State: ANDHRA PRADESH

Agriculture Contingency Plan for District: VISAKHAPATNAM

1.0 District Agriculture profile					
1.1	**Agro-Climatic/Ecological**				
	Agro Ecological Sub Region (ICAR)	Eastern coastal plain, hot sub- humid to semi arid eco region (12.2, 18.4)			
	Agro-Climatic Region (Planning Commission)	East coast plain and hill region (XI)			
	Agro Climatic Zone (NARP)	North Coastal Zone (AP-2)			
	List all the districts or part thereof falling under the NARP	Plain mandals Visakhapatnam, Vizianagaram and Srikakulam districts			
	Geographic coordinates of district	Latitude	Longitude	Altitude	
		18°7' N	83^0 25' E	73 m	
	Name and address of the concerned ZRS/ZARS/RARS/	Regional Agricultural Research Station, Anakapalle-531001			
	Mention the KVK located in the district	Krishi Vignan Kendra,Kondempudi,Butchayyapeta-531026 BCT-Krishi Vignan Kendra, Haripuram, Yelamanchili-531005			
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):	713	42	1st week of June	2nd week of October
	NE Monsoon(Oct-Dec):	297	6	3rd week of October	4th week of December
	Winter (Jan- Feb)	22	2	-	-
	Summer (Mar-May)	170	11	-	-
	Annual	1202	61	-	-

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)	1116.1	441.2	103.1	2.8	10.9	34.1	130.4	53.4	28.2

1. 4	**Major Soils (common names like shallow red soils etc.,)**	**Area ('000ha)**	**Percent (%) of total**
	Red clay loams	144.5	48.0
	Red sandy loams	96.7	32.0
	Coastal sandy soils	68.6	2.0
	Clay loams	40.6	13.0
	Alluvial soils	13.3	5.0
	Others (Specify):	-	
1.5	**Agricultural land use**	Area	Cropping intensity %
	Net sown area	304.0	123.9
	Area sown more than once	72.6	
	Gross cropped area	376.6	

1.6	**Irrigation**	Area (‘000 ha)		
	Net irrigated area	100.5		
	Gross irrigated area	133.9		
	Rainfed area	203.4		
	Sources of Irrigation	Number	Area (‘000 ha)	Percentage of total irrigated area
	Canals		43.1	41.1
	Tanks		28.6	27.2
	Open wells		5.1	5
	Bore wells		13.6	13.0
	Lift irrigation		0.2	0.2
	Micro-irrigation		-	
	Other sources		18.0	18
	Total Irrigated Area		133.8	
	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%				

Area under major field crops & horticulture etc. (2018-19)

1.7		**Major Field Crops cultivated**	**Area ('000 ha)**					
			Kharif		***Rabi***		**Summer**	**Total**
			Irrigated	***Rainfed***	***Irrigated***	***Rainfed***		
	1	Paddy	102	-	5	-	-	107
	2	Sugarcane	34	-	-	-	-	34
	3	Ragi	18	-	-	-	-	18
	4	Maize	-	3	1	-	-	4
	5	Groundnut	-	2	-	-	-	2
	6	Red gram	-	2	-	-	-	2
	7	Black gram	-	-	6	-	-	6
	8	Green gram	-	-	3	-	-	3
	9	Sesame	-	-	3	-	-	3
	10	Rajmah	2	-	-	-	-	2
	11	Niger	-	-	6	-	-	6
		Horticulture crops – Fruits	**Total area**					
	1	Mango	16.8					
	2	Banana	1.8					
	3	Pine Apple	1.1					
		Horticultural crops – Vegetables	**Total area**					
	1	Tomato	1.4					
	2	Brinjal	1.2					
	3	Bhendi	0.8					
	4	Chillies Green	0.4					
	5	Beans	0.35					
		Plantation crops	**Total area**					
	1	Coffee	63.2					
	2	Cashew nut	27.2					
	3	Coconut	7.5					

1.8				**Total (number)**
	Non descriptive Cattle (local low yielding)	231.2	193.8	425.1
	Crossbred cattle	39.4	114.4	153.9
	Non descriptive Buffaloes (local low yielding)	110.8	368.9	479.7
	Graded Buffaloes			
	Goat			333.0
	Sheep			262.6
	Others (Camel, Pig, Yak etc.)			22.82
	Commercial dairy farms (Number)			
1.9	**Poultry**	**No. of farms**	**Total No. of birds (number)**	
	Commercial		4586532	
	Backyard		1768821	

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)	
	17450	466	1079 / 511	387/222361	511/8	12/12

ii) Inland (Data Source: Fisheries Department)	**No. Farmer owned ponds**	**No. of Reservoirs**	**No. of village tanks**
	21	16	145

B. Culture

	Water Spread Area (ha)	**Yield (t/ha)**	**Production ('000 tons)**
i) **Brackish water** (Data Source: MPEDA/	231	0.001	0.2

	Fisheries Department)			
	ii) **Fresh water** (Data Source: Fisheries Department)	3	0.1	0.4
	Others		-	61.3

1.11	**Production and Productivity of major crops**	**Kharif**		**Rabi**		**Summer**		**Total**		**Crop residue as fodder** (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) Average**	
Major Field crops (Crops to be identified based on total acreage)										
1	Paddy	297	2887	16	3400	-	-	313	3144	
2	Sugarcane	1868	55356	-	-	-	-	1868	55356	
3	Ragi	17	909	-	-	-	-	17	909	
4	Maize	3	1160	7	5773	-	-	10	3467	
5	Groundnut	2	1282	-	-	-	-	2	1282	
6	Red gram	1	391	-	-	-	-	1	391	
7	Black gram	-	-	3	518	-	-	3	518	
8	Green gram	-	-	2	591	-	-	2	591	
9	Sesame	-	-	1	266	-	-	1	266	
10	Rajmah	3	667	-	-	-	-	3	-	
11	Niger	-	-	3	520	-	-	3	520	

1.12	**Sowing window for 5 major field crops (start and end of normal sowing period)**	Paddy	Sugarcane	Groundnut	Ragi	Maize	Sesame
	Kharif- Rainfed	2nd FN June- 2nd FN July	-	1st FN June – 1st FN July	2nd FN July to Aug 1st FN	2nd FN June – 2nd FN July	2nd FN April – 2nd FN May
	Kharif-Irrigated	1st FN July – 1st FN Aug	2nd FN May – 2nd FN July	1st FN June – 1st FN July	-	1st FN June – 2nd FN July	--
	Rabi- Rainfed	-	-	-		-	--
	Rabi-Irrigated	Dec 1st FN – 1st FN Jan	1st FN January to 2nd FN of February (early varieties), 1st FN of March to 1st FN of April (Mid late)	1st FN Nov to 2nd FN Dec		2nd FN Oct – 2nd FN Jan	2nd FN Dec – 1st FN Jan (Rice fallows)

