

State: **ANDHRA PRADESH**

Agriculture Contingency Plan for District: WARANGAL

1.0 District Agriculture profile					
1.1	Agro-Climatic/Ecological Zone				
	Agro Ecological Sub Region (ICAR)	North Telangana Plateau, hot moist semi arid AESR (7.2)			
	Agro-Climatic Region (Planning Commission)	Southern Plateau hills Region (X)			
	Agro Climatic Zone (NARP)	North Telangana Zone, RARS, Jagtial (AP-4)			
	List all the districts or part thereof falling under the NARP Zone	Adilabad, Nizamabad, Karimnagar, parts of Warangal, Medak and Khammam			
	Geographic coordinates of district	Latitude	Longitude	Altitude	
		17 ^o 19'' to 18 ^o 36'' N	78 ^o 49'' to 80 ^o 43'' E		
	Name and address of the concerned ZRS/ ZARS/ / RRS/ RRTTS	Regional Agricultural Research Station, Warangal.			
	Mention the KVK located in the district	Krishi Vigyan Kendra, Malyal, Warangal. (ANGRAU) Krishi Vigyan Kendra, Mamnoor, Warangal. (SVVU)			
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):	879	45	1 st week of June	2 nd week of October
	NE Monsoon(Oct-Dec):	101	10	2 nd week of October	4 th week of December
	Winter (Jan- March)	18	4	-	-
	Summer (Apr-May)	60	4	-	-
	Annual	1059	63	-	-

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 (Lakh ha)	1284.6	371.0	60.2	45.3	11.2	50.3	52.1	136.1	106.2
1.4	Major Soils (common names like shallow red soils etc.)		Area ('000 ha)		Percent (%) of total					
	1. Shallow red chalka soils		226		50					
	2. Black soils		113		25					
	3. Deep red chalka soils		90		20					
	4. Problematic soils		22		5					
	Others (specify):									
1.5	Agricultural land use (Year)		Area ('000 ha)		Cropping intensity %					
	Net sown area		471.0		129.5					
	Area sown more than once		138.9							
	Gross cropped area		609.8							

1.6	Irrigation (Year)	Area ('000 ha)		
	Net irrigated area	323.9		
	Gross irrigated area	411.5		
	Rainfed area	147.1		
	Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
	Canals		1.9	0.5
	Tanks		52.2	17
	Open wells		-	55
	Bore wells		241	14
	Lift irrigation		2	0.5
	Micro-irrigation			
	Other sources		54	13
	Total Irrigated Area			
	Pump sets			
	No. of Tractors			
	Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	No. of blocks/ Tehsils	(%) area	
	Over exploited	7	14	
	Critical	5	10	
	Semi- critical	3	6	
	Safe	36	71	
	Wastewater availability and use			
	Ground water quality			
*over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%				

Area under major field crops & horticulture etc. (2008-09)

1.7		Major Field Crops cultivated	Area ('000 ha)					
			<i>Kharif</i>		<i>Rabi</i>		Summer	Total
			<i>Irrigated</i>	<i>Rainfed</i>	<i>Irrigated</i>	<i>Rainfed</i>		
1	Rice	107	6	71	-	14	198.0	
2	Cotton and fibers	63	95	-	0.7	-	158.7	
3	Maize	9	41	31	0.05	-	81.0	
4	Ground nut	0.7	9	27	0.4	-	37.1	
5	Chilies	14	0.4	8	-	3	25.4	
6	Green gram	-	21	-	2	-	23.1	
7	Red gram	-	21	-	0.5	-	21.5	
8	Bajra	-	0.02	-	20	-	20.0	
9	Jowar	-	1	-	7	-	8.0	
10	Turmeric	8	-	-	-	-	8.0	
11	Bengal gram	-	-	0.2	2	-	2.2	
12	Other pulses	-	-	-	0.4	-	0.4	
	Horticulture crops - Fruits	Total area						
1	Mango	20.7						
2	Orange & Batavia	1.3						
3	Banana	1.0						
	Horticultural crops - Vegetables	Total area						
	Chillies	17.1						
	Spices	Total area						
	Turmeric	8.3						

1.8	Livestock	Male ('000)	Female ('000)	Total ('000)
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	Non descriptive Cattle (local low yielding)	546.4	238.6	785.0			
	Crossbred cattle	3.3	9.1	12.4			
	Non descriptive Buffaloes (local low yielding)	136.8	611.9	748.8			
	Graded Buffaloes						
	Goat			546.2			
	Sheep			1960.0			
	Others (Camel, Pig, Yak etc.)			53.1			
	Commercial dairy farms (Number)						
1.9	Poultry	No. of farms	Total No. of birds ('number)				
	Commercial		1274547				
	Backyard		3383927				
1.10	Fisheries (Data source: Chief Planning Officer)						
	A. Capture						
	i) Marine (Data Source: Fisheries Department)	No. of fishermen	Boats		Nets		Storage facilities (Ice plants etc.)
			Mechanized	Non-mechanized	Mechanized (Trawl nets, Gill nets)	Non-mechanized (Shore Seines, Stake & trap nets)	
	ii) Inland (Data Source: Fisheries Department)	No. Farmer owned ponds		No. of Reservoirs		No. of village tanks	
		13		4		719	
	B. Culture						

		Water Spread Area (ha)	Yield (t/ha)	Production ('000 tons)
	i) Brackish water (Data Source: MPEDA/ Fisheries Department)	-	-	0
	ii) Fresh water (Data Source: Fisheries Department)	14	0.0	0.4
	Others			12.6

1.11	Production and Productivity of major crops (Average of last 5 years: 2004,05,06, 07, 08)	Kharif		Rabi		Summer		Total		Crop residue as fodder ('000 tons)
		Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	
Major Field crops (Crops to be identified based on total acreage)										
1	Rice	391	2972	177	2929			568	2947	
2	Cotton	413	438	-	-			413	438	
3	Maize	189	3673	119	4618			308	3999	
4	Groundnut	12	565	2	674			14	580	
5	Redgram	10	460	-	-			10	460	
	Others							74	2964	
Horticulture Crops - Fruits										
1	Mango							171.368	8267	
2	Orange & Batavia							17.700	1330	

3	Banana							31.582	30000	
Horticultural Crops - Vegetables										
1	Chillies							48.312	2750	
Spices										
1	Turmeric							51.650	6200	

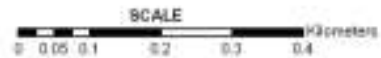
1.12	Sowing window for 5 major field crops (start and end of normal sowing period)	Rice	Cotton	Maize	Groundnut	Chillies	Redgram	Turmeric
	Khariif- Rainfed	-	Mid June to July end	June 1 st week to August 1 st week	Mid June to July end	Mid June - Aug end	Mid June to July end	-
	Khariif-Irrigated	Mid June to July end	Mid June to July end	June 1 st week to August 1 st week	Mid June to July end	-	Mid June to July end	Mid June to July end
	Rabi- Rainfed	-	-	-	Mid Sep to Mid oct	-	September 1 st week to October 1 st week	-
	Rabi-Irrigated	Mid Oct to Nov end	-	Mid Sep to Oct end	Mid Sep to Mid oct	Mid Sep to Mid oct	September 1 st week to October 1 st 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	Sporadic	None
	Drought		√	

