from the surface	• Drain the excess water as soon as possible • Apply booster dose of NPK fertilizers	• .Drain the excess water as soon as possible • .Apply booster dose of NPK fertilizers	• Harvest the mature bunches/nuts as soon as possible. • Market the produce as soon as possible.

2.3 Floods

Condition	**Transient water logging/ partial inundation**			
	Suggested contingency measure			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Rice	Drain out excess water	1. Drain out excess water 2. Apply booster dose of 20-25 kg urea + 15 kg MOP /acre.to hasten the establishment and promote more tillering 3. Survived hills are to be split into individual tillers and used for gap filling. 4. Take up plant protection measures against leaf folder, stem borer , cut worm, sheath blight and stem rot.	1. Drain out excess water 2. Take up plant protection measures against leaf folder, cut worm, BPH, sheath blight , neck blast and stem rot. 3. Community approach to control rodents	1. Drain out excess water 2. Harvest at physiological maturity.
Blackgram	Drain out water	1. Drain out water 2. Spray 2% urea. 3. Spray fungicides like Copper oxy chloride 3 g or Carbendazim 1g or Mancozeb 2.5g/ lit of water. 4. Take up plant protection measures against *Spodoptera* etc.	1. Drain out water 2. Spray 2% urea. 3. Spray fungicides like Copper oxy chloride 3 g or Carbendazim 1g or Mancozeb 2.5g/ lit of water. 4. Take up plant protection measures against *Spodoptera* etc.	1. Drain out water 2. Allow the crop to dry completely before harvesting 3. Protect crop from moulds.
Groundnut	Drain out water	1. Drain out water 2. Take up plant protection measures against *Spodoptera* etc.	1. Drain out water 2. Take up plant protection measures against *Spodoptera* etc.	1. Drain out water
Sugarcane	Drain out water	Drain out water	1. Drain out water	1. Drain out water

Sunflower	Drain out water	Drain out water	1. Drain out water 2. Protect crop from Helicoverpa and Spodoptera.	1. Drain out water 2. Protect from parrots
Condition - Continuous submergence for more than 2 days :				
	Suggested contingency measure[o]			
Rice	Drain out excess water	1. Drain out excess water 2. Apply booster dose of 20-25 kg urea + 15 kg MOP /acre.to hasten the establishment and promote more tillering 3. Survived hills are to be split into individual tillers and used for gap filling. 4. Take up plant protection measures against leaf folder, stem borer , cut worm, sheath blight and stem rot. 5. Community approach to control rodents	-	-
Blackgram	Resowing	-		
Groundnut				
Sugarcane	Drain out water			
Sunflower	Resowing			

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

Extreme event type	**Suggested contingency measure**			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Heat Wave				
Cold wave				
Frost				
Hailstorm				
Cyclone	-	-	-	-
Rice	Resowing	1. Drain out excess water 2. Apply booster dose of 20-25 kg urea + 15 kg MOP /acre.to hasten the establishment and promote more tillering 3. Survived hills are to be split into individual tillers and used for gap filling. 4. Take up plant protection measures against leaf folder, stem borer , cut worm, sheath blight and stem rot. 5. Community approach to control rodents	1. Drain out excess water 2. Take up plant protection measures against leaf folder, cut worm, BPH, sheath blight , neck blast and stem rot. 3. Community approach to control rodents	1. Drain out excess water 2. Harvest at physiological maturity.
Blackgram	Resowing	1. Drain out water 2. Spray 2% urea. 3. Spray fungicides like Copper oxy chloride 3 g or Carbendazim 1g or Mancozeb 2.5g/ lit of water. 4. Take up plant protection measures against *Spodoptera* etc.	1. Drain out water 2. Spray 2% urea. 3. Spray fungicides like Copper oxy chloride 3 g or Carbendazim 1g or Mancozeb 2.5g/ lit of water. 4. Take up plant protection measures	1. Drain out water 2. Allow the crop to dry completely before harvesting 3. Protect crop from moulds.