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)	√		
	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

Annexure I

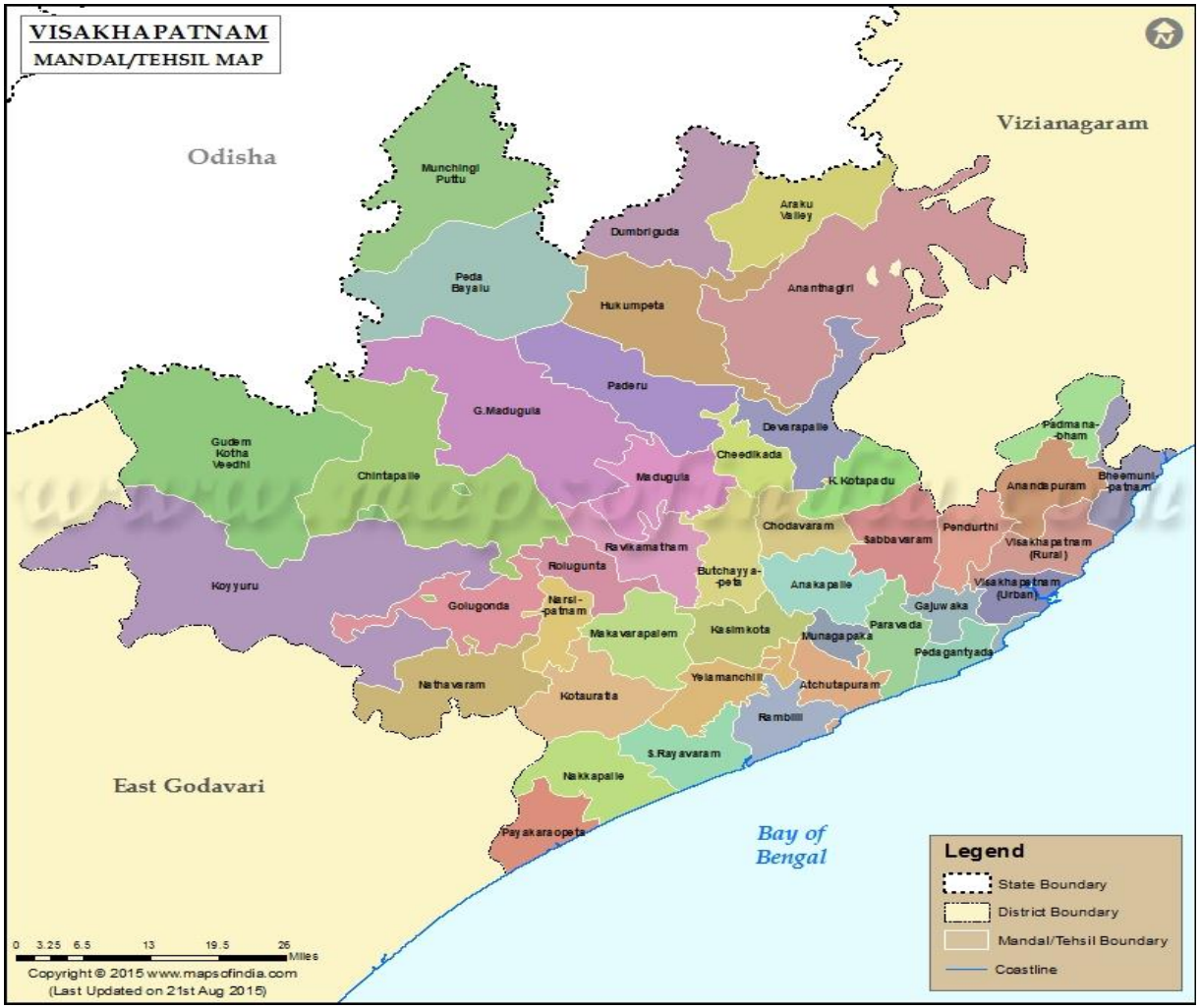

Fig: Location map of the Visakhapatnam district

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 Situation**	**Change in crop/cropping Situation**	**Agronomic measures**	**Remarks on Implementation**
Delay by 2 weeks (Specify month)* 3rd week of June	Rainfed red sandy loams	Ragi, Groundnut, Bajra, Redgram, Rainfed Sugarcane	No change	-	--
	Rainfed red sandy loams with clay base	Groundnut/ Maize, Groundnut + Redgram Greengram/Ragi/Redgram Jowar, Rainfed Sugarcane	Direct sowing of Ragi Sowing of maize in ridge and furrow method		

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop/cropping Situation**	**Change in crop/cropping Situation**	**Agronomic measures**	**Remarks on Implementation**
Delay by 4 weeks (Specify	Rainfed red sandy loams	Groundnut, Bajra Ragi, Redgram	No change	Direct sowing of Ragi Sowing of maize in	

month) **July 1st week**	Rainfed red sandy loams with clay base	Maize, Groundnut , Ragi, Rainfed sugarcane	Redgram + Groundnut Ragi + Redgram Maize + Redgram	ridge and furrow method	

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop/cropping Situation**	**Change in crop/cropping Situation**	**Agronomic measures**	**Remarks on Implementation**
Delay by 6 weeks (Specify month) **July 3rd week**	Rainfed red sandy loams	Maize	Maize	Conservation furrow at every 3.5mtr.	-
		Groundnut, Bajra	Ragi		
		Blackgram	Redgram		
		Ragi + Redgram	Ragi +Redgram		
		Maize	Blackgram, Cowpea, Fodder jowar		
	Rainfed red sandy loams with clay base	Maize	Rainfed rice		
		Groundnut	Blackgram		
		Redgram + Groundnut	Maize		
		Maize + Redgram	Ragi + Redgram		
		Rainfed sugarcane	Fodder jowar		

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop/cropping Situation**	**Change in crop/cropping Situation**	**Agronomic measures**	**Remarks on Implementation**
	Rainfed red sandy	Maize	Ragi	-	

Delay by 8 weeks (Specify month) August 2nd week	loams	Groundnut, Bajra	Jowar	-	
		Blackgram	Cowpea		
		Ragi + Redgram	Redgram, Cluster bean, fodder jowar	Adopt closer spacing for Redgram	
	Rainfed red sandy loams with clay base	Maize	Ragi, Blackgram	-	
		Groundnut	Maize	-	
		Redgram + Groundnut	Redgram(closer spacing)	-	
		Maize + Redgram	Maize +Redgram	-	
		Rainfed sugarcane	Fodder jowar	-	

Condition			**Suggested Contingency measures**		
Early season drought **(Normal onset)**	**Major Farming situation**	**Normal Crop/cropping Situation**	**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.	Rainfed red sandy loams	Maize	If germination fails go for resowing	-	
		Groundnut		-	
		Bajra		-	
		Blackgram		-	
		Ragi +Redgram		-	
	Rainfed red sandy loams with clay base	Maize, Groundnut		-	
		Redgram + Groundnut		-	
		Ragi + Redgram		-	
		Maize + Redgram		-	
		Rainfed Sugarcane		-	