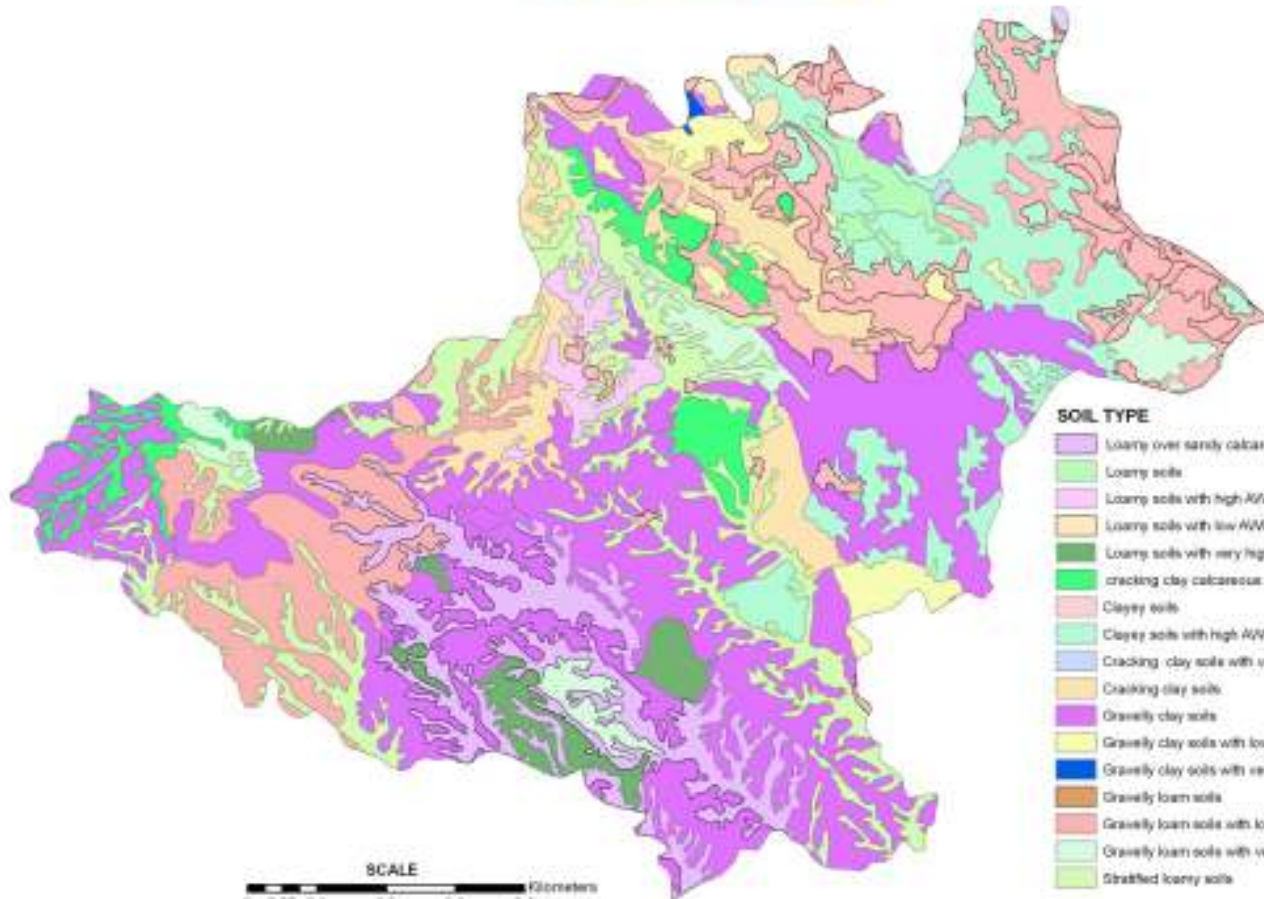
	Flood		√	
	Cyclone			√
	Hail storm	√		
	Heat wave		√	
	Cold wave	√		
	Frost			√
	Sea water intrusion			√
	Pests and diseases (specify) Regular and Severe	Rice – BPH & Blast, stem borer Cotton – Sucking complex	Yellow Mosaic Virus in Green gram Maruca & Heliothis in Red gram	
	Others			

1.14	Include digital maps of the district for	Location map of district within State as Annexure I	Enclosed: Yes/No
		Mean annual rainfall as Annexure 2	Enclosed: Yes/No
		Soil map as Annexure 3	Enclosed: Yes/No

**MANDALWISE - NORMAL RAINFALL (mm)
WARANGAL DISTRICT**

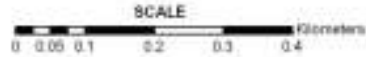


SOIL MAP - WARANGAL DISTRICT



SOIL TYPE

- Loamy over sandy calcareous stratified soils
- Loamy soils
- Loamy soils with high AWC
- Loamy soils with low AWC
- Loamy soils with very high AWC
- cracking clay calcareous soils
- Clayey soils
- Clayey soils with high AWC
- Cracking clay soils with very high AWC
- Cracking clay soils
- Gravelly clay soils
- Gravelly clay soils with low AWC
- Gravelly clay soils with very low AWC
- Gravelly loam soils
- Gravelly loam soils with low AWC
- Gravelly loam soils with very low AWC
- Stratified loamy soils



2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delay by 2 weeks (June 3 rd week)	Black soils	Cotton	No change		
		Maize			
		Redgram			
		Greengram			
	Red soils	Redgram (Sole crop)			
		Greengram			
		Maize			
		Redgram + Groundnut			
Delay by 4 weeks (July 2 nd week)	Black soils	Cotton	No change	Reduce row spacing from 180 to 120cm	
		Maize			
		Redgram			
		Greengram			
	Red soils	Redgram (Sole crop)			
		Greengram			
		Maize			
		Redgram +Maize			
	Redgram + groundnut	Redgram	Reduce row spacing from 180 to 120cm		
	Redgram + Sesamum				
Delay by 6 weeks (July 3 rd week)	Black soils	Cotton	No change	Reduce row spacing from 180 cm to 120 cm	-
		Redgram			
		Maize	Redgram		
		Greengram	No Change	-	
	Red soils	Redgram (Sole crop)		Reduce row spacing from 180 cm to 150 cm	
		Maize		-	
		Redgram +maize	Redgram	Reduce row spacing	

		Redgram+groundnut		from 180 cm to 150 cm	
		Redgram + Sesamum			
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 (August 1st week)	Black soils	Cotton	Redgram/ Castor	Redgram: Reduce row spacing from 180 cm to 120 cm Castor: Normal	-
		Redgram			
		Maize			
		Greengram			
	Red soils	Redgram	Redgram/ Castor		
		Maize			
Greengram					

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.	Black soils – Rainfed	Cotton	Gap filling to be done at 7- 10 days after sowing.	Intercultivation.	-
		Redgram	Plough back and same crop may be sown		
		Greengram			
		Maize			
	Red soils - Rainfed	Redgram (sole crop)			
		Greengram			
Maize		Re-sowing may be taken-up with short duration hybrid (Specify)	Foliar spray of 2% urea		
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	Black soils – Rainfed	Cotton, Redgram, Green gram, Maize	Plough back and Same crop may be sown Spray 2 % urea solution	Inter cultivation and thinning	
	Red soils - Rainfed	Cotton, Redgram, Green gram, Maize			

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	Cotton	Spray urea - 2 % or KNO ₃ or water soluble fertilizers 1 % to supplement nutrition	Inter-cultivation =	
		Redgram			
		Maize			
	Greengram	Harvest and Use as fodder			
	Red soils - Rainfed	Redgram (sole crop), Maize	Spray urea - 2 % or KNO ₃ or water soluble fertilizers		
		Greengram	Harvest and Use as fodder		

Condition			Suggested Contingency measures		
Terminal drought	Major Farming situation	Normal Crop/cropping system	Crop management	Rabi Crop planning	Remarks on Implementation
	Black soils – Rainfed	Cotton	Spray urea - 2 % or KNO ₃ or water soluble fertilizers	-	-
		Redgram			
	Red soils - Rainfed	Redgram	Spray urea - 2 % or KNO ₃ or water soluble fertilizers	-	-

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

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delayed release of water in canals due to low rainfall	Red & black soils irrigated	Green Manure-paddy-paddy	Adopt short duration paddy varieties. (MTU 1010, JGL 1798)	Management practices for over aged seedlings. Nitrogen application in nurseries may be avoided Direct seeding by growing short duration varieties like Eerramallelu, Kavya, Jagtial Sannalu, Polasa Prabha are preferred . Green manure crops like sunhemp, pillipesara, greengram may be sown with little showers some portion of sunhemp may be fed as fodder, left over may be incorporated as and when release of water from canals	
			Direct seeded rice under puddled condition	Adopt weed management with chemicals	