			against *Spodoptera* etc.	
Groundnut	Resowing	1. Drain out water 2. Take up plant protection measures against *Spodoptera* etc.	1. Drain out water 2. Take up plant protection measures against *Spodoptera* etc.	1. Drain out water
Sugarcane	Replanting	1. Drain out water 2.Wrapping and propping.	1. Drain out water	1. Drain out water
Sunflower	Resowing	1. Drain out water	1. Drain out water 2. Protect crop from Helicoverpa and Spodoptera.	1. Drain out water 2. Protect from parrots
Horticulture				
Lemon	• If the damage is severe, go for resowing.	• Tress fallen on ground may be lifted and earthed up • Manuring and plant protection measures have to be taken up. • Broken and damaged branches may be pruned and applied with Bordeaux paste	• Tress fallen on ground may be lifted and earthed up • Manuring and plant protection measures have to be taken up. • Broken and damaged branches may be pruned and applied with Bordeaux paste	• Drain the excess water as soon as possible. • Harvest the mature fruits as soon as possible. • Collect the fallen fruits and sell immediately or go for preparation of processed products. • If to store, store the produce in well-ventilated place temporarily before it can be marketed. • Broken and damaged branches may be pruned and applied

				with Bordeaux paste
Mango	-do-			
Orange & Batavian				
Cashew				
Banana		• Wind damaged plants should be pruned using disinfected secaetures and cut ends must be smeared with Bordeaux paste • Drain the excess water as soon as possible • The fallen plants may be cut leaving two suckers • Inter-cultivate the soil with gorru for aeration. • Spray 0.5 % KNO3 or Urea 2% solution 2-3 times. • Topdressing of booster dose of 80 g MOP + 100 g Urea per plant at two to three times intervals. • Gap filling may be taken up if the plants are two weeks old and sowing window is still available for the crop. • If the age of the plant is less than three months and submergence up to three feet better to replant the garden.	• Wind damaged plants should be pruned using disinfected secaetures and cut ends must be smeared with Bordeaux paste • Drain the excess water as soon as possible • The fallen plants may be cut leaving two suckers • Topdressing of booster dose of 80 g MOP + 100 g Urea per plant at two to three times intervals • Mature bunches on the completely damaged plants but still attached to the plant may be covered with leaves and harvested with in 15-20days	• Wind damaged plants should be pruned using disinfected secaetures and cut ends must be smeared with Bordeaux paste • Drain the excess water as soon as possible. • Harvest the mature bunches as soon as possible. • use ripening chambers for quick and uniform ripening • Store the harvested bunches in wellventilated place temporarily before it can be marketed. • Market thebunches as soon as possible. • 3-4 foliar application of KNO3 on immature/ developing bunches and leaves at weekly intervals.

				• Staking with bamboo for support .
Horticultural crops - Vegetables				
Chillies	• Grow nursery on raised beds.	• Uprooted plants may be lifted and earthed up • Drain the excess water as soon as possible • Gap filling must be done immediately • If damage is more go for replanting Spray Urea 2% solution 2-3 times. • Topdressing of booster dose of 15 kg MOP + 30 kg Urea per acre as soon as possible.	• Uprooted plants may be lifted and earthed up • Drain the excess water as soon as possible • Spray Urea 2% solution 2-3 times. • Topdressing of booster dose of 15 kg MOP + 30 kg Urea per acre as soon as possible.	• Drain the excess water as soon as possible. • Dry the pods on concrete floor/ tarpaulins immediately • use poly house solar driers for quick drying • Remove the pest and disease infected pods. .
Spices & Plantation crops				
Oil palm	• Planting should be done on mounts or bunds • Drainage system suited to local conditions. may be provided to remove surplus water from root zone • Relief drains [shallow] channels are opened at places where water accumulates and connected with main drain to remove water from the surface	• Drain the excess water as soon as possible • Twisted leaves may be cut and removed • Apply booster dose of NPK fertilizers • The palms have fallen with root system still having contact with the soil, they need to be brought to position and provided with soil mound and support	• Drain the excess water as soon as possible • Hanging bunches may be provided with supports wherever possible. Apply booster dose of NPK fertilizers • The palms have fallen with root system still having contact with the soil, they need to be brought to position and provided with	• Twisted leaves may be cut and removed • Hanging bunches may be provided with supports wherever possible • Harvest the mature nuts as soon as possible. • Market the produce as soon as possible.