Condition			Suggested Contingency measures		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	**Major Farming situation[a]**	**Normal Crop/cropping Situation[b]**	**Crop management**	**Soil nutrient & moisture conservation measure[s]**	**Remarks on Implementation[e]**
At vegetative stage	Rainfed red sandy loams	Maize	1.Life saving irrigation if water available 2.Foliar spray with 2% urea and 1%MOP 3.Control sucking pest complex by spraying Dimethoate@2ml/lt ir Acephate @ 1.5 g per litre of water.	1. Making conservation furrows at 3.5 mt 2. Maintain weed free condition , 3. Frequent interculture to form dust mulch.	
		Groundnut			
		Bajra			
		Blackgram			
		Ragi + Redgram			
	Rainfed red sandy loams with clay base	Maize, Groundnut			
		Redgram + Groundnut			
		Ragi + Redgram			
		Maize + Redgram			
		Rainfed Sugar cane			

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	**Major Farming situation**	**Normal Crop/cropping Situation**	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**
At reproductive stage	Rainfed red sandy loams	Maize	Life saving Irrigation if water available. Foliar spray with 2% urea and	1. Digging farm ponds 2. Making conservation furrows. 3. Maintain weed free condition.	-
		Groundnut			
		Bajra			
		Blackgram			

		Ragi + Redgram	1% MOP or KNO3	4 Intercultivation to a shallow depth except for groundnut.	
	Rainfed red sandy loams with clay base	Maize, Groundnut			
		Redgram + Groundnut			
		Ragi + Redgram			
		Maize + Redgram			
		Rainfed Sugar cane			

Condition			**Suggested Contingency measures**		
Terminal drought	**Major Farming situation**	**Normal Crop/cropping Situation**	**Crop management**	**Rabi Crop planning**	**Remarks on Implementation**
	Rainfed red sandy loams	Maize	Prolonged dry spell may flare up incidence of jassids/thrips/flea beetles hence need based application of Acephate@1gm/l Foliar spray with 1% 19-19-19	-	Monitor for incidence of fall army worm in maize
		Groundnut			
		Bajra			
		Blackgram			
		Ragi + Redgram			
	Rainfed red sandy loams with clay base	Maize, Groundnut			
		Redgram + Groundnut			
		Ragi + Redgram			
		Maize + Redgram			
		Rainfed Sugar cane			

2.1.2 Irrigated situation

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping Situation**	**Change in crop/cropping Situation**	**Agronomic measures**	**Remarks on Implementation**
Delayed release of water in canals due to low rainfall	Irrigated wet lands	Rice	Selection of medium , short duration varieties Direct seeding with short duration varieties.	1.Medium or Short duration varieties like, MTU 1121,MTU 1153, MTU 1156,NLR-3449 MTU-1010, , RGL 2538. 2. Life saving irrigation to already sown nurseries. 3. Plating of aged seedlings with special management (Colse planting 44 pl/sqmt 4-5 plants /hill , N in 2 splits instead of 3 splits 2/3 as basal) 5. Direct sowing of paddy with drum seeder or broad casting of sprouted seed or Direct sowing with ferti cum seed drill. 6. Adopt control measures for pest like gallmidge.and leaf folder.	

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping Situation**	**Change in crop/cropping Situation**	**Agronomic measures**	**Remarks on Implementation**
Limited release of	Irrigated wet	Rice	Rice/go for ID	1.Select short Duration	

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping Situation**	**Change in crop/cropping Situation**	**Agronomic measures**	**Remarks on Implementation**
water in canals due to low rainfall	lands		crops (Rice with short duration varieties)	Medium or short varieties like MTU 1156, MTU 1153, NLR 34449, RGL1880) 2.Alternate wetting and drying is suggested 3. Irrigate up to 5 cm depth from PI to grain formation stage.	
	Irrigated uplands	Rice	Vegetables, Maize.		

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping Situation**	**Change in crop/cropping Situation**	**Agronomic measures**	**Remarks on Implementation**
Non release of water in canals under delayed onset of monsoon in catchment	Irrigated wet lands	Rice planting with over aged seedlings	Maize, Ragi		Monitor for fall army worm incidence in maize.
	Irrigated uplands	Rice	Redgram+maize Ragi+Redgram		

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

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping Situation**	**Change in crop/cropping Situation**	**Agronomic measures**	**Remarks on Implementation**
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	Irrigated wet lands	Rice	Growing rice as rainfed crop initially and later converted to wet (aerobic rice)	Selection of medium duration drought tolerant varieties viz., Vasundara, Naveen, Rasi, MTU1010	
	Irrigated uplands	Sugarcane/ maize/ groundnut	Vegetables , Maize, Ragi		

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping Situation**	**Change in crop/cropping Situation**	**Agronomic measures**	**Remarks on Implementation**
Insufficient groundwater recharge due to low rainfall	1.Irrigated wet lands	Direct sowing of rice (upland rice)	Greengram-Ragi, Greengram-Jowar	-	-
Any other condition (specify)	Waterlogged areas and Ava area	Long duration rice varieties like Srikakulam sannalu	Growing improved varieties like PLA-1100, MTU 1061, MTU 1064, MTU 1140.	-	-

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

Continuous high rainfall in a short span leading to water logging	**Vegetative stage**	**Flowering stage**	**Crop maturity stage**	**Post harvest**
1. Sugarcane	1. Drain out excess water 2. Apply 50 kg of urea as booster dose + 50Kg MOP immediately after receding of excess water. 3. Take up suitable preventive measures in anticipation of pests and diseases outbreaks.	Grand growth : Drain out excess water. 2. Propping the crop with bamboo poles. 3.Apply 50 kg of urea as booster dose + 50Kg MOP immediately after receding of excess water.	1. Drain out excess water. 2. Propping the crop with bamboo poles.	
2. Groundnut	1. Drain out excess water 2. Apply 10 kg of urea as booster dose immediately after receding of excess water 3. Take up suitable preventive measures in anticipation of pests and diseases outbreaks.	1. Drain out excess water 2. Apply 10 kg of urea as booster Dose immediately after receipt of excess water 3. Take up suitable preventive measures in anticipation of pests and diseases outbreaks	1.Drain the excess water as Early as possible 2. Allow the crop to dry completely Before harvests.	1. Drying in inverted wind rows 2. Keeping the plants in bunches by placing pod up to drain excess water. 3. Pricking of pods and drying in thin layers.
3. Ragi	1. Drain out excess water as early as	1. Drain out excess	1.Drain the excess	1. Drain out water

