State: ANDHRA PRADESH

Agriculture Contingency Plan for District: PRAKASAM

1.0 District Agriculture profile					
1.1	**Agro-Climatic/Ecological Zone**				
	Agro Ecological Sub Region (ICAR)	Eastern Coastal plain, hot sub-humid to semi arid eco region (7.3, 18.3)			
	Agro-Climatic Region (Planning Commission)	East Coast plain and hill region (XI)			
	Agro Climatic Zone (NARP)	Krishna – Godavari Zone (AP-1)			
	List all the districts or part thereof falling under the NARP Zone	Guntur, Krishna, Prakasam			
	Geographic coordinates of district	Latitude	Longitude	Altitude	
		14°57'N	78°43'E		
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Regional agricultural Research Station, Lam, Guntur			
	Mention the KVK located in the district	Darsi, Prakasam Dt , AP			
1.2	**Rainfall**	**Normal RF(mm)**	**Normal Rainy days (no)**	**Normal Onset (specify week and month)**	**Normal Cessation (specify week and month)**
	SW monsoon (June-Sep):	388	36	June 2nd week	October 2nd week
	NE Monsoon(Oct-Dec):	393	18	October 2nd week	Last week of December
	Winter (Jan- February)	16	5	-	-
	Summer (Mar-May)	73	6	-	-
	Annual	871	65	-	-

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)	1762.6	442.5	171.5	58.6	69.6	11.1	158.3	100.4	103.9

1. 4	**Major Soils (common names like shallow red soils etc.,)**	**Area ('000 ha)**	**Percent (%) of total**
	1. Shallow Red soils	215	51
	2. Deep black cotton soils	173	41
	3. Sandy loamy soils	25	6
	4.Sandy soils	9	2
	Others (specify):		
1.5	**Agricultural land use**	**Area ('000 ha)**	**Cropping intensity %**
	Net sown area	548.1	107.7
	Area sown more than once	42.0	
	Gross cropped area	590.2	

1.6	**Irrigation**	**Area ('000 ha)**		
	Net irrigated area	173.1		
	Gross irrigated area	188.3		
	Rainfed area	375.0		
	Sources of Irrigation	**Number**	**Area ('000 ha)**	**Percentage of total irrigated area**
	Canals		66.7	34.3
	Tanks	957	27.8	14.3
	Open wells	22783		
	Bore wells	41163	84.4	43.4
	Lift irrigation	1407		
	Micro-irrigation	--		
	Other sources	--	15.7	8.1
	Total Irrigated Area		194.6	100.0
		--		
	Pump sets	--	--	
	No. of Tractors	--	--	
	Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	**No. of blocks/ Tehsils**	**(%) area**	
	Over exploited			
	Critical			
	Semi- critical			
	Safe			
	Wastewater availability and use			
	Ground water quality			
*over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%				

1.7		Major Field Crops cultivated	Area ('000 ha)					
			Kharif		*Rabi*		Summer	Total
			Irrigated	*Rainfed*	*Irrigated*	*Rainfed*		
	1	Chick Pea	-	-	153.0	-	-	153.0
	2	Paddy	*47*	--	*81*	--	--	128.0
	3	Redgram		69		3.0	--	72.0
	4	Tobacco				69.2		69.2
	5	Cotton	11.1	13.5	0.6	--	15.8	41.0
	6	Sunflower	1.5	0.5	17.6	12.5	--	32.1
	7	Bajra	3.7	10.3	0.8	--	--	14.8
	8	Groundnut	1.5	--	2.8	--	--	4.3
	9	Other crops	22.8	--	2.5	--	--	25.3
		Horticulture crops - Fruits	**Total area**					
	1	Orange &Batavia	22.5					
	2	Mango	6.6					
	3	Sapota	5.6					
	4	Lemon	2.3					
	5	Papaya	1.6					
		Horticultural crops - Vegetables	**Total area**					
	1	Chillies	10.6					
	2	Tomato	6.9					
		Plantation crops	**Total area**					
	1	Coriander	1.3					

1.8	Livestock	Male ('000)	Female ('000)	Total ('000)
	Non descriptive Cattle (local low yielding)	77.3	35.1	112.4
	Crossbred cattle	1.4	1.0	2.4
	Non descriptive Buffaloes (local low yielding)	195.9	1077.9	1273.8
	Graded Buffaloes			
	Goat			436.5

	Sheep			1478.6
	Others (Camel, Pig, Yak etc.)			19.91
	Commercial dairy farms (Number)			
1.9	**Poultry**	**No. of farms**	**Total No. of birds ('000)**	
	Commercial		293.0	
	Backyard		110.8	

1.10	**Fisheries** (Data source: Chief Planning Officer)						
	A. Capture						
	i) Marine (Data Source: Fisheries Department)	**No. of fishermen**	**Boats**		**Nets**		**Storage facilities (Ice plants etc.)**
			Mechanized	Non-mechanized	Mechanized (Trawl nets, Gill nets)	Non-mechanized (Shore Seines, Stake & trap nets)	
		12748	38	937 / 2260	31 / 83789	0 / 807	20 / 1
	ii) Inland (Data Source: Fisheries Department)	**No. Farmer owned ponds**		**No. of Reservoirs**		**No. of village tanks**	
		70		9		159	
	B. Culture						
		Water Spread Area (ha)		**Yield (t/ha)**		**Production ('000 tons)**	
	i) **Brackish water** (Data Source: MPEDA/ Fisheries Department)	2380		0.001		2.731	
	ii) **Fresh water** (Data Source: Fisheries Department)	341		0.003		0.943	
	Others			0.000		27.215	

1.11	**Production and Productivity of major crops** (Average of last 5 years)	**Kharif**		**Rabi**		**Summer**		**Total**		**Crop residue as fodder** ('000 tons)
		Production (MT)	**Productivity (kg/ha)**	**Production (MT)**	**Productivity (kg/ha)**	**Production (MT)**	**Productivity (kg/ha)**	**Production (MT)**	**Productivity (kg/ha)**	
Major Field crops (Crops to be identified based on total acreage)										
1	Paddy	115929	3139	206023	3346	--	--	321952	6485	--