			soil mound and support	

2.5 Livestock, Poultry
General contingency plans

Before the event	During the event	After the event
Feed and fodder availability		
1.Conserving fodder/crop residues/ forest grass by silage / hay making either by individual or on community basis 2. Preparing complete diets and storing in strategic locations 3. Organize procurement of dry fodders / feed ingredients from surplus areas 4. Establish fodder banks and feed banks 5. Livestock relief camps during floods/cyclones must be planned in the vicinity of relief camps for people 6. Capacity building and preparedness	1.Organise relief camps 2.Supply silage / hay to farmers with productive stock on subsidized rates 3.Segregate old, weak and unproductive stock and send for slaughter 4. Supply mineral mixture to avoid deficiencies 5. Dry fodder must be offered to the livestock in little quantities for number of times 6.Concentrate feed or complete feed must be offered to only productive and young stock only	1. Capacity building to stake holders on drought /cyclone/flood mitigation in livestock sector 2. Promote fodder cultivation. 3. Flushing the stock to recoup 4. Avoid soaked and mould infected feeds / fodders to livestock 5. Replenish the feed and fodder banks 6.Promote fodder preservation techniques like silage / hay making
Drinking water		

1.Construct drinking water tanks in herding places, village junctions and in relief camp locations 2.Plan for sufficient number of tanks for water transportation 3.Identify bore wells, which can sustain demand. 4.Procure sufficient quantities of water Sanitizers	1.Regular supply of clean drinking water to all tanks 2.Cleaning the tanks in regular intervals 3.Keep the livestock away from contaminated flood/cyclone/stagnated waters 3.Add water sanitizers	1.Hand over the maintenance of the structures to panchayats 2.Sensitize the farming community about importance of clean drinking water
Health and disease Management		
1.Procure and stock emergency medicines and vaccines for important endemic diseases of the area 2. All the stock must be immunized for endemic diseases of the area 3. Carry out deworming to all young stock 4. Keep stock of bleaching powder and lime 5.Carry out Butax spray for control of external parasites 6.Identify the Clinical staff and trained paravets and indent for their services as per schedules 7.Identify the volunteers who can serve in need of emergency	1.Keep close watch on the health of the stock 2.Sick animals must be isolated and treated Separately. 3. Carry out deworming and spraying to all animals entering into relief camps 4. Clean the animal houses regularly and apply disinfectants. 5.Safe and hygienic disposal of dead animal carcasses 6. Organize with community daily lifting of dung from relief camps	1.keep close surveillance on disease outbreak. 2.Undertake the vaccination depending on need 3.Keep the animal houses clean and spray disinfectants

2.5.1 Detailed contingency strategies for Livestock,

	Suggested contingency measures		
	Before the event	**During the event**	**After the event**