	possible. 2. Apply 20 Kg urea +10 kg MOP/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.	water as early as possible. 2. Take up suitable plant protection measures in anticipation of pest & disease out breaks.	water as Early as possible 2. Take up suitable plant Protection measures in Anticipation of pest & disease Out breaks.	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. Ensure proper grain moisture before storing.
4. Maize	1. Drain out excess water as early as possible. 2. 20 Kg urea +10 kg MOP /acre after draining excess Water. 3. Take up Intercultivation and at optimum soil moisture condition to loosen and aerate the soil and to control weeds. 4. Provide anchorage 5. Earthing up the crop for anchorage. 6. Spray KNO_3 1% support nutrition. 7. Take up timely control measures for Pink stem Borer, fall army worm, sheath blight and Turcicum leaf blight.	1. Drain the excess water as early as possible. 3. To spray Urea 2% to support nutrition. 4. Take up timely control measures for sheath blight and post flowering stalk rots.	1.Drain the excess water as early as possible. 2. Allow the crop to dry completely before harvesting.	1. Harvest the cobs after they are dried up properly. Dry the grain to optimum moisture condition before storing .

Horticulture crops – Fruits				
Cashew	• Drain the excess water as soon as possible • Spray 1% KNO_3 or Urea 2% solution 2-3 times. • Spray Imidacloprid 0.3 ml or Dimethoate 2 ml or Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases.	• Drain the excess water as soon as possible • Spray 1% KNO_3 or Urea 2% solution 2-3 times. • Spray Imidacloprid 0.3 ml or Dimethoate 2 ml or Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases.	• Drain the excess water as soon as possible • Spray 1% KNO_3 or Urea 2% solution 2-3 times. • Harvest the mature fruits as soon as possible • Spray Imidacloprid 0.3 ml or Dimethoate 2 ml or Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases.	• Separate seed from the fruits and dry the seeds seperately. • Store the fruits in well ventilated place temporarily before it can be marketed. • Market the fruits as soon as possible or use for the preparation of processed products..
Mango	• Drain the excess water as soon as possible • Spray 1% KNO_3 or Urea 2%	• Drain the excess water as soon as possible	• Drain the excess water as soon as possible	• Store the fruits in well ventilated

	solution 2-3 times. • Spray Imidacloprid 0.3 ml or Dimethoate 2 ml or Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases. • Drench the plants with COC 0.3% to prevent wilts.l	• Spray 1% KNO3 or Urea 2% solution 2-3 times. • Spray Imidacloprid 0.3 ml or Dimethoate 2 ml or Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases.	• Harvest the mature produce in a clear sunny day' • After harvest spray Imidacloprid 0.3 ml or Dimethoate 2 ml or Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases. • Spray Dithane M-45 3.0% or bavistin 1.0% against Anthracnose	place temporarily before it can be marketed. • Market the fruits as soon as possible.
Guava	• Drain the excess water as soon as possible • Spray 1% KNO_3 or Urea 2% solution 2-3 times.	• Drain the excess water as soon as possible • Spray 1% KNO_3	• Drain the excess water as soon as possible • Harvest the	. • Store the produce in well ventilated

	• Spray Imidacloprid 0.3 ml or Dimethoate 2 ml or Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases. • Drench the plants with COC 0.3% to prevent wilts	or Urea 2% solution 2-3 times. • Spray Imidacloprid 0.3 ml or Dimethoate 2 ml or Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases.	mature produce as soon as possible. • Spray Imidacloprid 0.3 ml or Dimethoate 2 ml or Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases.	place temporarily before it can be marketed. • Market the produce as soon as possible.
Horticultural crops – Vegetables				
Beans	• Drain the excess water as soon as possible • Spray Urea 2% solution 2-3 times. • Topdressing of booster dose of 10 kg MOP + 30 kg Urea per acre as soon as possible. • Spray COC 30 g in 10 liters of water, 2-3 times against leaf spots. • Gap filling may be taken up if the	• Drain the excess water as soon as possible • Spray Urea 2% solution 2-3 times. • Topdressing of booster dose of 10 kg MOP + 30 kg Urea per acre as soon as possible. • Spray COC 30 g in	• Drain the excess water as soon as possible • Spray Urea 2% solution once. • Spray COC 30 g in 10 liters of water once.	• Drain the excess water as soon as possible. • Harvest the mature produce as soon as possible. • Store the produce in well ventilated place

	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.	10 liters of water, 2-3 times against leaf spots.		temporarily before it can be marketed. • Market the produce as soon as possible.
Brinjal	• 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. • Spray COC 30 g in 10 liters of water, 2-3 times against leaf spots. • 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 10 kg MOP + 30 kg Urea per acre as soon as possible. • Spray COC 30 g in 10 liters of water, 2-3 times against leaf spots	• Drain the excess water as soon as possible • Harvest the marketable fruits in a clear sunny day' • Spray captan or Mancozeb 0.3% to prevent fruit rot	• Store the harvested fruits in well ventilated place temporarily before it can be marketed. • Market the fruits as soon as possible.

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. • Spray COC 30 g in 10 liters of water, 2-3 times against leaf spots. • Gap filling may be taken up if the	• Drain the excess water as soon as possible • Spray Urea 2% solution 2-3 times. • Topdressing of booster dose of 10 kg MOP + 30 kg Urea per acre as soon as possible. • Spray COC 30 g in 10 liters of	• Drain the excess water as soon as possible • Harvest the marketable fruits in a clear sunny day' • Spray captan or mancozeb 0.3% to prevent fruit rot	• Store the harvested fruits in well ventilated place temporarily before it can be marketed. • Market the fruits as soon as possible.

	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.	water, 2-3 times against leaf spots		
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. • Spray COC 30 g + 1g Streptocycline in 10 liters of water, 2-3 times against the Bacterial Leaf Spot and Chaenophora blight. • Drenching in the affected patches with COC 3 g per litre to avoid spread of diseases. • 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	• 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 COC 30 g + 1g Streptocycline in 10 liters of water, 2-3 times against the Bacterial Leaf Spot and Chaenophora blight. • Drench the affected patches with COC 3 g per litre to avoid wilt and root rot	• Drain the excess water as soon as possible • Harvest the matured fruits in a clear sunny day. • Spray Propiconazole 0.1% or COC 0.3% against Die back and fruit rot. • Drench the affected patches with COC 3 g per litre to avoid wilt and root rot diseases.	• 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.