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Limited release of water in canals due to low rainfall	Black soils – Canal irrigated	Green manure-paddy-paddy	Rice	Rice –1. Alternate wetting and drying Take up effective weed control measures	
			Maize	Irrigation at critical stages	
			Maize (rabi)	Zero tillage	
	Red soils – Canal irrigated	Paddy-paddy	Paddy /Jowar/Fodder	Rice –1. Alternate wetting and drying 2. Take up effective weed control measures Rice fallow 1. crops like, Jowar, Maize; Use of micro irrigation	

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
			Redgram + Green gram/Jowar	-	
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 – Canal irrigated	Green Manure-paddy-paddy	Vegetables in place of Paddy; Red gram/castor as rainfed if water is not released	1. Green manure incorporation 2. Sowing of Maghi Jowar from September second fortnight onwards 3. Maize, Red gram, Sesamum, Sunflower can be grown as rabi crops from September onwards	Provision may be provided to release water for 1 or 2 irrigations
	Red soils – Canal irrigation	Paddy-paddy	Scope for alternate crops like Redgram or Maize +Redgram as rainfed if water not released into the canal	1. Green manure incorporation 2. Sowing of Maghi Jowar from September second fortnight onwards 3. Maize, Red gram, Sesamum, Sunflower can be grown as rabi crops from September onwards	Same as above
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	Tank fed –red soils	Paddy	Vegetables	Establishment of optimum plant Population	
	Red &black soils irrigated	Paddy	Rainfed crops like maize, cotton, castor, short duration pulses, redgram	-	

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Insufficient groundwater recharge due to low rainfall	Open Well and bore well irrigated				
	Black soils	Chilli/Cotton/paddy	Maize + Red gram		
	Red soils	Chilli/Cotton/paddy	Sunflower Redgram	Irrigation at critical stages	
	Black/Red soils	Maize (maize+redgram)	Redgram and cotton	Irrigation at critical stages	

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	<ol style="list-style-type: none"> 1. Drain out excess water 2. A booster dose of 25kg urea and 15 Kg MOP per acre is to be applied. 3. gap filling with survived hills (split into individual tillers) 4. Proper weed control and plant protection measures should be adopted 	<ol style="list-style-type: none"> 1. Drain out excess water 2 A booster dose of 25kg urea and 15 Kg MOP per acre is to be applied. 3. Proper weed control and plant protection measures should be adopted 	<ol style="list-style-type: none"> 1. Drain out excess water early as possible 2. Take up suitable plant protection measures for pest & disease out breaks 	<ol style="list-style-type: none"> 1. Drain out water and spread sheaves loosely in field and paddy sheaves threshed immediately 2. Spray common salt at 2% on panicles to prevent germination
Cotton	<ol style="list-style-type: none"> 1. Drain out excess water 2. Inter cultivation and apply a booster dose of 30 kg urea+ 15 kg MOP per acre. 3. In water logged areas spray with urea 2%+ MgSo4 (1%) followed by Annabhedhi 5g+Citric acid 0.5g/l 4. Spray and also drench with Copper oxychloride 5. Take up timely control measures 	<ol style="list-style-type: none"> 1. Drain out excess water 2. Apply 30 kg N + 15 kg K /acre after draining excess water 3. Spray fungicides like Copper oxy chloride 0.3 % or Carbendazim 0.1 % or Mancozeb 0.25% two to three times by rotating the chemicals 4. Take up timely control measures against the out break of pests and diseases. 	<ol style="list-style-type: none"> 1. Drain out excess water 2. To spray KNO₃ 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% two to three times by rotating the chemicals 	<ol style="list-style-type: none"> 1. Dry the produce properly before sending to market

	against the out break of pests and diseases.		4. Take up timely control measures against the out break of pests and diseases.	
Redgram	<ol style="list-style-type: none"> 1. Drain out excess water 2. Apply 20 kg N + 10 kg K /acre after draining excess water 3. Take up inter cultivation at optimum soil moisture condition to loosen and aerate the soil and to control weeds 	<ol style="list-style-type: none"> 1. Drain out excess water 2. To spray KNO₃ 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1%. 3. Take up timely control measures against the out break of pests like Spodoptera, Helicoverpa etc. 	<ol style="list-style-type: none"> 1. Drain out excess water 2. Allow the crop to dry completely before harvesting 	<ol style="list-style-type: none"> 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 (<6%) per cent before bagging and storing to prevent deterioration in quality during storage
Greengram	<ol style="list-style-type: none"> 1. Drain out excess water 2. Apply 20 kg N + 10 kg K /acre after draining excess water 3. Take up inter cultivation at optimum soil moisture condition to loosen and aerate the soil and to control weeds 	<ol style="list-style-type: none"> 1. Drain out excess water 2. To spray KNO₃ 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1%. 3. Take up timely control measures against the out break of pests like Spodoptera, Helicoverpa etc. 	<ol style="list-style-type: none"> 1. Drain out excess water 2. Allow the crop to dry completely before harvesting 	<ol style="list-style-type: none"> 1. Dry the grain to proper moisture per cent before bagging and storing to prevent deterioration in quality during storage
Maize	<ol style="list-style-type: none"> 1. Drain out excess water 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. Earthen up the crop for anchorage 5. To spray KNO₃ 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 6. Take up timely control measures for Pink borer, sheath blight and Turcicum leaf blight 	<ol style="list-style-type: none"> 1. Drain out excess water 2. Apply 20 kg N + 10 kg K /acre after draining excess water 3. To spray KNO₃ 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 sheath blight and post flowering stalk rots 	<ol style="list-style-type: none"> 1. Drain out excess water 	<ol style="list-style-type: none"> 1. Harvest the cobs after the they are dried up properly.
Horticulture crops – Fruits				

Mango	<ul style="list-style-type: none"> • Drain the excess water as soon as possible • Spray 1% KNO₃ or Urea 2% solution 2-3 times. 	<ul style="list-style-type: none"> • Drain the excess water as soon as possible • Spray 1% KNO₃ or Urea 2% solution 2-3 times. 	<ul style="list-style-type: none"> • Drain the excess water as soon as possible • Harvest the mature produce in a clear sunny day' 	<ul style="list-style-type: none"> • Store the fruits in well ventilated place temporarily before it can be marketed. • Market the fruits as soon as possible.
Orange & Batavian	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Drain the excess water as soon as possible. • Harvest the mature fruits in a clear sunny day. 	<ul style="list-style-type: none"> • Store the fruits in well ventilated place temporarily before it can be marketed. • Market the fruits as soon as possible.
Banana	<ul style="list-style-type: none"> • 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 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 	<ul style="list-style-type: none"> • 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 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. 	<ul style="list-style-type: none"> • Drain the excess water as soon as possible • Harvest the marketable bunches in a clear sunny day. • Spray 0.5 % KNO₃ or Urea 2% solution 2-3 times for quick development of immature bunches. • Staking with bamboos to prevent further lodging. 	<ul style="list-style-type: none"> • Use ripening chambers for quick ripening • Market the produce as soon as possible.

	submergence up to three feet better to replant the garden.			
Horticulture crops vegetables				
Chilies	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Drain the excess water as soon as possible • Harvest the matured fruits in a clear sunny day. 	<ul style="list-style-type: none"> • 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 and Plantations				
Turmeric	<ul style="list-style-type: none"> • 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. • In case of severe damage (considered as complete economical loss or if inundation is more than for four days), and the contingency period is between June to August, sowing of best alternative crop must be taken up. 	<ul style="list-style-type: none"> • Drain the excess water as soon as possible • Spray Urea 2% or 1% KNO₃ solution 2-3 times. 	<ul style="list-style-type: none"> • Drain the excess water as soon as possible • Harvest the rhizomes when field comes to normal 	<ul style="list-style-type: none"> • Dry the rhizomes on concrete floor or use boilers (if available) for processing immediately • Grade and separate the rotten and mould affected rhizomes. • Pack the dried material in gunny bags disinfected with safe insecticides • Store in a well ventilated rooms