Drought			
Feed and Fodder availability	Establishment of silvi-pastoral system in CPRs with ***Stylosanthus hamata*** and ***Cenchrus ciliaris*** as grass with ***Leucaena leucocephala*** as tree component Top dressing of N in 2-3 split doses @ 20-25 kg N/ha in common property resources (CPRs) like temple lands, panchyat lands or private property resources (PPRs) like waste and degraded lands with the monsoon pattern for higher biomass production Promote cultivation of short duration fodder crops of sorghum/bajra/maize(UP chari, MP chari, HC-136, HD-2, GAINT BAJRA, L-74, K-677, Ananad/African Tall, Kisan composite, Moti, Manjari, B1-7 and also sunhemp Chopping of fodder should be made as mandatory in every village through supply and establishment of good quality chaff cutters. Establishment of backed yard cultivation of para grass with drain water from bath room/washing area Harvesting and collection of perennial vegetation particularly grasses which grow during monsoon Proper drying, bailing and densification of harvested grass from previous season Creation of permanent fodder, feed and fodder seed banks in all drought prone villages	Harvest and use biomass of dried up crops (Rice, Maize, Bajra, Horse gram, Groundnut, black gram, sun hemp) material as fodder. Harvest the tree fodder (Neem, Subabul, Acasia, Pipal etc) and unconventional feeds resources available and use as fodder for livestock (LS). Available feed and fodder should be cut from CPRs and stall fed in order to reduce the energy requirements of the animals UMMB, hay, concentrates and vitamin & mineral mixture should be transported to the needy areas from the reserves at the district level initially and latter stages from the near by districts. Hay should be enriched with 2% Urea molasses solution or 1% common salt solution and fed to LS Herd should be split and supplementation should be given only to the highly productive and breeding animals Provision of emergency grazing/feeding (Cow-calf camps or other special arrangements to protect high productive & breeding stock) Motivate the farmers to mix the dry fodder with available kitchen waste while feeding Arrangements should be made for mobilization of small ruminants across the villages where no drought exits with subsidized road/rail transportation and temporary shelter provision for the shepherds	Concentrates supplementation should be provided to all the animals. The farmers may be advised to practice "flushing the stock" to recoup Short duration fodder crops of should be sown in unsown and crop failed areas where no further routine crop sowing is not possible Supply of quality seeds of fodder varieties and motivating the farmers to cultivate at least 10% of their land holding for fodder production

		Unproductive livestock should to be culled during severe drought Create transportation and marketing facilities for the culled and unproductive animals Supply silage and or hay on subsidized rates to the farmers having high productive stock Subsidized loans should be provided to the livestock keepers.	
Cyclone	Harvest all the possible wetted grain (rice/maize/bajra etc) and sugar cane tops and use as animal feed. Motivate the farmers to store a minimum quantity of hay (25-50 kg) and concentrates (10-25 kg) per animal in farmer's / LS keepers house/ shed for feeding the animals during cyclone. Stock of anti-diarrheal drugs and electrolytes should be made available for emergency transport Don't allow the animals for grazing in case of early forewarning (EFW) of cyclone Incase of EFW of severe cyclone, shift the animals to safer places.	Treatment of the sick, injured and affected animals through arrangement of mobile emergency veterinary hospitals / rescue animal health workers. Diarrhea out break may happen. Health camps should be organized In severe cases un-tether **or** let loose the animals Arrange transportation of highly productive animals to safer place Spraying of fly repellants in animal sheds	Repair of animal shed Deworm the animals through mass camps Vaccinate against possible disease out breaks like HS, BQ, FMD and PPR Proper dispose of the dead animals / carcasses by burning / deep burying (4-8 feet) with lime powder (1kg for small ruminants and 5kg for large ruminants) in pit Bleach / chlorinate (0.1%) drinking water or water

			resources Collect drowned crop material, dry it and store for future use Sowing of short duration fodder crops in unsown and water logged areas when crops are damaged and no chance to replant Application of urea (20-25kg/ha) in the inundated areas and CPR's to enhance the bio mass production.
Floods	In case of early forewarning (EFW), harvest all the crops (Maize, Rice, Bajra, Groundnut) that can be useful as fodder in future (store properly) and also sugar cane tops Don't allow the animals for grazing if severe floods are forewarned Motivate the farmers to store a minimum required quantity of hay (25-50kg) and concentrates (25kgs) per animals in farmer / LS keepers house / shed for feeding animals during floods Arrangement for transportation of animals from low lying area to safer places and also for rescue animal	Transportation of animals to elevated areas Stall feeding of animals with stored hay and concentrates Proper hygiene and sanitation of the animal shed In severe floods, un-tether or let loose the animals Emergency outlet establishment for required medicines or feed in each village Spraying of fly repellants in animal sheds	Repair of animal shed Bring back the animals to the shed Cleaning and disinfection of the shed Bleach (0.1%) drinking water / water sources Deworming with