	alternative crop must be taken up.			
Gourds	• Drain the excess water as soon as possible • Spray Urea 2% solution 2-3 times. • Topdressing of booster dose of 10 kg MOP + 30 kg Urea per acre as soon as possible. • Spray mancozeb 25 g in 10 liters of water, 2-3 times against leaf spots. • 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 • 2. Spray Urea 2% solution 2-3 times. • 3. Topdressing of booster dose of 10 kg MOP + 30 kg Urea per acre as soon as possible. • Spray mancozeb 25 g in 10 liters of water, 2-3 times against leaf spots	• Drain the excess water as soon as possible • Spray Urea 2% solution once. • Spray mancozeb 25g in 10 liters of water, 2-3 times against leaf spots.	• 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 & Plantation crops				
Areca nut and Coconut	• Planting should be done on mounts or bunds • Drainage system, suited to local conditions may be provided to remove surplus water from root zone	• Drain the excess water as soon as possible • Apply booster dose of NPK fertilizers	• Drain the excess water as soon as possible • Apply booster dose of NPK fertilizers	• Store the produce in well ventilated place temporarily before it can be market

	• Relief drains [shallow] channels are opened at places where water accumulates and connected with main drain to remove water from the surface		• Harvest the mature nuts as soon as possible.	• Market the nuts as soon as possible.
Turmeric	• Drain the excess water as soon as possible • Spray Urea 2% or 1% KNO_3 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. • Spray Propiconazole 1 ml per litre of water, 2-3 times against the occurrence of leaf spots. • Soil drenching with COC 3 g per litre to check the Rhizome rot disease. • 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.	• Drain the excess water as soon as possible • Spray Urea 2% or 1% KNO_3 solution 2-3 times. • Spray Propiconazole 1 ml per liter of water, 2-3 times against the occurrence of leaf spots.-	• Drain the excess water as soon as possible • Harvest the rhizomes when field comes to normal	• 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
Heavy rainfall				

with high speed winds in a short span				
Paddy	• Drain out excess water • Incase of loss of plant population Survived hills are to be split into individual tillers and use for gap filling. • Apply a booster dose of 20-25kg of urea and 15kg of MOP per acre hasten the establishment and promote more tillering • Pests like Leaf folder and swarming caterpillar may emerge so monitor the pest and control measures like spraying of chloripyriphos 2.5 ml/l or cartap hydrochloride 2gm/l may be taken up.	• Drain out excess water, Apply a booster dose of 20-25kg of urea and 15kg of MOP per acre • Monitor incidence of BLB and sheath blight and initiate Control measures for BLB • Spraying should be done in evening times only.	• Drain out excess water. • Control measures for BPH • Spraying of Bufrofizin 1.6ml/lt or Acephate 1.5 gm/lt • In case of lodging at milky stage staking of paddy hills (3-4hills) may be done.	• Spraying of 5% salt solution to prevent germination and discolouratio n of grain. • Shifting of harvested sheaves to the field bunds or elevated places.
Groundnut	Drain out the water as early as possible Inter cultivation as soon as possible for quick evaporation of excess moisture. Spraying with 1% 19:19:19 or 13-0-45 to correct nutrient deficiencies and enhance growth Spraying with carbendiazm 1gm /+ Mancozeb 3gm/lt as prophylactic measure against fungal diseases.	Drain out the water as early as possible Spraying with carbendiazm 1gm /+ Mancozeb 3gm/lt as prophylactic measure against fungal diseases.	Drain out the water as early as possible . Harvesting may be planned in case of advanced maturity stage.	Drain out the water as early as possible. Pluck the pods from plants and dry. Harvested crop may kept in heaps upside down to facilitate the pods to dry early

Maize	• Drain out the water as early as possible • Inter cultivation as soon as possible for quick evaporation of excess moisture. • Apply a booster dose of 20-25kg of urea and 15kg of MOP per acre • Spraying with 1% Multi K or 19:19:19 to correct nutrient deficiencies and enhance growth	• Drain out the water as early as possible • Inter cultivation as soon as possible for quick evaporation of excess moisture. • Apply a booster dose of 20-25kg of urea and 15kg of MOP per acre • Spraying with 1% Multi K or 19:19:19 to correct nutrient deficiencies and enhance growth	• Drain out the water as early as possible. . Harvesting may be planned in case of advanced maturity stage for greencob purpose	• Drain out the water as early as possible. • Harvested cobs may be dried .
Sugarcane	• Drain out the water as early as possible • Inter cultivation as soon as possible for quick evaporation of excess moisture. • Apply a booster dose of 50 kg of urea and 50 kg of MOP per acre	• Drain out the water as early as possible • Apply a booster dose of 50 kg of urea and 50 kg of MOP per acre • Propping may be done to the lodged canes	• Drain out the water as early as possible • Propping may be done to the lodged canes • Plan for early harvesting and send to the factory or for jaggery making	• Drain out the water as early as possible • Plan for send to the factory at the earliest or for jaggery making
Horticulture crops – Fruits				
Cashew	• Drain the excess water as soon as possible • Spray 1% KNO_3 or Urea 2% solution 2-3 times. • Spray Imidacloprid 0.3 ml or Dimethoate 2 ml or	• Drain the excess water as soon as possible • Spray 1% KNO_3 or Urea 2% solution 2-3 times.	• Drain the excess water as soon as possible • Spray 1% KNO_3 or Urea 2% solution 2-3	• Separate seed from the fruits and dry the seeds separately. • Store the fruits

	Phosphomidon 2 ml per litre to prevent insect pest damage. • .Spray Carbendazim 1 g per litre to prevent spread of diseases.	• Spray Imidacloprid 0.3 ml or Dimethoate 2 ml or Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases.	times. • Harvest the mature fruits as soon as possible • Spray Imidacloprid 0.3 ml or Dimethoate 2 ml or Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases.	in well ventilated place temporarily before it can be marketed. • Market the fruits as soon as possible or use for the preparation of processed products.
Mango	• Drain the excess water as soon as possible • Spray 1% KNO_3 or Urea 2% solution 2-3 times. • Spray Imidacloprid 0.3 ml or Dimethoate 2 ml or Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases.	• Drain the excess water as soon as possible • Spray 1% KNO_3 or Urea 2% solution 2-3 times. • Spray Imidacloprid 0.3 ml or Dimethoate 2 ml or	• Drain the excess water as soon as possible • Harvest the mature produce in a clear sunny day' • After harvest, spray Imidacloprid 0.3	• Store the fruits in well ventilated place temporarily before it can be marketed. • Market the fruits as soon as possible.

	• Drench the plants with COC 0.3% to prevent wilts.	Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases.	ml or Dimethoate 2 ml or Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases. • Spray Dithane M-45 3.0% or bavistin 1.0% against Anthracnose	
Guava	• Drain the excess water as soon as possible • Spray 1% KNO_3 or Urea 2% solution 2-3 times. • Spray Imidacloprid 0.3 ml or Dimethoate 2 ml or Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases. • Drench the plants with COC	• Drain the excess water as soon as possible • Spray 1% KNO_3 or Urea 2% solution 2-3 times. • Spray Imidacloprid 0.3 ml or Dimethoate 2 ml or Phosphomidon 2 ml per litre to	• Drain the excess water as soon as possible • Harvest the mature produce as soon as possible. • Spray Imidacloprid 0.3 ml or Dimethoate 2 ml or	• Store the produce in well ventilated place temporarily before it can be marketed. • Market the produce as soon as possible.