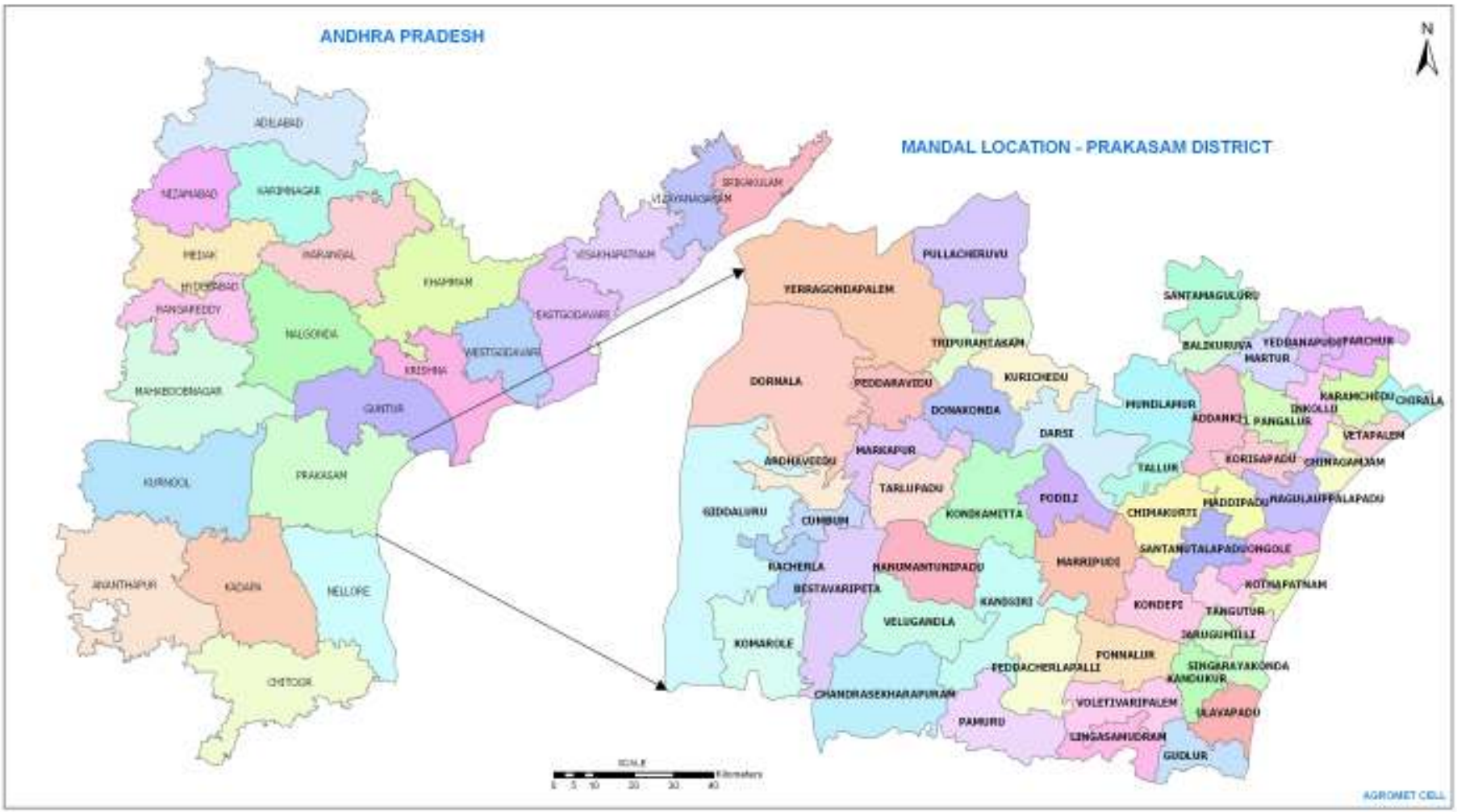
2	Redgram	37664	498	--	--	--	--	37664	498	--
3	Cotton	48667	325	--	--	--	--	48667	325	--
4	Bengalgram	--	--	153041	1699	--	--	153041	1699	--
5	Sunflower	991	518	35838	1258	--	--	36829	1776	--
6	Groundnut	1641	868	15508	2350	--	--	17149	3218	--
7	Chillies	32260	2371	13084	3234	--	--	45344	5605	--
Major Horticultural crops										
1	Orange& Batavia							299.5	13300	
2	Mango							54.6	8267	
3	Sapota							56.2	10000	
4	Lemon							34.2	14667	
5	Papaya							124.6	78667	
Vegetables										
1	Chillies							30.4	1917	
2	Tomato							132.9	12667	
Spices and plantation crops										
1	Coriander							1.5	800	

1.12	**Sowing window for 5 major field crops (start and end of normal sowing period)**	**Paddy**	**Redgram**	**Cotton**	**Bengal gram**	**Sunflower**
	Kharif- Rainfed	--	July last week to August 2nd week	July last week to August 2nd week	--	July last week to August 2nd week
	Kharif-Irrigated	August 2nd week to September 3rd week	--	--	--	--
	Rabi- Rainfed	--	October 3rd week to November 1st week	--	October last week to December 1st week	October 3rd week to November 1st week
	Rabi-Irrigated	October 1st week to December 1st week	--	--		

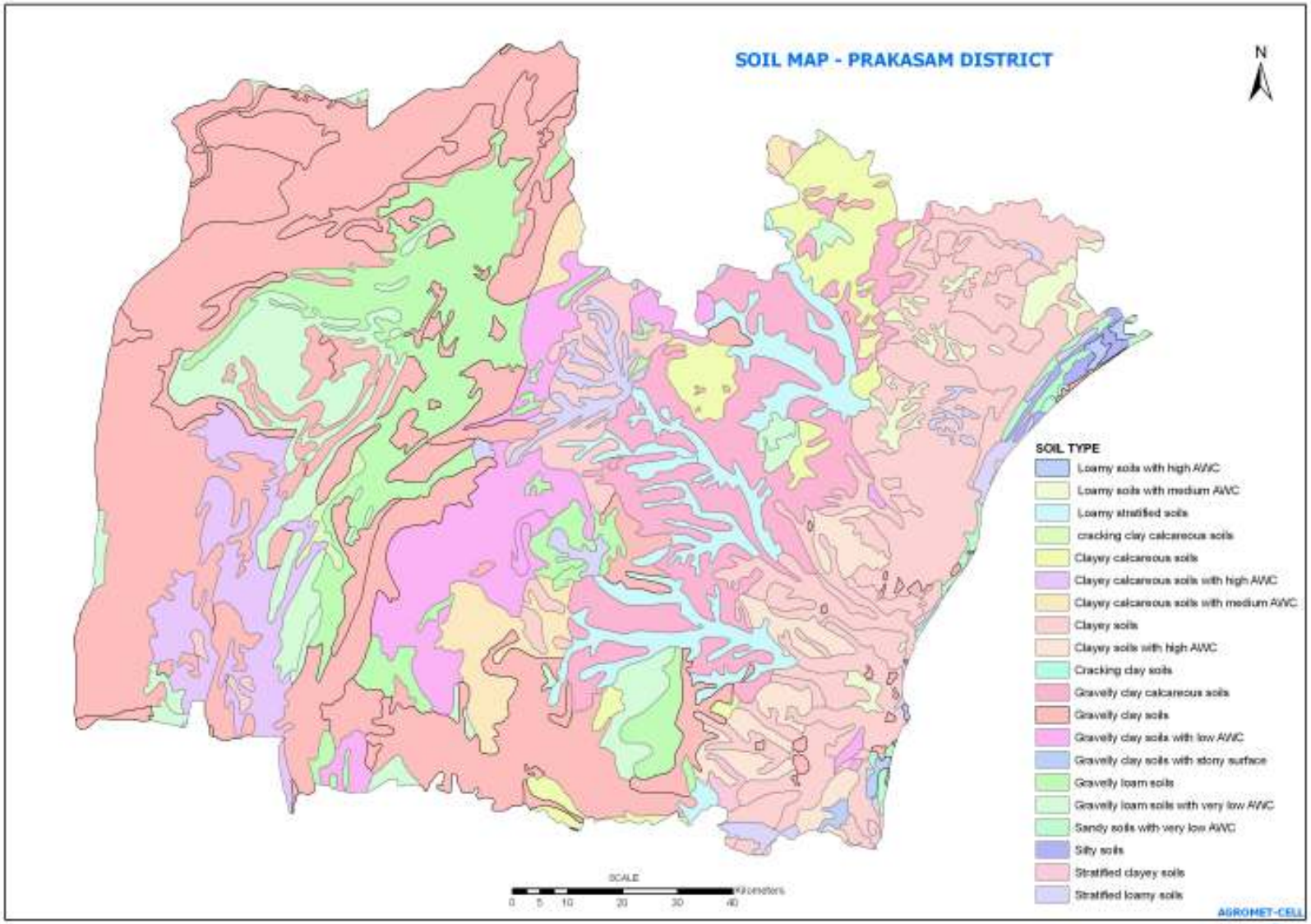
1.13	**What is the major contingency the district is prone to? (Tick mark and mention years if known during the last 10 year period)**	Regular	Occasional	None
	Drought	√		
	Flood		√	
	Cyclone		√	
	Hail storm			
	Heat wave			
	Cold wave			
	Frost			
	Sea water intrusion			
	Pests and diseases (specify)	Rice: Blast,BLB Redgram: Maruca and Helicoverpa Cotton: Sucking pest complex Castor: Botrytis grey mould		