	health workers to get involve in rescue operations		broad spectrum dewormers Vaccination against possible disease out breaks like HS, BQ, FMD and PPR Proper disposable of the dead animals / carcasses by burning / deep burying (4-8 feet) with lime powder (1kg for small ruminants and 5kg for large ruminants) in pit Drying the harvested crop material and proper storage for use as fodder.

2.5.3 Fisheries/ Aquaculture**:**

	Suggested contingency measures		
	Before the event	**During the event**	**After the event**
1) Drought			
A. Capture			
Marine	No intervention	No intervention	No intervention

Inland			
(i) Shallow water depth due to insufficient rains/inflow	Stocking of advnced fingerlings in half or even less than the normal stocking density or stocking of common carp seed	Immediate harvesting or decreasing the density commensurate with the water quantity.	De weeding and deepening of tank to ensure retention of water for a longer period and provision of employment under MGNREGP
(ii) Changes in water quality	Regular monitoring of water quality parameters and application of geolites, soil probiotics, etc to maintain water qaulity	Immediate harvesting or changing the water quality by application of sanitisers.	Removal of top layer, deep ploughing of tank and application of lime
(iii) Any other			
B. Aquaculture			
(i) Shallow water in ponds due to insufficient rains/inflow	Crop holiday or going for stocking of yearlings by reducing the density according to availability of water	Harvesting of fish and leaving the pond fallow till next season	Removal of top layer, deep ploughing of tank and application of lime
(ii) Impact of salt load build up in ponds / change in water quality	Stocking of salinity tolerant fish / shrimp, application of geolites and other buffers	Frenquent change of water with fresh water	Frequent draining of the pond with fresh water, removal of top layers
(iii) Any other			
2) Floods			
A. Capture			
Marine	No intervention	No intervention	No intervention
Inland			
(i) Average compensation paid due to loss of human life	Shifting the people from low lying areas to relief camps	Deployment of specially trained persons for rescue operations by providing life bouys, jackets, ropes, boats, etc	Payment sufficient ex-gratia to the families
(ii) No. of boats / nets/damaged	Shifting and relocating boats and nets to safer places when warnings are issued, to avoid fishing, etc	Shifting and relocating boats and nets to safer places	Assessment of damages to boats and nets and provision of boats and nets for restoration of livelihoods

(iii) No.of houses damaged	Avoidance of construction of houses in flood prone ares, construction of pucca houses at elevated places,	Shifting of people by relief boats to the relief camps	Assessment of damages to houses and provision of compensation in case of partial damage and sanction house under existing schemes
(iv) Loss of stock	Avoidance of surface species like catla, silver carp since they are vulnerable in tanks prone to floods, erection of nets across the spill way or just beyond it	Erection of nets at spill ways	Taking up compensatory stocking
(v) Changes in water quality		When dissolved oxygen levels go down, aerators, recirculation of water, etc are to be attempted to maintain DO levels, going for partial harvest, etc	
(vi) Health and diseases	Sometimes there may be heavy accumulation of nutrients and organic matter.	There may be break out of Heamorrhagic septicimea. Addition of antibiotics like Chloro Tetra Cycline or Oxy Tetra Cycline to the feed to constrol the disease	Removal of weeds, top layer of soil, deep ploughing of tank and application of lime, exposing to sun light
B. Aquaculture			
(i) Inundation with flood water	Raising and rivetting the bunds, construction of spill way to release excess water, erection of nets to avoid escape of fish	Continuous pumping of excess water, erection of nets low lying areas	Strengthening of bunds, excavating channels along the sides of the ponds for free escape of water
(ii) Water continuation and changes in water quality		When dissolved oxygen levels go down, aerators, recirculation of water, etc are to be attempted to maintain DO levels, going for partial harvest, etc	
(iii) Health and diseases	Sometimes there may be heavy accumulation of nutrients and organic	There may be break out of Heamorrhagic septicimea. Addition	Removal of weeds, top layer of soil, deep ploughing of tank and application