Horticulture crops vegetables				
Chillies	<ul style="list-style-type: none"> • 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 kg MOP + 30 kg Urea per acre as soon as possible. • Intercultivate the soil with gorru and guntaka for better aeration 	<ul style="list-style-type: none"> • Uprooted plants may be lifted and earthed up • Gap filling must be done immediately • 3. 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 soon as possible. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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) • Grade the pods and market as soon as possible. • Do not store such produce for long periods. .
Spices and Plantation crops				
Turmeric	<ul style="list-style-type: none"> • 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. • In case of severe damage (considered as complete economical loss or if inundation is more than for four days), and the contingency period is between June to August, sowing of best alternative crop must be taken up. 	<ul style="list-style-type: none"> • Drain the excess water as soon as possible • Spray Urea 2% or 1% KNO3 solution 2-3 times. 	<ul style="list-style-type: none"> • Drain the excess water as soon as possible • Harvest the rhizomes when field comes to normal 	<ul style="list-style-type: none"> • Dry the rhizomes on concrete floor or use boilers (if available) for processing immediately • Grade and separate the rotten and mould affected rhizomes. • Pack the dried material in gunny bags disinfected with safe insecticides • Store in a well ventilated rooms
Condition - Heavy rainfall with high speed winds in a short span				
Rice	<ol style="list-style-type: none"> 1. Drain out excess water 2. A booster dose of 25kg urea and 15 Kg MOP per acre is to be 	<ol style="list-style-type: none"> 1. Drain out excess water 2. Lift the lodged hills tie them together to keep them erect 	<ol style="list-style-type: none"> 1. Fields need to be drained and sheaves to be threshed immediately 	<ol style="list-style-type: none"> 1. Drain out excess water 2. Dry the bundles on elevated areas like field

	<p>applied.</p> <p>3. gap filling with survived hills (split into individual tillers)</p> <p>4. Proper weed control and plant protection measures should be adopted</p>	<p>3. Takeup timely plant protection measures for pest and disease incidences</p>	<p>2. Soon after cyclone the rodent population tends to increase – monitor rodents and adopt community rodent management practices.</p> <p>4. Takeup timely plant protection measures for pest and disease incidences</p>	<p>bunds and drying floors and dry the grain to optimum moisture content to store the grain</p>
Cotton	<p>1. Drain out excess water</p> <p>2. Inter cultivation and apply a booster dose of 30 kg urea+ 15 kg MOP per acre.</p> <p>3. In water logged areas spray with urea 2%+ MgSo4 (1%) followed by Annabhedi 5g+Citric acid 0.5g/l</p> <p>4. Spray and also drench with Copper oxychloride</p> <p>5. Take up timely control measures against the out break of pests and diseases.</p>	<p>1. Drain out excess water</p> <p>2. Apply 30 kg N + 15 kg K /acre after draining excess water</p> <p>3. Spray fungicides like Copper oxychloride 0.3 % or Carbendazim 0.1 % or Mancozeb 0.25% two to three times by rotating the chemicals</p> <p>4. Take up timely control measures against the out break of pests and diseases.</p>	<p>1. Drain out excess water</p> <p>2. Monitor for boll rot. Take up corrective measures</p> <p>3. Kapas picking should be done carefully to prevent admixtures with waste plant material</p>	<p>1. Dry the produce under sun before sending to market</p>
Redgram	<p>1. Drain out excess water</p> <p>2. Apply 20 kg N + 10 kg K /acre after draining excess water</p> <p>3. Take up inter cultivation at optimum soil moisture condition to loosen and aerate the soil and to control weeds</p>	<p>1. Drain out excess water</p> <p>2. To spray KNO₃ 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1%.</p> <p>3. Take up timely control measures against the out break of pests like Spodoptera, Helicoverpa etc.</p>	<p>1. Drain out excess water</p> <p>2. Allow the crop to dry completely before harvesting</p>	<p>1. Spread the bundles drenched in rain on field bunds or drying floors to quicken the drying</p> <p>2. Thresh the bundles after they are dried properly</p> <p>3. Dry the grain to proper moisture per cent before bagging and storing to prevent deterioration in quality during storage</p>
Greengram	<p>1. Drain out excess water</p> <p>2. Apply 20 kg N + 10 kg K /acre after draining excess water</p> <p>3. Take up inter cultivation at optimum soil moisture condition to loosen and aerate the soil and to control weeds</p>	<p>1. Drain out excess water</p> <p>2. To spray KNO₃ 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1%.</p> <p>3. Take up timely control measures against the out break of pests like Spodoptera, Helicoverpa etc.</p>	<p>1. Drain out excess water</p> <p>2. Allow the crop to dry completely before harvesting</p>	<p>1. Spread the bundles drenched in rain on field bunds or drying floors to quicken the drying</p> <p>2. Thresh the bundles after they are dried properly</p> <p>3. Dry the grain to proper moisture per cent before bagging and storing to</p>

				prevent deterioration in quality during storage
Maize	<ol style="list-style-type: none"> 1. Drain out excess water 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. Earthenup the crop for anchorage 5. To spray KNO₃ 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 6. Take up timely control measures for Pink borer, sheath blight and Turcicum leaf blight 	<ol style="list-style-type: none"> 1. Drain out excess water 2. Apply 20 kg N + 10 kg K /acre after draining excess water 3. To spray KNO₃ 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 sheath blight and post flowering stalk rots 	<ol style="list-style-type: none"> 1. Drain out excess water 	<ol style="list-style-type: none"> 1. Harvest the cobs after the they are dried up properly.
Horticulture				
Horticulture crops – Fruits				
Mango	<ul style="list-style-type: none"> • Drain the excess water as soon as possible • Spray 1% KNO₃ or Urea 2% solution 2-3 times. 	<ul style="list-style-type: none"> • Drain the excess water as soon as possible • Spray 1% KNO₃ or Urea 2% solution 2-3 times. 	<ul style="list-style-type: none"> • Drain the excess water as soon as possible • Harvest the mature produce in a clear sunny day' 	<ul style="list-style-type: none"> • Store the fruits in well ventilated place temporarily before it can be marketed. • Market the fruits as soon as possible.
Sweet orange	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Drain the excess water as soon as possible. • Harvest the mature fruits in a clear sunny day. 	<ul style="list-style-type: none"> • Store the fruits in well ventilated place temporarily before it can be marketed. • Market the fruits as soon as possible.

	should be applied.	should be applied.		
Banana	<ul style="list-style-type: none"> • 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 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. 	<ul style="list-style-type: none"> • 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 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. 	<ul style="list-style-type: none"> • Drain the excess water as soon as possible • Harvest the marketable bunches in a clear sunny day. • Spray 0.5 % KNO₃ or Urea 2% solution 2-3 times for quick development of immature bunches. • Staking with bamboos to prevent further lodging. 	<ul style="list-style-type: none"> • Use ripening chambers for quick ripening • Market the produce as soon as possible.
Horticulture crops vegetables				
Chilies	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Drain the excess water as soon as possible • Harvest the matured fruits in a clear sunny day. 	<ul style="list-style-type: none"> • 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 and Plantations				
Turmeric	<ul style="list-style-type: none"> • 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. • In case of severe damage (considered as complete economical loss or if inundation is more than for four days), and the contingency period is between June to August, sowing of best alternative crop must be taken up. 	<ul style="list-style-type: none"> • Drain the excess water as soon as possible • Spray Urea 2% or 1% KNO₃ solution 2-3 times. 	<ul style="list-style-type: none"> • Drain the excess water as soon as possible • Harvest the rhizomes when field comes to normal 	<ul style="list-style-type: none"> • Dry the rhizomes on concrete floor or use boilers (if available) for processing immediately • Grade and separate the rotten and mould affected rhizomes. • Pack the dried material in gunny bags disinfected with safe insecticides • Store in a well ventilated rooms
Horticulture crops vegetables				
Chillies	<ul style="list-style-type: none"> • 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 kg MOP + 30 kg Urea per acre as soon as possible. • Intercultivate the soil with gorru and guntaka for better aeration 	<ul style="list-style-type: none"> • Uprooted plants may be lifted and earthed up • Gap filling must be done immediately • 3. 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 soon as possible. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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) • Grade the pods and market as soon as possible. • Do not store such produce for long periods. .
Spices and Plantation crops				
Turmeric	<ul style="list-style-type: none"> • Drain the excess water as soon as possible 	<ul style="list-style-type: none"> • Drain the excess water as soon as possible 	<ul style="list-style-type: none"> • Drain the excess water as soon as possible 	<ul style="list-style-type: none"> • Dry the rhizomes on