		Blackgram : YMV		
	Others (Fog)		√	

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 / No


ANDHRA PRADESH
MANDAL LOCATION - PRAKASAM DISTRICT
N
ADILABAD
NIZAMABAD
KARIMNAGAR
MEDAK
WARANGAL
HYDERABAD
RANGAREDDY
KHAMMAM
NALGONDA
VISAKHAPATNAM
SRIKAKULAM
VIZIANAGARAM
EASTGODAVARI
WESTGODAVARI
KRISHNA
MAHABOOBNAGAR
GUNTUR
KURNOOL
PRAKASAM
ANANTHAPUR
KADAPA
NELLORE
CHITTOOR
YERRAGONDAPALEM
PULLACHERUVU
TRIPURANTAKAM
DORNALA
PEDDAVARIDU
KURICHEDU
DONAKONDA
DARSI
MARKAPUR
ARDHAVEEDU
TARLUPADU
GIDDALURU
CUMBUM
KONDAMETTA
PODILI
RACHERLA
HANUMANTUNIPADU
MARRIPUDI
BESTAVARIPETA
KANDUKUR
VELUGANDLA
KOMAROLE
PEDDACHERLAPALLI
CHANDRASEKHARAPURAM
PAMURU
VOLETIVARIPALEM
SINGASAMUDRAM
GUDLUR
SANTAMAGULURU
BALIKURUVA
YEDDANAPUDI
PARCHUR
MARTUR
KARAMCHEDU
CHIRALA
INKOLLU
MUNDLAMUR
ADDANKI
PANGALUR
VETAPALEM
KORISAPADU
CHINAGANJAM
TALLUR
NAGULAPPALAPADU
MADDIPADU
CHIMAKURTI
SANTANUTALAPADUONGOLE
KOTHAPATNAM
KONDEPI
TANGUTUR
ARUGUMILLI
PONNALUR
SINGARAYAKONDA
KANDUKUR
ULAVAPADU
SCALE
AGROMET CELL


MANDAL WISE - NORMAL RAINFALL (mm)
PRAKASAM DISTRICT
N
PULLACHERUVU 709.3
YERRAGONDAPALEM 731.2
TRIPURANTAKAM 728.8
DORNALA 850.4
PEDDARAVIDU 711.6
KURICHEDU 771.2
DONAKONDA 728
DARSI 815.5
MARKAPUR 725.9
ARDHAVEEDU 754.5
TARLUPADU 738.9
GIDDALURU 636.2
CUMBUM 733.3
RACHERLA 618.1
BESTAVARIPETA 763.1
KOMAROLE 737.6
HANUMANTUNIPADU 753.3
KONAKAMITTA 770.5
PODILI 789.1
VELUGANDLA 805.8
KANIGIRI 795.2
MARKIPUDI 801.9
PEDDACHERLAPALLI 798.3
CHANDRASEKHARAPURAM 777.1
PAMURU 723.5
SANTAMAGULURU 739.8
BALIKHRUVA 789.5
MARTUR 842
YEDDANAPUDI 881.5
PARCHUR 919.3
MUNDLAMUR 816.6
ADDANKI 829
J. PANGALUR 906.4
INKOLLU 896.3
KARAMCHEDU 950
CHIRALA 1015.3
VETAPALEM 963.7
KORISAPADU 884.4
CHINAGANJAM 936.6
TALLUR 839.2
MADDIPADU 934.7
NAGULAPPALAPADU 982.6
CHIMAKURTI 922.6
SANTANUTALAPADU 1000.6
ONGOLE 1084.4
KOTHAPATNAM 1132.3
KONDEPI 1081.5
TANGUTUR 1098.6
JARUGUMILLI 1094.5
PONNALUR 970.4
SINGARAYAKONDA 1219.8
KANDUKUR 1145.7
VOLETIVARIPALEM 1056
ULAVAPADU 928.1
LINGASAMUDRAM 1139.8
GUDLUR 1104
SCALE
0 5 10 20 30 40 Kilometers
AGROMET CELL


SOIL MAP - PRAKASAM 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 clay soils with stony surface
Gravelly loam soils
Gravelly loam soils with very low AWC
Sandy soils with very low AWC
Silty soils
Stratified clayey soils
Stratified loamy soils
SCALE
0 5 10 20 30 40
AGROMET-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 (June 4th week)	Rainfed Red soils	Redgram	No change		
		Redgram+ Castor (1:2)			
		Castor + Bajra (1:2)			
		Castor			
		Fallow-FCV Tobacco (Rabi)			
		Fallow-Bengalgram (*Rabi*)			
	Rainfed Black soils	Cotton			
		Fallow-Bengalgram (*Rabi*)			
		Fallow-Tobacco (FCV)(Rabi)			

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 2nd week)	Rainfed Red soils	Redgram	No change	Reduce redgram row spacing from 120 cm to 90 cm	
		Redgram+ Castor (1:2)			
		Castor + Bajra (1:2)			
		Castor			
		Fallow-FCV tobacco (Rabi)			
		Fallow-Bengalgram (*Rabi*)			
	Rainfed Black soils	Cotton			
		Fallow-Bengalgram (*Rabi*)			

		Fallow-Tobacco (FCV)(Rabi)			

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 6 weeks (July 4nd week)	Light sols-Rainfed	Redgram	No change	Reduce row spacing from 120 cm to 90 cm	
		Redgram+ Castor (1:2)			
		Castor + Bajra (1:2)			
		Castor		Reduce spacing from 90X60 cm to 90X45 cm	
		Sunflower			
		Fallow-FCV Tobacco (Rabi)			
		Fallow-Bengalgram (*Rabi*)			
	Heavy soils-Rainfed	Cotton	No change	Adopt closer spacing of 90x45cms	
		Fallow-Bengalgram (*Rabi*)			
		Sunflower			
		Fallow-Tobacco (FCV)(Rabi)			

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	Light sols-Rainfed	Redgram	No change	Reduce row spacing to 90 cm	
		Redgram+ Castor (1:2)			

(August 2nd week)		Castor + Bajra (1:2)			
		Castor		Reduce spacing from 90X60 cm to 90X45 cm	
		Sunflower			
		Fallow-FCV tobacco (Rabi)			
		Fallow-Bengalgram (*Rabi*)			
	Heavy soils-Rainfed	Cotton	No change	Adopt closer spacing of 90X30 cm	
		Fallow-Bengalgram (*Rabi*)			
		Sunflower			
		Fallow-Tobacco (FCV)(Rabi)			

Condition			**Suggested Contingency measures**		
Early season drought **(Normal onset)**	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	Heavy soils - Rainfed	Cotton	Gap filling	1. When the crop is 2 weeks old take up inter cultivation to conserve moisture 2. Spray 2 % urea solution or 1 % water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 nutrition 3. Formation of dead furrows 4.Digging of farm ponds	- - - -
	Light soils - Rainfed	Redgram (sole crop)		1.Inter cultivation to be done after 2 weeks of sowing to conserve soil moisture 2. Formation of dead furrows 3.Digging of farm ponds	
		Redgram+ castor			