	0.3% to prevent wilts	prevent insect pest damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases.	Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases.	
Horticultural crops – Vegetables				
Beans	• Drain the excess water as soon as possible • Spray Urea 2% solution 2-3 times. • Topdressing of booster dose of 10 kg MOP + 30 kg Urea per acre as soon as possible. • Spray COC 30 g in 10 liters of water, 2-3 times against leaf spots. • .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	• Drain the excess water as soon as possible • Spray Urea 2% solution 2-3 times. • Topdressing of booster dose of 10 kg MOP + 30 kg Urea per acre as soon as possible. • Spray COC 30 g in 10 liters of water, 2-3 times against leaf spots.	• Drain the excess water as soon as possible • Spray Urea 2% solution once. • Spray COC 30 g in 10 liters of water once.	• 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.

	up.			
Brinjal	• .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. • Spray COC 30 g in 10 liters of water, 2-3 times against leaf spots. • 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 10 kg MOP + 30 kg Urea per acre as soon as possible. • Spray COC 30 g in 10 liters of water, 2-3 times against leaf spots	• Drain the excess water as soon as possible • Harvest the marketable fruits in a clear sunny day' • Spray captan or mancozeb 0.3% to prevent fruit rot	• Store the harvested fruits in well ventilated place temporarily before it can be marketed. • Market the fruits as soon as possible.

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. • Spray COC 30 g in 10 liters of water, 2-3 times against leaf spots. • 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 10 kg MOP + 30 kg Urea per acre as soon as possible. • Spray COC 30 g in 10 liters of water, 2-3 times against leaf spots	• Drain the excess water as soon as possible • Harvest the marketable fruits in a clear sunny day' • Spray captan or mancozeb 0.3% to prevent fruit rot	• Store the harvested fruits in well ventilated place temporarily before it can be marketed. • Market the fruits as soon as possible.
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. • Spray COC 30 g + 1g	• 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	• Drain the excess water as soon as possible • Harvest the matured fruits in a clear sunny day. • Spray	• Dry the pods on concrete floor immediately after the appearance of sunlight (or). • Use poly house solar driers for quick drying

	Streptocycline in 10 liters of water, 2-3 times against the Bacterial Leaf Spot and Chaenophora blight. • Drenching in the affected patches with COC 3 g per litre to avoid spread of diseases. • 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.	Urea per acre as soon as possible. • Spray COC 30 g + 1g Streptocycline in 10 liters of water, 2-3 times against the Bacterial Leaf Spot and Chaenophora blight. • Drench the affected patches with COC 3 g per litre to avoid wilt and root rot	Propiconazole 0.1% or COC 0.3% against Die back and fruit rot. • Drench the affected patches with COC 3 g per litre to avoid wilt and root rot diseases.	• Grade the pods and market as soon as possible. • Do not store such produce for long periods.
Gourds	• Drain the excess water as soon as possible • Spray Urea 2% solution 2-3 times. • Topdressing of booster dose of 10 kg MOP + 30 kg Urea per acre as soon as possible. • Spray mancozeb 25 g in 10 liters of water, 2-3 times against leaf spots. • Gap filling may be taken up if the plants are two weeks old and sowing window is still available	• Drain the excess water as soon as possible • 2. Spray Urea 2% solution 2-3 times. • 3. Topdressing of booster dose of 10 kg MOP + 30 kg Urea per acre as soon as possible. • Spray mancozeb 25 g in 10 liters of water, 2-3 times	• Drain the excess water as soon as possible • Spray Urea 2% solution once. • Spray mancozeb 25g in 10 liters of water, 2-3 times against leaf spots.	• 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

	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.	against leaf spots		marketed. • Market the produce as soon as possible.
Spices & Plantation crops				
Areca nut and Coconut	• Planting should be done on mounts or bunds • Drainage system, suited to local conditions may be provided to remove surplus water from root zone • Relief drains [shallow] channels are opened at places where water accumulates and connected with main drain to remove water from the surface	• Drain the excess water as soon as possible • Apply booster dose of NPK fertilizers	• Drain the excess water as soon as possible • .Apply booster dose of NPK fertilizers • Harvest the mature nuts as soon as possible.	• Store the produce in well ventilated place temporarily before it can be market • Market the nuts as soon as possible.
Turmeric	• Drain the excess water as soon as possible • Spray Urea 2% or 1% KNO_3 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	• Drain the excess water as soon as possible • Spray Urea 2% or 1% KNO_3 solution 2-3 times. • Spray Propiconazole 1 ml	• Drain the excess water as soon as possible • Harvest the rhizomes when field comes to normal	• Dry the rhizomes on concrete floor or use boilers (if available) for processing immediately • Grade and separate the

	with 250 kg of Neem Cake per acre as soon as possible. • Spray Propiconazole 1 ml per litre of water, 2-3 times against the occurrence of leaf spots. • Soil drenching with COC 3 g per litre to check the Rhizome rot disease. • 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.	per liter of water, 2-3 times against the occurrence of leaf spots.-		rotten and mould affected rhizomes. • Pack the dried material in gunny bags disinfected with safe insecticides • Store in a well ventilated rooms

2.3 Floods

Condition	**Suggested contingency measure**			
Transient water logging/ partial inundation[1]	**Seedling / nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Paddy	Drain out excess water and Apply a booster dose of 2-2.5kg of urea and 1.5kg of MOP per 10 cents nursery hasten the growth of nursery Apply a booster dose of 20-25kg of urea and 15kg of MOP per acre hasten the establishment and promote more tillering in direct sown paddy Incase of loss of plant population	Drain out excess water and Apply a booster dose of 20-25kg of urea and 15kg of MOP per acre hasten the establishment and promote more tillering Gap filing can be takenup with established tillers. Pests like Leaf folder and swarming caterpillar may emerge so monitor the pest and control measures like spraying of chloripyriphos 2.5 ml/lt or car tap hydrochloride 2gm/l may be taken up. Resowing of Paddy, direct seeding with Drum seeder or broadcasting of sprouted	Drain out excess water Foliar spraying with 1% 13-0-45 during evening period. Monitor incidence of BPH and initiate Control measures for BPH Bufrofizin 1.6ml/lt or Acephate 1.5 gm/lt Spraying should be done in evening times only Initiate Prophylactic sprays against blast and sheath rot Sparying of tricyclozole	Drain out excess water Spray 5% salt solution on paddy sheaves If the paddy crop lost, fodder shortage would be severe, so fodder crops like pillipesara, cowpea, etc may be grown Plan for rabi crops like