	<ul style="list-style-type: none"> 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. In case of severe damage (considered as complete economical loss or if inundation is more than for four days), and the contingency period is between June to August, sowing of best alternative crop must be taken up. 	<ul style="list-style-type: none"> Spray Urea 2% or 1% KNO₃ solution 2-3 times. 	<ul style="list-style-type: none"> Harvest the rhizomes when field comes to normal 	<p>concrete floor or use boilers (if available) for processing immediately</p> <ul style="list-style-type: none"> Grade and separate the rotten and mould affected rhizomes. Pack the dried material in gunny bags disinfected with safe insecticides Store in a well ventilated rooms
Condition - Outbreak of pests and diseases due to unseasonal rains				
Rice	Blast, Stem rot and Sheath blight - need based plant protection measures to be initiated based on incidence levels	BPH, Blast, Sheath blight incidence may increase due to unseasonal rains - need based plant protection measures to be initiated	Climbing cutworm and neck blast	-
Cotton	Sucking pests, Wilt and root rot, Bacterial leaf blight - Need based plant protection measures to be initiated	Jassids, <i>Spodoptera</i> , Wilt and root rot, Bacterial leaf blight, Grey mildew - Need based plant protection measures to be initiated	Grey mildew - Need based plant protection measures to be initiated	-
Redgram	Spodoptera, wilt and root rot - Need based plant protection measures to be initiated	Spodoptera, Wilt and root rot- Need based plant protection measures to be initiated	-	
Green gram	Spodoptera and leaf spots- Need based plant protection measures to be initiated	Spodoptera, Leaf spots, Powdery mildew - Need based plant protection measures to be initiated	Spodoptera - Need based plant protection measures to be initiated	
Maize	Spodoptera-Need based plant protection measures to be initiated	Bacterial stalk rot- Need based plant protection measures to be initiated	Post flowering Stalk rots – Need based plant protection measures to be initiated	Dry the grain to optimum seed moisture content to avoid damage in storage
Horticulture crops Fruits				
Mango		Mango leaf hopper, Thrips,	anthracnose	anthracnose
Sweet orange	Citrus canker, mite, bacterial leaf	Citrus canker, mite, bacterial leaf	Citrus canker, mite, bacterial leaf	Citrus canker

	blight	blight	blight	
Banana				
Horticulture crops vegetables				
Chillies	Thrips, Mites, Spodoptera and Helicoverpa, Bacterial leaf spot	Thrips, Mites, Spodoptera and Helicoverpa, Bacterial leaf spot	Thrips, Mites, Spodoptera and Helicoverpa, Bacterial leaf spot, Die back and fruit rot	Bacterial leaf spot, Die back and fruit rot

2.3 Floods

Condition	Transient water logging/ partial inundation ¹			
	Suggested contingency measure ⁰			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Rice	1. Drain out excess water	1. Drain out excess water 2. Immediately after the water recedes apply a booster dose of 20kg Urea+15kg MOP application, preferably in the mud followed by light irrigation after 24 hrs. 3. gap filling with survived hills (split into individual tillers) along with application of booster dose of 20kg urea and 15kg MOP 4. Take-up need based plant protection measures	1. Drain out excess water 2. Takeup need based plant protection measures	1. Drain out excess water 2. Spray common salt at 2% on panicles to prevent germination and spoilage of straw from moulds
Cotton	1. Drain out excess water 2. Inter cultivation and apply a booster dose of 30 kg urea+ 15 kg MOP per acre. 3. In water logged areas spray with urea 2%+ MgSo4 (1%) followed by Annabhedhi 5g+Citric acid 0.5g/l 4. Spray and also drench with Copper oxychloride 5. Take up timely control	1. Drain out excess water 2. Apply 30 kg N + 15 kg K /acre after draining excess water 3. Spray fungicides like Copper oxy chloride 0.3 % or Carbendazim 0.1 % or Mancozeb 0.25% two to three times by rotating the chemicals 4. Take up timely control measures against the out break	1. Drain out excess water 2. Loom for boll rot. Take up corrective measures 3. Kapas picking should be done carefully to prevent admixtures with waste plant material	1. Dry the produce under sun before sending to market

	measures against the out break of pests and diseases.	of pests and diseases.		
Redgram	<ol style="list-style-type: none"> 1. Drain out excess water 2. Apply 20 kg N + 10 kg K /acre after draining excess water 3. Take up inter cultivation at optimum soil moisture condition to loosen and aerate the soil and to control weeds 	<ol style="list-style-type: none"> 1. Drain out excess water 2. To spray KNO₃ 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1%. 3. Take up timely control measures against the out break of pests like Spodoptera, Helicoverpa etc. 	<ol style="list-style-type: none"> 1. Drain out excess water 2. Allow the crop to dry completely before harvesting 	<ol style="list-style-type: none"> 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
Green gram	<ol style="list-style-type: none"> 1. Drain out excess water 2. Apply 20 kg N + 10 kg K /acre after draining excess water 3. Take up inter cultivation at optimum soil moisture condition to loosen and aerate the soil and to control weeds 	<ol style="list-style-type: none"> 1. Drain out excess water 2. To spray KNO₃ 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1%. 3. Take up timely control measures against the out break of pests like Spodoptera, Helicoverpa etc. 	<ol style="list-style-type: none"> 1. Drain out excess water 2. Allow the crop to dry completely before harvesting 	<ol style="list-style-type: none"> 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
Maize	<ol style="list-style-type: none"> 1. Drain out excess water 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. Earthenup the crop for anchorage 5. To spray KNO₃ 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 6. Take up timely control measures for Pink borer, sheath blight and Turcicum 	<ol style="list-style-type: none"> 1. Drain out excess water 2. Apply 20 kg N + 10 kg K /acre after draining excess water 3. To spray KNO₃ 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 sheath blight and post flowering stalk rots 	<ol style="list-style-type: none"> 1. Drain out excess water 	<ol style="list-style-type: none"> 1. Harvest the cobs after the they are dried up properly.

	leaf blight			
Horticulture crops – Fruits				
Mango	<ul style="list-style-type: none"> • Drain the excess water as soon as possible • Spray 1% KNO₃ or Urea 2% solution 2-3 times. 	<ul style="list-style-type: none"> • Drain the excess water as soon as possible • Spray 1% KNO₃ or Urea 2% solution 2-3 times. 	<ul style="list-style-type: none"> • Drain the excess water as soon as possible • Spray 1% KNO₃ or Urea 2% solution 2-3 times. 	<ul style="list-style-type: none"> • 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.
Sweet orange	<ul style="list-style-type: none"> • Drain the excess water as soon as possible. • Spray 1% KNO₃ or Urea 2% solution 2-3 times. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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.
Banana	.	<ul style="list-style-type: none"> • Drain the excess water as soon as possible • Spray 1% KNO₃ or Urea 2% solution 2-3 times. 	<ul style="list-style-type: none"> • Drain the excess water as soon as possible • Spray 1% KNO₃ or 	<ul style="list-style-type: none"> • Drain the excess water as soon as possible. • Harvest the mature bunches as soon as