		Castor			
		Castor + Bajra			
		Sunflower			

Condition			**Suggested Contingency measures**		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**
At vegetative stage	Heavy soils-rainfed	Cotton	Spray 2 % urea solution or 1 % water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21	Frequent intercultivation to conserve moisture Protective irrigation Formation of dead furrows --	
	Light soils -rainfed	Redgram (sole crop)	-do-		
		Redgram + castor inter crop	-do-		
		Castor	Spray 2 % urea solution or 1 % water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 Adopt nipping to allow main spike to develop		
		Sunflower	Spray 2 % urea solution or 1 % water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21		
		Castor intercropped with bajra	Harvest intercrops as fodders as chances of grain yield are poor Supplement the nutrients to the main crop through foliar spray	Inter cultivate periodically (7-10 days interval) to conserve soil moisture	

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	Heavy soils-Rainfed	Cotton	Spray urea - 2 % or KNO_3 1% or other water soluble fertilizers 1 % to supplement nutrition	-	-
	Light soils-Rainfed	Redgram (sole crop)	-do-		
		Redgram + castor intercrop	Spray urea - 2 % or KNO_3 1% or other water soluble fertilizers 1 % to supplement nutrition Nipping of auxiliary buds to allow the main spike to mature		
		Castor	Nipping of auxiliary buds to allow the main spike to mature Foliar spray of urea 2 % or KNO_3 1% or other water soluble fertilizers 1 % to supplement nutrition		

Condition			**Suggested Contingency measures**		
Terminal drought	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Rabi Crop planning**	**Remarks on Implementation**
	Heavy soils-rainfed	Cotton	Spray urea - 2 % or KNO_3 1% or other water soluble fertilizers 1 % to supplement nutrition	Bengalgram	
	light soils-Rainfed	Redgram (sole crop)	Spray urea - 2 % or KNO_3 1% or other water soluble fertilizers 1 % to supplement nutrition Selection of varieties with less duration if terminal drought is a common phenomenon	FCV-Tobacco	
		Redgram+ castor			
		Castor	1. Nipping of auxiliary buds to allow the main spike to mature 2. Foliar spray of urea 2 % or KNO_3 1% or other water soluble fertilizers 1 % to supplement nutrition	-	

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 of water in canals due to low rainfall	Black soils – Canal irrigated (KWD)	Rice – Blackgram/Fodder	No Change	1.Green manure preceding to kharif rice Adopt preventive control measures for diseases like Blast in rice 2. During Rabi season select Blackgram varieties like LBG 20, LBG 752, LBG 708, LBG 709, T9 which are early maturing and suitable for delayed sowings 3. Greengram can be grown in rice fallows under late seasonal conditions	-
	Red Soils/Black Soils – Canal irrigated (NSP Command)	Greengram – Rice – Greengram/Maize/Blackgram/Fodder		1.Avoid growing rice varieties like BPT 5204 as they are highly susceptible to blast disease under delayed season 2. Select varieties like NLR 34449, NLR 3041, NLR 145, JGL 384 etc. which are resistant to blast and suitable for mid kharif season 3. If BPT 5204 is grown, timely plant protection in crucial	

Condition			**Suggested Contingency measures**		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Limited release of water in canals due to low rainfall	Black soils – Canal irrigated (KWD)	Rice-Fodder	Rice (Direct seeded)-Blackgram	**Rice –**1. Adopt alternate wetting and drying upto Primordial Initiation stage to save water 2. Irrigate upto a depth of 3 – 5 cm from Primordial Initiation to maturity 3. Take up effective weed control measures either mechanically or through herbicides as the problem of weeds is more under alternate wetting and drying method of irrigation (specify herbicides and its concentration) **Rice fallows** 1.Crops like maize which require more water shall be avoided 2. Crops like Greengram, Blackgram, Jowar, Bajra etc. which require less water than Maize shall be grown 3. Short duration varieties of crops shall be selected(list out short duration varieties). 4. Water saving micro irrigation systems like Sprinkler irrigation for Grengram and Blackgram can be followed 5. water conservation practices like inter cultivation, earthing up, Alternate row irrigation shall be practiced 6. Water loss during conveyance can be reduced by using PVC/Metallic pipes instead of running water in open field	**Rice -** Farmers should be careful in weed management as weeds are the major threat to crop under alternate wetting and drying method of irrigation. They should be properly educated and trained in use of suitable chemical and mechanical control measures **Rice fallows –** 1. Availability of seed of short duration varieties shall be ensured 2. Facilities like micro irrigation systems – Sprinkler and Drip can be extended to the farmers

				channels	

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal 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	Black soils/Red soils – Canal irrigation (NSP)	NA			
	Black soils – Canal irrigated (KWD)	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	Heavy soils – irrigated-tankfed	Red gram-Paddy	Green manure/ Greengram-Paddy.	1. Use recommended seed rate to maintain optimum plant population 2. Foliar spray of nutrients 2% Urea or 1% KNO3	--

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
	Light soils-irrigated-tankfed/wells and bore wells	Summer Cotton-paddy	Cotton-Paddy	1. Timely sowing is advantageous 2. Irrigation at critical stages through Micro irrigation systems 3. Irrigation at critical stages may be followed instead of intensive irrigations	
		Cotton	Cotton	Adopt closer spacing 60 X30 cm	
		Bengal gram	Bengal gram	1. Timely sowing is advised 2. Irrigation at critical stages through Micro irrigation systems	

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal 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	Blackgram/ Greengram/ /Sesamum/ Bengal gram	1. Timely sowing is advised 2. Irrigation at critical stages through Micro irrigation systems 3. Irrigation at critical stages may be followed instead of intensive irrigations	
		Maize	Blackgram/ Greengram/ /Sesamum/ Bengal gram		
		Sunflower	No change		

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 the excess water as early as possible 2. Apply 20 kg N + 10 kg K /acre after draining excess water 3. Take up gap filling either with available nursery or by splitting the tillers from the surviving hills 4. Take up proper weed control Measures 5. Take up suitable plant protection Measures in anticipation of pest & disease out breaks	1. Drain the excess water as early as possible 2. Apply 20 kg N + 10 kg K /acre after draining excess water 3. Take up suitable plant protection Measures in anticipation of pest & disease out breaks	1. Drain the excess water as early as possible 2. Take up suitable plant protection measures in anticipation of pest & disease out breaks	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 panicles to prevent germination and spoilage of straw from moulds 3. Thresh after drying the sheaves properly 4. Ensure proper grain moisture before storing
Cotton	1. Drain the excess water as early as possible in black soils 2. Apply 20 kg N + 10 kg K /ha after draining excess water 3. Take up inter cultivation at optimum soil moisture condition to loosen and aerate the soil and to control weeds 4. To spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 @ 1% to support nutrition 5. Spray fungicides like Copper oxy chloride 0.3 % or Carbendazim 0.1 % or Mancozeb 0.25% two to three times by rotating the chemicals 6. Take up timely control measures	1. Drain the excess water as early as possible 2. Apply 20 kg N + 10 kg K /ha after draining excess water 3. To spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 4. Spray fungicides like Copper oxy chloride 0.3 % or Carbendazim 0.1 % or Mancozeb 0.25% two to three times by rotating the chemicals to control Bacterial leaf blight, wilt alternaria leaf spot and grey mildew 5. Take up timely control measures against sucking pets and bollworms.	1.Drain the excess water as early as possible 2.To spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 3.Spray fungicides like Copper oxy chloride 0.3 % or Carbendazim 0.1 % or Mancozeb 0.25% against boll not. 4.Take up timely control measures against bollworms and whitefly	Dry the produce properly before baling and sending to market