	Survived hills are to be split into individual tillers and use for gap filling. Pests like Leaf folder and swarming caterpillar may emerge so monitor the pest and control measures like spraying of chloripyriphos 2.5 ml/l or cartap hydrochloride 2gm/l may be taken up.	seed Initiate Prophylactic sprays aginst blast and sheath rot Sparying of tricyclozole @0.6 g/l for blast and propiconazole @ 1 ml/l or hexaconazole @ 2 for sheath blight	@0.6 g/l for blast and propiconazole @ 1 ml/l or hexaconazole @ 2 for sheath rot	oilseed and pulses
Pulses	1. To drain out the excess water at the earliest. 2.Take up the gap filling at the earliest. 3. Take up weed control either mechanically 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. Take up weed control either mechanically through weedicides. 3. Apply 4-5 kg N/acre after draining excess water. 4. To spray KNO_3 2% 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 2% to support nutrition. 4. 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 after the fields are dried up.
Maize	1. To drain out the excess water at the earliest. 2. Take up weed control either mechanically through weedicides. 3. Inter cultivation and earthing up to be done.	1. To drain out the excess water at the earliest. 2. Take up weed control either mechanically through weedicides. 3. Inter cultivation and earthing up to be done. 4. Apply 20 kg urea +10 kg	1. To drain out the excess water at the earliest. 2. Take up plant protection measures against possible pests and disease incidence.	1. To drain out the excess water at the earliest. 2. Cob picking to be done after they are dried fully.

	4. Apply 20 kg urea +10 kg MOP/acre after draining excess water. 5. Take up plant protection measures against possible pests and disease incidence.	MOP/acre after draining excess water. 5. Take up plant protection measures against possible pests and disease incidence.		
Sugarcane	1. Drain out the water as early as possible 2. In case of loss of plant population Gap filling may be done to maintain optimum population	3. Drain out the water as early as possible 4. Inter cultivation as soon as possible for quick evaporation of excess moisture. 5. Apply a booster dose of 20-25kg of urea and 15kg of MOP per acre	1. Drain out the water as early as possible 2. Apply a booster dose of 20-25kg of urea and 15kg of MOP per acre 3. Propping may be done to the lodged canes	1. Drain out the water as early as possible 2. Propping may be done to the lodged canes 3. Plan for early harvesting and send to the factory or for jaggery making
Horticulture crops – Fruits				
Cashew	• Drain the excess water as soon as	• Drain the excess water as	• Drain the excess water as soon as	• Drain the excess water

	possible • Spray 1% KNO3 or Urea 2% solution 2-3 times. • Spray Imidacloprid 0.3 ml or Diamithoate 2 ml or Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases.	soon as possible • Spray 1% KNO3 or Urea 2% solution 2-3 times. • Spray Imidacloprid 0.3 ml or Diamithoate 2 ml or Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases.	possible • Spray 1% KNO3 or Urea 2% solution 2-3 times. • Spray Imidacloprid 0.3 ml or Diamithoate 2 ml or Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases.	as soon as possible. • Harvest the mature produce as soon as possible. • Store the produce in well ventilated place temporarily before it can be marketed. • Market the produce as soon as possible.
Mango	• Drain the excess water as soon as possible • Spray 1% KNO3 or Urea 2% solution 2-3 times. • Spray Imidacloprid 0.3 ml or Dimethoate	• Drain the excess water as soon as possible • Spray 1% KNO3 or Urea 2% solution 2-3 times. • Spray Imidacloprid 0.3 ml or Dimethoate 2 ml or Phosphomidon 2 ml per litre to prevent insect pest	• Drain the excess water as soon as possible • Spray 1% KNO_3 or Urea 2% solution 2-3 times. • Spray	• Drain the excess water as soon as possible. • Harvest the mature fruits as soon as possible.

	2 ml or Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases. • Drench the seedlings with COC 3.0% against root rot	damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases. • Drench the seedlings with COC 3.0% against root rot	Imidacloprid 0.3 ml or Dimethoate 2 ml or Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases.	• Store the fruits in well ventilated place temporarily before it can be marketed. • Market the fruits as soon as possible. • Spray Dithane M-45 3.0% or bavistin 1.0% against Anthracnose
Guava	• Drain the excess water as soon as possible • Spray 1% KNO_3 or Urea 2% solution 2-3 times. • Spray Imidacloprid 0.3 ml or Dimethoate 2 ml or Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases.	• Drain the excess water as soon as possible • Spray 1% KNO_3 or Urea 2% solution 2-3 times. • Spray Imidacloprid 0.3 ml or Dimethoate 2 ml or Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases.	• 1 Drain the excess water as soon as possible • Spray 1% KNO_3 or Urea 2% solution 2-3 times. • Spray Imidacloprid 0.3 ml or Dimethoate 2 ml or Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1 g	• Drain the excess water as soon as possible. • Harvest the mature produce as soon as possible. • Store the produce in well ventilated

			per litre to prevent spread of diseases.	place temporarily before it can be marketed. • Market the produce as soon as possible.
Horticultural crops – Vegetables				
Beans	• 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. • Spray COC 30 g in 10 liters of water, 2-3 times against leaf spots. • 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 10 kg MOP + 30 kg Urea per acre as soon as possible. • Spray COC 30 g in 10 liters of water, 2-3 times against leaf spots	• Drain the excess water as soon as possible • Spray Urea 2% solution once. • Spray COC 30 g in 10 liters of water once.	• 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.
Brinjal	• Drain the excess water as soon as possible • Soil drenching with COC 3g or ridomil 2g in 1 lit of water to prevent damping off	• Drain the excess water as soon as possible • Spray Urea 2% solution 2-3 times. • Topdressing of booster dose of 10 kg MOP + 30 kg Urea per acre as soon as possible. • Spray COC 30 g in 10 liters of water, 2-3 times against leaf spots	• Drain the excess water as soon as possible • Spray Urea 2% solution once. • Spray COC 30 g in 10 liters of water once.	• 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.
Tomato	• Drain the excess water as soon as possible • Soil drenching with COC 3g or ridomil 2g in 1 lit of water to prevent damping off	• Drain the excess water as soon as possible • Spray Urea 2% solution 2-3 times. • Topdressing of booster dose of 10 kg MOP + 30 kg Urea per acre as soon as possible. • Spray Dithane M-45 25g or captan 30 g in 10 liters of water, 2-3 times against leaf blight	• Drain the excess water as soon as possible • Spray Urea 2% solution once. • Spray Dithane M-45 25g or captan 30 g in 10 liters of water, 2-3 times against leaf blight	• 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.
Chillies	• Drain the excess water as soon as possible • Spray COC 30 g+1g Streptocycline in 10 liters of water, 2-3 times against the Bacterial Leaf Spot and Chaenophora blight. • Soil drenching with COC 3g or ridomil 2g in 1 lit of water to prevent damping off	• 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 COC 30 g+ 1g Streptocycline in 10 liters of water, 2-3 times against the Bacterial Leaf Spot and Chaenophora blight. • 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 COC 30 g+ 1g Streptocycline in 10 liters of water, 2-3 times against the Bacterial Leaf Spot and Chaenophora blight. • Spray planofix 1ml in 4.5 lit of	• 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.