		<ul style="list-style-type: none"> • Topdressing of booster dose of 80 g MOP + 100 g Urea per plant in two to three splits at monthly intervals. • If the age the plant is more than three months and less than seven months allow one sword sucker for ratoon and take up fertilization at monthly intervals for four months. 	<ul style="list-style-type: none"> • Urea 2% solution 2-3 times. • Stake the plants with bamboos to prevent further lodging. 	<ul style="list-style-type: none"> • possible. • use ripening chambers for quick and uniform ripening • Store the harvested bunches in well ventilated place temporarily before it can be marketed. • Market the fruits as soon as possible.
Horticulture crops vegetables				
Chillies	<ul style="list-style-type: none"> • Drain the excess water as soon as possible 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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
Spices and Plantation crops				
Turmeric		<ul style="list-style-type: none"> • Drain the excess water as soon as possible • Spray Urea 2% or 1% KNO₃ solution 2-3 times. • Spray ferrous sulphate 20g + citric acid 5g in 10 lit of water twice at weekly intervals 	<ul style="list-style-type: none"> • Drain the excess water as soon as possible • Spray Urea 2% or 1% KNO₃ solution 2-3 times. • Spray ferrous sulphate 20g + citric acid 5g in 10 lit of water twice at weekly intervals 	<ul style="list-style-type: none"> • Drain the excess water as soon as possible. • Dry the rhizomes on concrete floor immediately after the appearance of sunlight. Mix thoroughly and periodically for quick and uniform drying of surface moisture. • Use boilers and

				<ul style="list-style-type: none"> polishers for processing Remove and separate the rotten and mould affected rhizomes. Cook and dry the rhizomes as soon as possible.
Condition - Continuous submergence for more than 2 days²				
	Suggested contingency measure^o			
Rice	<ol style="list-style-type: none"> 1. Top dressing with 0.2 kg N/40 sq.m immediately after recede of flood water 2. Spray of ZnSO₄, FeSO₄ to correct micronutrient deficiencies 	<ol style="list-style-type: none"> 1. To drain out the excess water at the earliest 2. Apply 20 kg N + 10 kg K /acre after draining excess water 3. Timely plant protection measures for pest and disease out break 	<ol style="list-style-type: none"> 1. To drain out the excess water at the earliest 2. Takeup need based plant protection measures 	<ol style="list-style-type: none"> 1. Drain out water spread sheaves loosely in field or field bunds where there is no water stagnation 2. Spray common salt at 2% on panicles to prevent germination and spoilage of straw from moulds
Cotton	<ol style="list-style-type: none"> 1. Mortality is most likely hence resowing to be taken up 2. Select short duration hybrids 3. Adopt closer spacing of 90X45 or 90X30 cm 	<ol style="list-style-type: none"> 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 KNO₃ 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition 5. Intercultivate to smother weeds and to loosen and aerate the soil 6. Need based plant protection measures to be taken up 	<ol style="list-style-type: none"> 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. To spray KNO₃ 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 	<ol style="list-style-type: none"> 1. Drain out the water as early as possible 2. To spray KNO₃ 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 done carefully to avoid admixtures with plant waste
Redgram	<ol style="list-style-type: none"> 1. Takeup gap filling if the gaps are < 30 % and if more take up resowing 2. After gap filling take up inter cultivation to smother 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 1. Drain out excess water form the field 2. Apply 20 kg N + 10 kg K /acre after draining 	<ol style="list-style-type: none"> 1. Drain out excess water as early as possible 2. Dry the bundles on field bunds and drying floors

	the weeds and to aerate the soil 3. Apply 20 kg N + 10 kg K /acre after draining excess water	water	excess water 3. Need based plant protection measures to be taken up	
Green gram	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. 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 @ 1% to support nutrition 3. Need based plant protection measures to be taken up	1. To drain out the excess water at the earliest 2. Dry the bundles on field bunds and drying floors
Maize	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 water	1. To drain out the excess water at the earliest 2. Apply 20 kg N + 10 kg K /acre after draining excess water 3. Intercultivate to smother weeds and to loosen and aerate the soil 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. Need based plant protection measures to be taken up	1. To drain out the excess water at the earliest 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 @ 1% to support nutrition 4. Need based plant protection measures to be taken up	1. To drain out the excess water at the earliest 2. Pick the cobs and dry them properly before threshing 3. Dry the grain to optimum moisture content before storage or marketing

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

Extreme event type	Suggested contingency measure ^r			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Heat Wave				
Paddy	Irrigation in early hours			

Maize	Mulching			
Cotton	Mulching	Spray 2% urea solution		
Others	Mulching	Spray 2% urea solution		
Horticulture crops - Fruits				
Mango, Sweet orange	<ul style="list-style-type: none"> • Provide temporary shade to the young plants • Cover the newly planted plants with dry leaves • Increase the frequency of irrigation. 	<ul style="list-style-type: none"> • Mulch the plant basins with dried leaves • Increase the frequency of irrigation 	<ul style="list-style-type: none"> • Increase the frequency of irrigation. • Provide irrigation at critical stages 	<ul style="list-style-type: none"> • Harvest the fruits either in the morning or in the evening • Use ripening chambers for getting quality fruits
Banana	<ul style="list-style-type: none"> • Cover the newly planted plants with dry leaves • Increase the frequency of irrigation. 	<ul style="list-style-type: none"> • Mulch the plant basins with dried banana leaves • Increase the frequency of irrigation 	<ul style="list-style-type: none"> • Cover the developing bunches with banana leaves • Increase the frequency of irrigation. 	<ul style="list-style-type: none"> • Harvest the bunches either in the morning or in the evening • Use ripening chambers for getting quality fruits
Horticultural crops - Vegetables				
Vegetables	<ul style="list-style-type: none"> • Provide shade to the newly planted /seedlings • Irrespective of stage increase the frequency of irrigation. • Use mulches • Add bulky organic manures at the time of last ploughing 	<ul style="list-style-type: none"> • Harvest either in the morning or in the evening 		
Spice crop				
Turmeric	<ul style="list-style-type: none"> • Provide shade to the newly planted /seedlings • Irrespective of stage increase the frequency of irrigation. • Use mulches 	<ul style="list-style-type: none"> • Provide light irrigation • Delay the harvesting 		

	<ul style="list-style-type: none"> • Add bulky organic manures at the time of last ploughing 			
Cyclone				
Rice	<ol style="list-style-type: none"> 1. To drain out the excess water at the earliest 2. Apply booster dose of 0.2 kg N/40 sq. m 3. Spray micronutrients like Zn, Fe 2-3 times at 4 -5 days interval 4. Takeup proper weed control measures 	<ol style="list-style-type: none"> 1. To drain out the excess water at the earliest 2. Apply booster dose of 20 kg N/Acre 3. Spray ZnSO₄ 0.2 % if it is less than 45 days after transplanting 4. Takeup need based plant protection measures 	<ol style="list-style-type: none"> 1. To drain out the excess water at the earliest 2. Takeup need based plant protection measures 3. Lodged plants to be lifted and tied together to make them stand erect 	<ol style="list-style-type: none"> 1. Drain out water spread sheaves loosely in field or field bunds where there is no water stagnation 2. Spray common salt at 2% to prevent germination of seed and spoilage of straw from moulds
Cotton	<ol style="list-style-type: none"> 1. To drain out the excess water at the earliest 2. Inter cultivate at optimum field moisture condition 3. Apply 20 kg N + 10 kg K /acre after draining excess water 	<ol style="list-style-type: none"> 1. To drain out the excess water at the earliest 2. Inter cultivate at optimum field moisture condition 3. Apply 20 kg N + 10 kg K /acre after draining excess water 4. To spray KNO₃@1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 @ 1% to support nutrition 5. Spray of micronutrients two times at 7-10 days interval 6. Take up plant protection measures against possible pests and disease incidence 	<ol style="list-style-type: none"> 1. To drain out the excess water at the earliest 2. To spray KNO₃ @1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 @ 1% to support nutrition 3. Spray of micronutrients two times at 7-10 days interval 4. Take up plant protection measures against possible pests and disease incidence 	<ol style="list-style-type: none"> 1. Kapas picking should be done carefully to prevent admixtures with waste plant material
Redgram	<ol style="list-style-type: none"> 1. To drain out the excess water at the earliest 2. Inter cultivate at optimum field moisture condition 3. Apply 4-5 kg N/acre after draining excess water 	<ol style="list-style-type: none"> 1. To drain out the excess water at the earliest 2. Inter cultivate at optimum field moisture condition 3. Apply 4-5 kg N/acre after draining excess water 	<ol style="list-style-type: none"> 1. To drain out the excess water at the earliest 2. To spray KNO₃@ 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 @ 1% to support nutrition 	<ol style="list-style-type: none"> 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