	against sucking pests			
Redgram	1. Drain the excess water as early as possible 2. Apply 20 kg N + 10 kg K /acre after draining excess water 3. Take up inter cultivation at optimum soil moisture status to loosen and aerate the soil and to control weeds 4. To spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition	1. Drain the excess water as early as possible 2. To spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 3. Take up timely control measures against possible outbreak of pod borer complex, maruca , Helicovera etc.	1. Drain the excess water as early as possible 2. Allow the crop to dry completely before harvesting	1. Spread the bundles drenched in rain on field bunds or drying floors to quicken the drying 2. Thresh the bundles after they are dried properly 3. Dry the grain to proper moisture per cent before bagging and storing to prevent deterioration in quality during storage
Castor	1. Drain the excess water as early as possible 2. Apply 4-5 kg N /acre after draining excess water 3. To spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 4. Take up timely control measures for semilooper	1. Drain the excess water as early as possible 2. Apply 4-5 kg N /acre after draining excess water 3. To spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 4. Spray fungicides like Copper oxy chloride 0.3 % or Carbendazim 0.2 % for Botrytis grey rot control5. Take up timely control measures against *Spodoptera* and capsule borer	1. Drain the excess water as early as possible 2. Allow the crop to dry completely before harvesting	
Maize	1. Drain the excess water as early as possible 2. Apply 20 kg N + 10 kg K /acre after draining excess water 3. Take up inter cultivation and at optimum soil moisture condition to loosen and aerate the soil and to control weeds 4. To spray KNO_3 1 % or water	1. Drain the excess water as early as possible 2. Apply 20 kg N + 10 kg K /acre after draining excess water 3. To spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 4. Take up timely control measures	1. Drain the excess water as early as possible 2. Allow the crop to dry completely before harvesting	1. Harvest the cobs after the they are dried up properly. Dry the grain to optimum moisture condition before storing

	soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 5. Take up timely control measures for Pink stem borer, sheath blight	for sheath blight and post flowering stalk rots		
Bengalgram	1. Drain the excess water as early as possible 2. Apply 4-5 kg N /acre after draining excess water 3. To spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 4. Spray fungicides like Copper oxy chloride 0.3 % or Carbendazim 0.1 % or Mancozeb 0.25% 5. Take up timely control measures against the out break of pests like *Helicoverpa* etc.	1. Drain the excess water as early as possible 2. Apply 4-5 kg N /acre after draining excess water 3. To spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 4. Spray fungicides like Copper oxy chloride 0.3 % or Carbendazim 0.1 % or Mancozeb 0.25% against blight and wilt 5. Take up timely control measures against the outbreak of pests like *Helicoverpa* etc.	1. Drain the excess water as early as possible 2. Allow the crop to dry completely before harvesting	
Horticulture (Fruits)				
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	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	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.

	750 g MOP per tree should be applied.	750 g MOP per tree should be applied.		
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
Sapota	Same as above	Same as above	Same as above	Same as above
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.	.	
Papaya	Drain out the excess water out break of any sucking past should be controlled using systemic insecticides Water logging near trunk should be prevented	Drain out the excess water Water logging near trunk should be prevented	Drain out the excess water Harvest the marketable fruits in a clear sunny day Water logging near trunk should be prevented Micronutrient deficiencies should be corrected by foliar sprays of Fe, Mg, Zn, Bo and Mn	
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.
Tomato	Drain the excess water as soon as possible Spray Urea 2% solution 2-3 times. Topdressing of booster dose of 12 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	Same as above	Same as above	Store the harvested fruits in well ventilated place temporarily before it can be marketed. Market the fruits as soon as possible.

	crop must be taken up.			
Spices and plantation crops				
Coriander	Drain the excess water as soon as possible Spray Urea 2% or 1% KNO3 solution 2-3 times.	Drain the excess water as soon as possible Spray Urea 2% or 1% KNO3 solution 2-3 times.	Drain the excess water as soon as possible Harvest the marketable umbels as soon as possible.	Dry the produce immediately Market the produce immediately after drying.
Condition - Heavy rainfall with high speed winds in a short span				
Rice	Measures similar to above given for heavy rainfall situation as above	In addition to the above measures lift the lodged hills and tie them together to keep them erect	In addition to the above measures, lift the lodged plants and tie them together keep erect	In addition t the above measures, for water lagging take up measures to minimize blowing away of produce due to high velocity winds.
Cotton	In addition to the measures for removing excess water, Lift the fallen plants if any and firm up the soil around the base of the stem	Lift the fallen plants if any and firm up the soil around the base of the stem Bacterial leaf blight: Spray plantomycin 16g per acre	Similar measures as in water lagged situation. Additional by pick the net cotton at the earliest	Dry the produce under sun before sending to market
Redgram	Lift the lodged plants if any and firm up the soil around the base of the stem Apply 4-5 kg N /acre after draining excess water	Lift the lodged plants if any and firm up the soil around the base of the stem Takeup timely pest control measures for pod borers and wilt	Harvest the pods from uprooted plants as soon as the field condition permits and transport to drying floor	Dry the produce under sun before thrashing and sending to market.
Castor	1. Drain out the excess water from the field as early as possible	1. Drain out the excess water from the field as early as possible	1. Drain out the excess water from the field as early as possible	1. Dry the produce under sun before sending to

	2. Apply 4-5 kg N /acre after draining excess water 3. .To spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 4. Take up proper weed control measures 5. Takeup timely plant protection measures for possible pest and disease out breaks	2. Apply 4-5 kg N /acre after draining excess water 3. .To spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 4. Takeup timely plant protection measures for possible pest and disease out breaks	2. Harvest the crop as soon as the field condition permits	market
Maize	Drain out the excess water from the field as early as possible Earthing-up for better anchorage	Drain out the excess water from the field as early as possible	Drain out the excess water from the field as early as possible Allow the crop to dry completely before harvesting	Harvest the cobs after they are dried up properly. Dry the grain to optimum moisture condition before storing
Horticulture				
Orange & Batavian	Wind damaged branches should be pruned using disinfected secaetures and cut endsmust be smeared with Bordeaux paste Drain the excess water as soon as possible Spray Urea 2% or 1% KNO3 followed by Ferrous Sulphate 0.5% + Citric Acid 0.1 % solution 2-3 times. Topdressing of booster dose of 40 kg MOP + 50 kg Urea along with 250 kg of Neem Cake per acre as soon as possible.	Wind damaged branches should be pruned using disinfected secaetures and cut endsmust be smeared with Bordeaux paste Drain the excess water as soon as possible Spray Urea 2% or 1% KNO3 followed by Ferrous Sulphate 0.5% + Citric Acid 0.1 % solution 2-3 times. Topdressing of booster dose of 40 kg MOP + 50 kg Urea along with 250 kg of Neem Cake per acre as soon as possible.	Wind damaged branches 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 matured fruits in a clear day by using improved harvesters	Grade the damaged or infected fruits. Store the graded fruits in well-ventilated place temporarily before it can be marketed. Market the fruits as soon as possible. . The fallen under sized fruits may be utilized for processing immediately
Mango	Wind damaged branches should be	Wind damaged branches should be	Same as above	Same as above