	matter.	of antibiotics like Chloro Tetra Cycline or Oxy Tetra Cycline to the feed to constrol the disease	of lime, exposing to sun light
(iv) Loss of stock and inputs (feed, chemicals etc)	Advance erection of nets, strengthening of bunds where they are prone to breaches, harvesting or reducing the density	Suspension of feeding, application of organic manures	Compensatory stocking, assessment of values and payment of subsidy on inputs
(v) Infrastructure damage (pumps, aerators, huts etc)	Insuring pond, accessories, etc., Shifting of aerators, pumps soon after warnigs are issued	Relocating pumps, aerators to elevated places	Assessment of damages and provision of them on subsidy
(vi) Any other			
3. Cyclone / Tsunami			
A. Capture			
Marine			
(i) Average compensation paid due to loss of fishermen lives	Avoidance of fishing, preventing fishermen from venturing into sea, carrying of safety equipment and VHF sets, shifting fishermen from vulnerable areas to relief camps, etc	To ensure the return of fishing boats on long voyages, provision of information on such boats to coast Guard	Payment sufficient ex-gratia to the families
(ii) Avg. no. of boats / nets/damaged	Avoidance of fishing when warnings are issued, shifting of boats and nets to safe places	Shifting and relocating boats and nets to safer places	Assessment of damages to boats and nets and provision of boats and nets for restoration of livelihoods
(iii) Avg. no. of houses damaged	Avoidance of houses in Coastal Regulation Zone, designing of houses to withstand impact of turbulent wind and water	Shifting of people by relief boats to the relief camps	Assessment of damages to houses and provision of compensation in case of partial damage and sanction house under existing schemes
Inland	Erection of protective nets acroos the surplus weir to prevent fish loss due to overflows	Continuous monitoring to prevent or minimise escape of fish along with surplus water	Compensatory stocking of seed

B. Aquaculture			
(i) Overflow / flooding of ponds	The design of the pond must be in such a manner as to bail out surplus water and to prevent loss of stanidng crop	Continuous monitoring to prevent or minimise escape of fish along with surplus water	Compensatory stocking of seed
(ii) Changes in water quality (fresh water / brackish water ratio)	Recircualtion water to repleish and ensure sufficient dissolved oxygen levels in the pond. Maintenance of salinity levels by pumping in water from creecks.	Continuation of the same process.	Restoration of physical and chemical parameters
(iii) Health and diseases	Removal of stress causing factors to maintain the health of the animal	Removal of stress causing factors to maintain the health of the animal	Restoration of physical and chemical parameters
(iv) Loss of stock and inputs (feed, chemicals etc)	Preventive nets must be erected to minimise loss of stock	Continuation of the same process.	Compensatory stocking of seed
(v) Infrastructure damage (pumps, aerators, shelters/huts etc)	Pumps, aerators, etc must be protected by moving them to safe locations	To avoid use of aerators, pumps and other appliances	Overhauling of the eqipment to prevent from being damaged
(vi) Any other			
4. Heat wave and cold wave			
A. Capture			
Marine	Avoidance of fishing	Avoidance of fishing	No intervention
Inland	Monitoring dissolved oxygen levels	Monitoring dissolved oxygen levels	No intervention
B. Aquaculture			
(i) Changes in pond environment (water quality)	Reduction of biomass by partial harvest in the event of heat as the DO levels will be very low.	Avoidance of fishing	Compensatory stocking of seed and restoration of all physical and chemical parameters
(ii) Health and Disease management	Removal of stress causing factors to	Removal of stress causing factors	Compensatory stocking of seed and

	maintain the health of the animal	to maintain the health of the animal	restoration of all physical and chemical parameters
(iii) Any other			