			3. Take up plant protection measures against possible pests and disease incidence	elevated places like filed bunds or drying floors
Green gram	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 KNO₃ @1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 @ 1% to support nutrition 	<ol style="list-style-type: none"> 1. To drain out the excess water at the earliest 2. Apply 4-5 kg N/acre after draining excess water 3. To spray KNO₃ @1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 @ 1% to support nutrition. 	<ol style="list-style-type: none"> 1. Drain out the excess water at the earliest 2. Harvest the crop after the fields are dried up
Maize	<ol style="list-style-type: none"> 1. To drain out the excess water at the earliest 2. Intercultivation and earthing up to be done 3. Apply 20 kg N + 10 kg K /acre after draining excess water 4. Take up plant protection measures against possible pests and disease incidence 	<ol style="list-style-type: none"> 1. To drain out the excess water at the earliest 2. Takeup weed control either mechanically or through weedicides 3. Intercultivation and earthing up to be done 4. Apply 20 kg N + 10 kg K /acre after draining excess water 	<ol style="list-style-type: none"> 1. To drain out the excess water at the earliest 2. Take up plant protection measures against possible pests and disease incidence 	<ol style="list-style-type: none"> 1. To drain out the excess water at the earliest 2. Cob picking to be done after they are dried fully
Horticulture crops – Fruits				
Mango	<ul style="list-style-type: none"> • If the damage is severe, go for resowing 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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.

				<ul style="list-style-type: none"> • 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
Orange & Batavian	-do-	-do-	-do-	-do-
Banana		<ul style="list-style-type: none"> • Wind damaged plants should be pruned using disinfected secateurs and cut ends must be smeared with Bordeaux paste • Drain the excess water as soon as possible • The fallen tress may be cut leaving two suckers • Inter-cultivate the soil with gorru for aeration. • 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. 	<ul style="list-style-type: none"> • Wind damaged plants should be pruned using disinfected secateurs and cut ends must be smeared with Bordeaux paste • Drain the excess water as soon as possible • The fallen tress 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 be covered with Leaves and harvested with in 15-20days 	<ul style="list-style-type: none"> • Wind damaged plants should be pruned using disinfected secateurs 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 well ventilated place temporarily before it can be marketed. • Market the produce as soon as possible. • 3-4 foliar application of

				<p>KNO₃ on immature/developing bunches and leaves at weekly intervals.</p> <ul style="list-style-type: none"> • Staking with bamboo for support
Horticulture crops vegetables				
Chillies	<ul style="list-style-type: none"> • Grow nursery on raised beds. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 and Plantation crops				
Turmeric		<ul style="list-style-type: none"> • 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. • In case of severe damage (considered as complete economical loss or if inundation is more than for four days), and the contingency period is 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Drain the excess water as soon as possible. • Harvest the rhizomes when field comes to normal • Use boilers and polishers for processing • Remove and separate the rotten and mould affected rhizomes. • Cook and dry the rhizomes as soon as possible.

		between June to August, sowing of best alternative crop must be taken up.		
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Contingent strategies for Livestock, Poultry & Fisheries

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		

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

Warangal district regularly experience moderate drought, mild floods and mild heat wave.

General contingency plans:

	Suggested contingency measures		
	Before the event ^s	During the event	After the event
Drought			
Feed and fodder	1. Promoting green fodder production in	1. Organise relief camps for large ruminants	1. Capacity building to stake

availability	<p>contingency plans</p> <ol style="list-style-type: none"> 2. Conserving fodder by silage / hay making Individually or on community basis 3. Conserve crop residues 4. Conserve forest grass on community Basis or by govt. 5. Preparing complete diets and storing in strategic locations 6. Organize procurement of dry fodders / complete diets from surplus areas 7. Organize fodder banks and feed banks 8. Procure sufficient quantities of mineral Mixture 9. Capacity building and preparedness 	<ol style="list-style-type: none"> 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 	<p>holders on drought mitigation in livestock sector</p> <ol style="list-style-type: none"> 2. Promote fodder cultivation. 3. Promote selvi-pasture production. 4. Flushing the stock to recoup 5. Replenish the feed and fodder banks 6. Promote fodder preservation techniques like silage / hay making
Drinking water	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 1. Regular supply of clean drinking water to all tanks constructed for the purpose 2. Cleaning the tanks in regular intervals 3. Add water sanitizers 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 1. Identify all unproductive and weak stock and advise for culling before hand 2. Healthy and productive stock may be 	<ol style="list-style-type: none"> 1. Closely observe the general health of the livestock 2. Carry out deworming and spraying to all 	<ol style="list-style-type: none"> 1. Vaccinate the stock as per the vaccination schedule. 2. Deworming and spraying for

	<p>immunized for endemic diseases of the area</p> <p>3. Carry out deworming to all young stock</p> <p>4. Carry out Butax spray for control of external parasites</p> <p>5. Stockpile vaccines and emergency Medicines</p> <p>6. Identify the Clinical staff and trained paravets and indent for their services as per schedules</p> <p>7. Identify the volunteers who can serve in need of emergency</p>	<p>animals entering into relief camps</p> <p>3. Feeding watering areas must be always kept clean</p> <p>4. Organise with community to lift the dung daily which can be used in their fields.</p> <p>5. Attend to the sick animals immediately and separate them from the camp</p> <p>6. Spot decisions are required in Emergencies. Vets must be available round the clock</p>	<p>control of external parasites must be carried out.</p>
Floods			
<p>Feed and fodder Availability</p>	<p>1. Stockpile dry fodder in elevated safe places in the flood prone villages.</p> <p>2. Stock concentrate feed and complete feeds also in the flood prone villages</p> <p>3. Livestock relief camps must be planned in the vicinity of relief camps for people so that livestock owners can take care of their stock</p>	<p>1. Livestock must be kept loose in the paddock</p> <p>2. As green fodder will not be available, dry fodder must be offered to the livestock in little quantities for number of times. It must be kept in dry and clean feeders</p> <p>3. Concentrate feed or complete feed must be offered to only productive stock and young stock only</p>	<p>1. Dry fodder and concentrate feeding must be continued until livestock can be sent out for grazing.</p> <p>2. Avoid soaked and mould infected feeds / foddors to livestock.</p> <p>3. Offer mineral supplements as livestock are under fed during flood periods.</p>
<p>Drinking water</p>	<p>1. Identify drinking water supplying wells or other sources which will remain</p>	<p>1. Keep the livestock away from contaminated Flood waters.</p>	<p>1. Continue treating drinking Water.</p>