	pruned using disinfected secatures and cut ends must be smeared with Bordeaux paste Drain the excess water as soon as possible Spray 1% KNO_3 or Urea 2% solution 2-3 times.	pruned using disinfected secatures and cut ends must be smeared with Bordeaux paste Drain the excess water as soon as possible Spray 1% KNO_3 or Urea 2% solution 2-3 times.		
Guava	Provide support to the young plants Drain the excess water as soon as possible Spray 1% KNO3 or Urea 2% solution 2-3 times.	Wind damaged branches should be pruned using disinfected secaetures and cut endsmust be smeared with Bordeaux paste Drain the excess water as soon as possible Spray 1% KNO3 or Urea 2% solution 2-3 times.	Wind damaged branches should be pruned using disinfected secaetures and cut endsmust be smeared with Bordeaux paste Drain the excess water as soon as possible Harvest the mature fruits as soon as possible. Spray 1% KNO3 or Urea 2% solution 2-3 times.	Same as above
Lemon	Wind damaged branches should be pruned using disinfected secatures and cut ends must be smeared with Bordeaux paste Drain the excess water as soon as possible Spray Urea 2% or 1% KNO3 followed by Ferrous Sulphate 0.5% + Citric Acid 0.1 % solution 2-3	Wind damaged branches should be pruned using disinfected secatures and cut ends must be smeared with Bordeaux paste Drain the excess water as soon as possible Spray Urea 2% or 1% KNO3 followed by Ferrous Sulphate 0.5% + Citric Acid 0.1 % solution 2-3	Wind damaged branches should be pruned using disinfected secatures and cut ends must be smeared with Bordeaux paste Drain the excess water as soon as possible Harvest the matured fruits in a clear day	Same as above

	times. Topdressing of booster dose of 40 kg MOP + 50 kg Urea along with 250 kg of Neem Cake per acre as soon as possible.	times. Topdressing of booster dose of 40 kg MOP + 50 kg Urea along with 250 kg of Neem Cake per acre as soon as possible.		
Papaya	Uprooted plants may be lifted and earthed up Gap filling\Replanting may be done based on extent of damage Stake the plants if necessary	Staking may be provided for heavy bearing plants	Same as above and Staking may be provided for heavy bearing plants Dropped fruits should be collected from garden	Drain the excess water as soon as possible. Grade the damaged or infected fruits. Store the graded fruits in well ventilated place temporarily before it can be marketed. Market the fruits as soon as possible. The fallen under sized fruits may be utilized for processing immediately.
Vegetables				
Chillies	Uprooted plants may be lifted and earthed up Gap filling must be done immediately If damage is more, go for replanting Drain the excess water as soon as possible Spray Urea 2% or KNO3 1% solution 2-3 times. Topdressing of booster dose of 15	Uprooted plants may be lifted and earthed up Gap filling must be done immediately If damage is more ,go for replanting 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	Uprooted plants may be lifted and earthed up Drain the excess water as soon as possible Harvest the matured fruits in a clear sunny day.	Dry the pods on elevated concrete floor\polythene sheet immediately after the appearance of sunlight (or). Use poly house solar driers for quick drying Dry the chillies till it produces rattling sound (10-11% moisture)

	kg MOP + 30 kg Urea per acre as soon as possible. Intercultivate the soil with gorru and guntaka for better aeration	soon as possible.		Grade the pods and market as soon as possible. Do not store such produce for long periods. .
Tomato	Uprooted plants may be lifted and earthed up Gap filling must be done immediately If damage is more, go for replanting Drain the excess water as soon as possible Spray Urea 2% solution once.	Uprooted plants may be lifted and earthed up Drain the excess water as soon as possible Spray Urea 2% solution once.	Drain the excess water as soon as possible Harvest the marketable fruits in a clear sunny day.	Store the harvested fruits in well ventilated place temporarily before it can be marketed. Market the fruits as soon as possible.
Spices and plantation crops				
Coriander	Drain the excess water as soon as possible Spray Urea 2% or 1% KNO3 solution 2-3 times.	Drain the excess water as soon as possible Spray Urea 2% or 1% KNO3 solution 2-3 times.	Drain the excess water as soon as possible Harvest the marketable umbels as soon as possible.	Dry the produce immediately Market the produce immediately after drying.
Condition - Outbreak of pests and diseases due to unseasonal rains				
Rice	Stem borer, Leaf folder,BLB incidence is more	Stem borer, Leaf folder , stem rot	Blast, stem rot and Panicle mite	
Cotton	Jassids, Aphids	Jassids ,	Spodoptera, *Helicoverpa*	
Redgram	--	Maruca and Pd borer Helicoverpa	Pod fly, *Helicoverpa*	
Castor	---	Semilooper,Spodoptera and Botrytis grey rot	Hairy catterpillar and Botrytis grey rot	
Sunflower	Jassids, aphids	Green catterpillar, Aphids, Leaf blight and bud necrosis	Bud necrosis, *Helicoverpa*	
Bengalgram	*Spodoptera exigua*, Wilt , Blight	*Helicoverpa* Wilt	*Helicoverpa,* wilt	

Blackgram		YMV	YMV	
Horticulture				
Orange, Batavian, Lemon	-	Bacterial leaf spot	Orange, Batavian, Lemon	
Mango	Hoppers, Thrips	Anthracnose	Mango	
Sapota	Whitefly, meely bug, fruit fly	Anthracnose, wilt	Sapota	
papaya		Ring spot virus	papaya	
Chillies	Thrips,mites, Spodoptera and Helicoverpa	Die back and fruit rot, Bacterial leaf spot, viruses	Chillies	
Tomato	Helicoverpa	Blight, wilt, virus	Tomato	

2.3 Floods

Condition	**Transient water logging/ partial inundation**			
	Suggested contingency measure			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Rice	1. To drain out the excess water at the earliest 2. Apply booster dose of 0.5 kg N/40 sq. m 3. Spray micronutrients like Zn, Fe two to three times at 4 -5 days interval 4. Takeup proper weed control measures	1. To drain out the excess water at the earliest 2. Take up gap filling either with available nursery or by splitting the tillers from the surviving hills 3.Apply booster dose of 20 kg N/Acre 4. Spray $ZnSO_4$ 0.2 % if it is less than 45 days after transplanting 5. Take up need based plant protection measures	1. To drain out the excess water at the earliest 2. Take up need based plant protection measures	1. Drain out water spread sheaves loosely in field or field bunds where there is no water stagnation 2. Spray common salt at 5% on panicles to prevent germination and spoilage of straw from moulds 3. Thresh after drying the sheaves properly 4. Ensure proper grain moisture before storing
Cotton	1. To drain out the excess water at the earliest by farming drainage channels if there is a gradient and if not by using motors 2. Take up the gap filling at the earliest 3. Inter cultivate at optimum field moisture condition 4. Apply 20 kg N + 10 kg K /ha after draining excess water 5. To spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support	1. To drain out the excess water at the earliest by farming drainage channels if there is a gradient and if not by using motors Inter cultivate at optimum field moisture condition 2. Apply 20 kg N + 10 kg K /ha after draining excess water 3. To spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 4. Spray of micronutrients two times at 7-10 days interval 5. Take up plant protection	1. To drain out the excess water at the earliestby farming drainage channels if there is a gradient and if not by using motors 5 2. To spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 3. Take up plant protection measures against possible pests and disease incidence	Kapas picking should be done carefully to prevent admixtures with waste plant material

	nutrition 6. Take up plant protection measures against possible pests and disease incidence 7. Select short duration hybrids 8. Adopt closer spacing of 90X45 or 90X30 cm	measures against possible pests and disease incidence		
Redgram	1. To drain out the excess water at the earliest 2. Takeup the gap filling at the earliest 3. Inter cultivate at optimum field moisture condition 4. Apply 4-5 kg N/acre after draining excess water	1. To drain out the excess water at the earliest 2. Takeup the gap filling at the earliest 3. Inter cultivate at optimum field moisture condition 4. Apply 4-5 kg N/acre after draining excess water	1. To drain out the excess water at the earliest 2. To spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 3. Take up plant protection measures against possible pests and disease incidence	1. To drain out the excess water at the earliest 2. Harvest the crop when the field condition permits 3. Drying of bundles should be done on elevated places like filed bunds or drying floors
Bengalgram	1. To drain out the excess water at the earliest 2. Takeup the gap filling at the earliest 3. Takeup weed control either mechanically or through weedicides 4. Apply 4-5 kg N/acre after draining excess water 5. Take up plant protection measures against possible pests and disease incidence	1. To drain out the excess water at the earliest 2. Takeup weed control either mechanically or through weedicides 3. Apply 4-5 kg N/acre after draining excess water 4. To spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 5. Take up plant protection measures against possible pests and disease incidence	1. To drain out the excess water at the earliest 2. Apply 4-5 kg N/acre after draining excess water 3. To spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 4. Take up plant protection measures against possible pests	1. Drain out the excess water at the earliest 2. Harvest the crop after the fields are dried up

			and disease incidence	
Sunflower	1. To drain out the excess water at the earliest 2. Takeup the gap filling at the earliest 3. Inter cultivate at optimum field moisture condition 4. Apply 4-5 kg N/acre after draining excess water	1. To drain out the excess water at the earliest 2. Takeup the gap filling at the earliest 3. Inter cultivate at optimum field moisture condition 4. Apply 4-5 kg N/acre after draining excess water	1. To drain out the excess water at the earliest 2. To spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 3. Take up plant protection measures against possible pests and disease incidence	1. To drain out the excess water at the earliest 2. Harvest the crop when the field condition permits 3. Drying of bundles should be done on elevated places like filed bunds or drying floors
Condition - Continuous submergence for more than 2 days				
	Suggested contingency measure			
Rice	1. Top dressing with 0.5 kg N/40 sq.m immediately after recede of flood water 2. Spray of $ZnSO_4$, $FeSO_4$ to correct micronutrient deficiencies 3. Weed control through mechanical or Chemical measures	1. To drain out the excess water at the earliest 2. Take up gap filling either with available nursery or by splitting the tillers from the surviving hills if the gaps are < 30% if more go for replanting 3. Apply 20 kg N + 10 kg K /acre after draining excess water 4. Proper weed control measures to be taken up 4. Timely plant protection measures for pest and disease out break	1. To drain out the excess water at the earliest 2. Take up need based plant protection measures	1. Drain out water spread sheaves loosely in field or field bunds where there is no water stagnation 2. Spray common salt at 5% on panicles to prevent germination and spoilage of straw from moulds 3. Thresh after drying the sheaves properly 4. Ensure proper grain moisture before storing
Cotton	1. Mortality is most likely hence re sowing to be taken up 2. Select short duration hybrids 3. Adopt closer spacing of 90X45 & 90X30 cm	1. To drain out the excess water at the earliest 2. Apply 20 kg N + 10 kg K /acre after draining excess water 3. Spray micronutrient mixture for 2 to 3 times at an interval	1. To drain out the excess water at the earliest 2. Spray micronutrient mixture for 2 to 3 times at an interval of 7-10 days	1.Drain out the water as early as possible 2. Spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 3. Kapas picking should be

		of 7-10 days 4. To spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 5. Inter cultivate to smother weeds and to loosen and aerate the soil 6. Need based plant protection measures to be taken up	3. To spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 4. Need based plant protection measures to be taken up	done carefully to avoid admixtures and plant waste
Redgram	1. Take up gap filling if the gaps are < 30 % and if more take up re sowing 2. After gap filling take up inter cultivation to smother the weeds and to aerate the soil 3. Apply 20 kg N + 10 kg K /acre after draining excess water	1. After gap filling take up inter cultivation to smother the weeds and to aerate the soil 2. Apply 20 kg N + 10 kg K /acre after draining excess water	1. Drain out excess water form the field 2. Apply 20 kg N + 10 kg K /acre after draining excess water 3. Need based plant protection measures to be taken up	1. Drain out excess water as early as possible
Bengalgram	1. To drain out the excess water at the earliest 2. Takeup gap filling if the gaps are < 30 % and if more take up resowing 3. Apply 4-5 kg N /acre after draining excess water	1. To drain out the excess water at the earliest 2. Apply 4-5 kg N /acre after draining excess water 3. To spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 4. Proper weed control measures to be taken up 5. Need based plant protection measures to be taken up	1. To drain out the excess water at the earliest 2. To spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 3. Need based plant protection measures to be taken up	1. Drain out the excess water at the earliest
Castor	1. To drain out the excess water at the earliest 2. Re sow the crop if mortality is > 15 % 3. Apply 20 kg N + 10 kg K /acre after draining excess	1. To drain out the excess water at the earliest 2. Apply 20 kg N + 10 kg K /acre after draining excess water 3. Inter cultivate to smother weeds and to loosen and aerate	1. To drain out the excess water at the earliest 2. 2. Apply 20 kg N + 10 kg K /acre after draining excess water 3. To spray KNO_3 1 % or	Drain out the excess water at the earliest

	water	the soil 4. To spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 5. Need based plant protection measures to be taken up	water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 4. Need based plant protection measures to be taken up	
Sunflower	1. Mortality is most likely hence re sowing to be taken up 2. Select short duration hybrids 3. Adopt closer spacing of 45 X 30 cm	1. To drain out the excess water at the earliest 2. Apply 20 kg N + 10 kg K /acre after draining excess water 3. Spray micronutrient mixture for 2 to 3 times at an interval of 7-10 days 4. To spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 5. Inter cultivate to smother weeds and to loosen and aerate the soil 6. Need based plant protection measures to be taken up	1. To drain out the excess water at the earliest 2. Spray micronutrient mixture for 2 to 3 times at an interval of 7-10 days 3. Spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 4. Need based plant protection measures to be taken up	1.Drain out the water as early as possible 2. To spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition
Horticulture				
Orange & Batavian, Mango, Guava, Lemon, Papaya	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	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.	Drain the excess water as soon as possible. Harvest the mature fruits as soon as possible. Store the fruits in well ventilated place temporarily before it can be marketed. Market the fruits as soon as

		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.	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.	possible.
Chillies	Drain the excess water as soon as possible	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.	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. Spray planofix 1ml in 4.5 lit of water to prevent flower drop.	Drain the excess water 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 .
Tomato	Same as above	Drain the excess water as soon as possible Spray Urea 2% solution 2-3 times.	Drain the excess water as soon as possible Spray Urea 2% solution once.	Same as above

		Topdressing of booster dose of 10 kg MOP + 30 kg Urea per acre as soon as possible.		
Spices and plantation crops				
Coriander		Drain the excess water as soon as possible Spray Urea 2% or 1% KNO3 solution 2-3 times	Drain the excess water as soon as possible Spray Urea 2% or 1% KNO3 solution 2-3 times	Drain the excess water as soon as possible. Harvest the marketable umbels as soon as possible. Dry the produce immediately Market the produce immediately after drying.