	<p>uncontaminated due to flood waters.</p> <p>2. Stockpile water sanitizers in sufficient Quantities</p>	<p>2.Offer only fresh water or treated water.</p>	
<p>Health and disease Management</p>	<p>1.Procure and stock emergency medicines and vaccines for important endemic diseases of the area</p> <p>2.Keep stock of required Antibiotics</p> <p>3.Keep stock of bleaching powder and lime</p>	<p>1.Keep close watch on the health of the stock</p> <p>2.Sick animals must be isolated and treated Separately.</p> <p>3. Clean the animal houses regularly and Apply disinfectants.</p> <p>4.Safe and hygienic disposal of dead animal carcasses</p>	<p>1.keep close surveillance on disease outbreak.</p> <p>2.Undertake the vaccination depending on need</p> <p>3.Dispose the dead in a safe Way.</p> <p>4.Keep the animal houses clean and spray disinfectants.</p>
Heat wave and cold wave			
<p>Shelter/environment management</p>	<p>1.As a long term measure shade giving trees be planted around the animal houses</p> <p>2.As a short term plan animal house roofs may Be covered with grass.</p> <p>3.Procure sufficient dry foddors and feeds</p>	<p>1.Arrange water sprinklers on roofs of animal Houses and operate during hot part of the day.</p> <p>2.Hang gunny curtains on sides and wet them</p> <p>3.Avoid grazing during hot part of the day. Allow for grazing during early morning and evening hours only.</p> <p>4. Offer plenty of clean cool drinking water round the clock.</p> <p>5.Offer sufficient mineral mixture and salt</p> <p>6.During cold wave cover gunny bag on the body of animals in the nights and early</p>	

		morning hours 7. During the cold wave do not house the animals in open during night	
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Detail Contingent strategies for Livestock, Poultry & Fisheries

	Suggested contingency measures		
	Before the event	During the event	After the event
Drought			
Feed and Fodder availability	<p>Establishment of silvi-pastoral system in CPRs with <i>Stylosanthus hamata</i> and <i>Cenchrus ciliaris</i> as grass with <i>Leucaena leucocephala</i> as tree component (or suggest suitable similar system to your district)</p> <p>Top dressing of N in 2-3 split doses @ 20-25 kg N/ha in common property resources (CPRs) like temple lands, panchayat lands or private property resources (PPRs) like waste and degraded lands with the monsoon pattern for higher biomass production</p> <p>In chronically drought prone mandals promote cultivation of short duration fodder crops of sorghum/bajra/maize (UP chari, MP chari, HC-136, HD-2, GAIN T BAJRA, L-74, K-677, Ananad/African Tall, Kisan composite, Moti, Manjari, B1-7)</p> <p>Chopping of fodder should be made as mandatory in every village through supply and establishment of good quality chaff cutters.</p> <p>Avoid burning of maize stover</p> <p>Harvesting and collection of perennial vegetation particularly grasses which grow during monsoon</p> <p>Proper drying, bailing and densification of harvested grass from previous season</p>	<p>Harvest and use biomass of dried up crops (Sorghum, Paddy, Maize, green gram etc.) material as fodder.</p> <p>Harvest the tree fodder (Neem, Subabul, Acasia, Pipal etc) and unconventional feeds resources available and use as fodder for livestock (LS).</p> <p>Available feed and fodder should be cut from CPRs and stall fed in order to reduce the energy requirements of the animals</p> <p>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. All the hay should be enriched with 2% Urea molasses solution or 1% common salt solution and fed to LS</p> <p>Herd should be split and supplementation should be given only to the highly productive and breeding animals</p> <p>Provision of emergency grazing/feeding (Cow-calf camps or other special arrangements to protect high productive & breeding stock)</p> <p>Available kitchen waste should be mixed with dry</p>	<p>Concentrates supplementation should be provided to all the animals.</p> <p>Short duration fodder crops of should be sown in unsown and crop failed areas where no further routine crop sowing is not possible</p>

	Creation of permanent fodder, feed and fodder seed banks in all drought prone areas	<p>fodder while feeding</p> <p>Arrangements should be made for mobilization of small ruminants across the districts where no drought exits with subsidized road/rail transportation and temporary shelter provision for the shepherds</p> <p>Unproductive livestock should to be culled during severe drought</p> <p>Create transportation and marketing facilities for the culled and unproductive animals</p> <p>Subsidized loans should be provided to the livestock keepers</p>	
Cyclone	NA		
Floods	<p>In case of early forewarning (EFW), harvest all the crops (sorghum/Maize/Rice/green gramt) that can be useful as fodder in future (store properly)</p> <p>Don't allow the animals for grazing if severe floods are forewarned</p> <p>In regularly flood villages, arrange for storing minimum required quantity of hay (25-50kg) and concentrates (25kgs) per animals in farmer / LS keepers house / shed for feeding animals during floods</p> <p>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</p>	<p>Transportation of animals to elevated areas</p> <p>Stall feeding of animals with stored hay and concentrates</p> <p>Proper hygiene and sanitation of the animal shed</p> <p>In severe floods, un-tether or let loose the animals</p> <p>Emergency outlet establishment for required medicines or feed in each village</p> <p>Spraying of fly repellants in animal sheds</p>	<p>Repair of animal shed</p> <p>Bring back the animals to the shed</p> <p>Cleaning and disinfection of the shed</p> <p>Bleach (0.1%) drinking water / water sources</p> <p>Deworming with broad spectrum dewormers</p> <p>Vaccination against possible disease out breaks like HS, BQ, FMD and PPR</p> <p>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</p> <p>Drying the harvested crop material and proper storage for use as fodder.</p>
Heat wave	In mandals which are chronically prone to heat waves	Allow the animals preferably early in the morning	Feed the animals as per routine

	<p>the following permanent measures are suggested</p> <ul style="list-style-type: none"> i) Plantation of trees like Neem, Pipal, Subabul around the shed ii) Spreading of husk/straw/coconut leaves on the roof of the shed iii) Water sprinklers / foggers in the animal shed iv) Application of white reflector paint on the roof to reduce thermal radiation effect 	<p>or late in the evening for grazing during heat waves</p> <p>Feed green fodder/silage / concentrates during day time and roughages / hay during night time in case of heat waves</p> <p>Put on the foggers / sprinklers during heat waves and heaters during cold waves in case of high productive animals</p> <p>In severe cases, vitamin 'C' (5-10ml per litre) and electrolytes (Electral powder @ 20g per litre) should be added in water during severe heat waves.</p>	<p>schedule</p> <p>Allow the animals for grazing (normal timings)</p>
Health and Disease management	<p>List out the endemic diseases (species wise) in that district and store vaccines for those diseases</p> <p>Timely vaccination (as per enclosed vaccination schedule) against all endemic diseases</p> <p>Surveillance and disease monitoring network to be established at Joint Director (Animal Husbandry) office in the district</p>	<p>Constitution of Rapid Action Veterinary Force</p> <p>Procurement of emergency medicines and medical kits</p> <p>Performing ring vaccination (8 km radius) in case of any outbreak</p> <p>Restricting movement of livestock in case of any epidemic Rescue of sick and injured animals and their treatment</p>	<p>Conducting mass animal health camps</p> <p>Conducting fertility camps</p> <p>Mass deworming camps</p>
Insurance	<p>Encouraging insurance of livestock</p>	<p>Listing out the details of the dead animals</p>	<p>Submission for insurance claim and availing insurance benefit</p> <p>Purchase of new productive animals</p>
Drinking water	<p>Identification of water resources</p> <p>Rain water harvesting and create water bodies/watering points (when water is scarce use only as drinking water for animals)</p>	<p>Restrict wallowing of animals in water bodies/resources</p>	<p>Bleach (0.1%) drinking water / water sources</p> <p>Provide clean drinking water</p>

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, bajra etc, in to use as feed in case of severe drought	Supplementation only for productive birds with house hold grain Supplementation of shell grit (calcium) for laying birds Culling of weak birds	Supplementation to all survived birds
Drinking water		Use water sanitizers or offer cool 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, bajra 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 sanitizers / offer cool 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 lime powder in pit Disposal of poultry manure to prevent protozoal problem

			Supplementation of coccidiostats in feed Vaccination against RD
Cyclone	NA		
Heat wave			
Shelter/environment management	Provision of proper shelter with good ventilation	In severe cases, foggers/water sprinklers/wetting of hanged gunny bags should be arranged Don't allow for scavenging during mid day	Routine practices are followed
Health and disease management	Deworming and vaccination against RD and fowl pox	Supplementation of house hold grain Provide cool and clean drinking water with electrolytes and vit. C (5-10 ml per litre) In hot summer, add anti-stress probiotics in drinking water or feed (Reestobal etc., 10-20ml per litre)	Routine practices are followed