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

Extreme event type	**Suggested contingency measurer**			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Cyclone				
Horticulture crops – Fruits				
Orange & Batavian	Spray Carbendazim 1 g or COC 3g per litre to prevent spread of diseases 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	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	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

		with Bordeaux paste	with Bordeaux paste	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	If the damage is severe, go for resowing	Trees 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
Sapota	Drain the excess water as soon as possible	Wind damaged branches should be pruned using disinfected	Wind damaged branches should be pruned using disinfected	Wind damaged branches should be pruned using disinfected

	Spray 1% KNO 3 or Urea 2% solution 2-3 times. Provide support to the young plants.	secaetures and cut ends must be smeared with Bordeaux paste Drain the excess water as soon as possible Spray 1% KNO3 or Urea 2% solution 2-3 times.	secaetures and cut ends must be smeared with Bordeaux paste Drain the excess water as soon as possible Spray 1% KNO3 or Urea 2% solution 2-3 times.	secaetures and cut endsmust be smeared with Bordeaux paste Drain the excess water as soon as possible. Harvest the mature fruits as soon as possible. Store the fruits in well ventilated place temporarily before it can be marketed. Market the fruits as soon as possible. The unmarketable fruits may be utilized for processing
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
Papaya		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.	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. Collect the fallen fruits and sell immediately or go for preparation of processed products.
Horticulture 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	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	Drain the excess water as soon as possible. Dry the pods on concrete floor/ tarpaulins immediately use poly house solar driers for quick drying

		Urea 2% solution 2-3 times. Topdressing of booster dose of 15 kg MOP + 30 kg Urea per acre as soon as possible.	+ 30 kg Urea per acre as soon as possible.	.
Tomato	Grow nursery on raised beds. If damage is more go for resowing	Uprooted plants may be lifted and earthed up Drain the excess water as soon as possible Gap filling must be done immaditeatly Spray Urea 2% solution 2-3 times. Topdressing of booster dose of 15 kg MOP + 30 kg Urea per acre as soon as possible. If damage is more ,go for replanting	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. . If damage is more ,go for replanting	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.

Spices and Plantation crops				
Coriander		Drain the excess water as soon as possible Spray Urea 2% or 1% KNO3 solution 2-3 times.	Drain the excess water as soon as possible Spray Urea 2% or 1% KNO3 solution 2-3 times.	Drain the excess water as soon as possible. Harvest the marketable umbels as soon as possible. Dry the produce immediately Market the produce immediately after drying. Spray Dithane M-45/ Bavistin to prevent grey mould on the standing crop.

2.5 Contingent strategies for Livestock, Poultry & Fisheries

General contingency measures

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, Poultry & Fisheries

	Suggested contingency measures		
	Before the event	**During the event**	**After the event**
Drought			
Feed and Fodder availability	Some mandals of the district are chronically drought prone. It should have reserves of the following at any point of the year for mobilization to the needy areas (for feeding 5000 ACU (maintenance ration) for about 1-3 weeks period) Silage:20-50 t Urea molasses mineral bricks (UMMB):50-100 t Hay:100-250 t Concentrates: 20-50 t Minerals and vitamin supplements mixture:1-5 t Establishment of silvi-pastoral system in CPRs with ***Stylosanthus hamata*** and ***Cenchrus ciliaris*** as grass with ***Leucaena leucocephala*** as tree component (or suggest suitable similar system to your district) 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	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	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

	every village through supply and establishment of good quality chaff cutters. 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	drought exits with subsidized road/rail transportation and temporary shelter provision for the shepherds 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/bajra/maize/greengram/blackgram/groundnut 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 (rice/maize/greengram/blackgram) that can be useful as fodder in future (store properly) and also sugar cane tops Don't allow the animals for grazing if floods are forewarned Arrangement for transportation of animals from low lying area to safer places and also for rescue animal health workers to get involve in rescue operations	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 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.

Vaccination programme for cattle and buffalo:

Disease	**Age and season at vaccination**
Anthrax	In endemic areas only, Feb to May
Haemorrhagic septicaemia (HS)	May to June
Black quarter (BQ)	May to June
Foot and mouth disease (FMD)	July/August and November/December

Vaccination schedule in small ruminants (Sheep & Goat)

Disease	**Season**
Foot and mouth disease (FMD)	Preferably in winter / autumn
Peste des Petits Ruminants (PPR)	Preferably in January
Black quarter (BQ)	May / June
Enterotoxaemia (ET)	May
Haemorrhagic septicaemia (HS)	March / June

Sheep pox (SP)	November

2.5.2 Poultry

	Suggested contingency measures		
	Before the event[a]	**During the event**	**After the event**
Drought			
Shortage of feed ingredients	Storing of house hold grain like maize, broken rice, etc, in to use as feed in case of severe drought	Supplementation only for productive birds with house hold grain Supplementation of shell grit (calcium) for laying birds Culling of weak birds	Supplementation to all survived birds
Drinking water		Use water sanitizer or offer fresh and cool drinking water	
Health and disease management	Culling of sick birds. Deworming and vaccination against RD and fowl pox	Mixing of Vit. A,D,E, K and B-complex including vit C in drinking water (5ml in one litre water)	Hygienic and sanitation of poultry house Disposal of dead birds by burning / burying with lime powder in pit
Floods			
Shortage of feed ingredients	In case of early forewarning of floods, shift the birds to safer place Storing of house hold grain like maize, broken rice, etc,	Use stored feed as supplement Don't allow for scavenging Culling of weak birds	Routine practices are followed Deworming and vaccination against RD
Drinking water		Use water sanitizer or offer fresh drinking water	

Health and disease management	In case of EFW, add antibiotic powder (Terramycin/Ampicilline/ Ampiclox etc., 10g in one litre) in drinking water to prevent any disease outbreak	Prevent water logging surrounding the sheds through proper drainage facility Assure supply of electricity by generator or solar energy or biogas Sprinkle lime powder to prevent ammonia accumulation due to dampness	Sanitation of poultry house Treatment of affected birds Disposal of dead birds by burning / burying with line powder in pit Disposal of poultry manure to prevent protozoal problem Supplementation of coccidiostats in feed Vaccination against RD
Cyclone			
Shortage of feed ingredients	In case of EFW, shift the birds to safer place Storing of house hold grain like maize, broken rice, bajra etc, Culling of weak birds	Use stored feed as supplement Don't allow for scavenging Protect from thunder storms	Routine practices are followed
Drinking water		Use water sanitizers or offer cool drinking water	
Health and disease management	In case of EFW, add antibiotic powder in drinking water to prevent any disease outbreak	Sanitation of poultry house Treatment of affected birds Prevent water logging surrounding the sheds Assure supply of electricity Sprinkle lime powder (5-10g per square feet) to prevent ammonia accumulation due to dampness	Disposal of dead birds by burning / deep burying with lime powder in pit Disposal of poultry manure to prevent protozoal problem Supplementation of coccidiostats in feed Vaccination against Ranikhet Disease (0.5ml S/c)
Heat wave and cold wave	**NA**		

[a] based on forewarning wherever available

Andhra Pradesh Contingency plans for FISHERIES / AQUACULTURE			
	Suggested Contingency Measures		
1) Drought **A. Capture**	**Before the event**	**During the event**	**After the event**
Marine	No intervention	No intervention	No intervention
Inland			
(i) Shallow water depth due to insufficient rains / inflow	Stocking of advanced 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 / changes 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 damages	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 disease	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 contamination 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 disease	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
(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) Average 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) Average no. of houses damages	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 in 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 disease	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, 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 and Cold wave conditions			
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 water quality (fresh water / brackish water ratio)	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	Removal of stress causing factors to maintain the health of the animal	Removal of stress causing factors to maintain the health of the animal	Compensatory stocking of seed and restoration of all physical and chemical parameters
(iii) Any other			