			water to prevent flower drop.	• Market the produce as soon as possible
Gourds		• Drain the excess water as soon as possible • Spray Urea 2% solution 2-3 times. • Topdressing of booster dose of 10 kg MOP + 30 kg Urea per acre as soon as possible. • Spray COC 30 g in 10 liters of water, 2-3 times against leaf spots. • 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, go for resowing	• Drain the excess water as soon as possible • Spray Urea 2% solution once. • Spray COC 30 g in 10 liters of water, 2-3 times against leaf spots.	• 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 & Plantation crops				
Areca nut and Coconut	• Planting should be done on mounts or bunds • Drainage system, suited to local conditions. may be	• Drain the excess water as soon as possible • Apply booster dose of NPK fertilizers	• .Drain the excess water as soon as possible • .Apply booster dose of NPK	• Harvest the mature nuts as soon as possible. • Market the

	provided to remove surplus water from root zone • Relief drains [shallow] channels are opened at places where water accumulates and connected with main drain to remove water from the surface		fertilizers	produce as soon as possible.
Turmeric		• Drain the excess water as soon as possible • Spray Urea 2% or 1% KNO_3 solution 2-3 times. • Spray Propiconazole 1 ml per litre of water, 2-3 times against the occurrence of leaf spots. • Soil drenching with COC 3g or redomil 2g in 1 lit of water to prevent rhizome rot • Spray ferrous sulphate 20g + citric acid 5g in 10 lit of water twice at weekly intervals	• Drain the excess water as soon as possible • Spray Urea 2% or 1% KNO_3 solution 2-3 times. • Spray Propiconazole 1 ml per litre of water, 2-3 times against the occurrence of leaf spots. • Soil drenching with COC 3g or redomil 2g in 1 lit of water to prevent rhizome rot	• 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

			• Spray ferrous sulphate 20g + citric acid 5g in 10 lit of water twice at weekly intervals	and polishers for processing • Remove and separate the rotten and mould affected rhizomes. • Cook and dry the rhizomes as soon as possible.

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

Extreme event type	**Suggested contingency measure**			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Heat Wave				
Sugarcane	Protective irrigation to a depth of 5 cm or through drip	Protective irrigation to a depth of 5 cm or through drip	Sugarcane	-
Cold wave	-	-	-	-
Frost	-	-	-	-
Hailstorm	-	-	-	-
Cyclone				
1. Rice	1. To drain out the excess water at the earliest. 2. Apply booster dose of 0.2 kg N/40 sq.m. 3. Spray micro nutrients like Zn, Fe	1. To drain out the excess water at the earliest. 2. Apply booster dose of 20 kg	1. To drain out the excess water at the earliest.. 2. Take up need based plant protection measures. 3. Lodged plants to be	1. Drain out water spread sheaves loosely in field or field bunds where

	2-3 times at 4-5 days interval. 4. Take up proper weed control measures.	urea/acre. 3. Spray $ZnSo_4$ 0.2 % if it is less than 45 days after transplanting. 4. Take up need based plant protection measures.	lifted and tied together To make them stand erect.	there is no water stagnation. 2. Spray common salt at 5% to prevent germination of seed and spoilage of straw from moulds. 3. Thresh after drying the sheaves properly. 4. Ensure proper grain moisture before storing.
2. Sugarcane	• Drain out the water as early as possible • In case of loss of plant population Gap filling may be done to maintain optimum population	• Drain out the water as early as possible • Inter cultivation as soon as possible for quick evaporation of excess moisture. • Apply a booster dose of 20-25kg of urea and 15kg of MOP per acre	• Drain out the water as early as possible • Apply a booster dose of 20-25kg of urea and 15kg of MOP per acre • Propping may be done to the lodged canes	• Drain out the water as early as possible • Propping may be done to the lodged canes • Plan for early harvesting and send to the factory or for jaggery making
3.Groundnut	Drain out the water as early as possible Inter cultivation as soon as possible for quick evaporation of excess moisture. Spraying with Poly feed 500gm/acre to correct nutrient deficiencies and enhance growth	Drain out the water as early as possible Pests like Spodoptera may attack the crop. control measures like Thiodicarb	Drain out the water as early as possible . Spraying with carbendiazm 1gm /+ Mancozeb 3gm/lt as prophylactic measure against fungal diseases.	Drain out the water as early as possible. Pluck the pods from plants and dry.

	Spraying with carbendiazm 1gm /+ Mancozeb 3gm/lt as prophylactic measure against fungal diseases.	1gm/lt may be sprayed Spraying with carbendiazm 1gm /+ Mancozeb 3gm/lt as prophylactic measure against fungal diseases.	Harvesting may be planned in case of advanced maturity stage.	
4. Black gram	1. Drain out the excess water at the earliest. 2. Take up weed control either mechanically or through weedicides.	1. Drain out the excess water at the earliest. 2. Take up weed control either mechanically through weedicides. 3. Apply 4-5 kg N/acre after draining excess water. 4. To spray 2% Urea to support nutrition. 5. Take up plant protection measures against possible pests and disease incidence.	1. Drain out the excess water at the earliest. 2. Apply 4-5 kg urea/acre after draining excess water. 3. To spray 2% Urea to support nutrition. 4. Take up plant protection measures against possible pests and disease incidence.	1. Drain out the excess water at the earliest. 2. Harvest the crop after the fields are dried up.
5. Maize	1. Drain out the excess water at the earliest. 2. Inter cultivation 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.	1. Drain out the excess water at the earliest. 2. Take up weed control either mechanically or through weedicides. 3. Inter cultivation and earthing up to be done.	1. Drain out the excess water at the earliest. 2. Take up plant protection measures against possible pests and disease incidence.	1. Drain out the excess water at the earliest. 2. Cob picking to be done after they are dried fully.

		4. Apply 20 kg urea +10 kg MOP/acre after draining excess water. 5. Take up plant protection measures against possible pests and disease incidence.		
Horticulture crops – Fruits				
Cashew	• Drain the excess water as soon as possible • Spray 1% KNO3 or Urea 2% solution 2-3 times. • Spray Imidacloprid 0.3 ml or Dimethoate 2 ml or Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases. • Provide support to the young plants	• Drain the excess water as soon as possible • Tress fallen on ground may be lifted and earthed up • Broken and damaged branches may be pruned and applied with Bordeaux paste • Spray Imidacloprid 0.3 ml or Dimethoate 2 ml or Phosphomidon 2 ml per litre to prevent insect pest	• Drain the excess water as soon as possible • Tress fallen on ground may be lifted and earthed up • Broken and damaged branches may be pruned and applied with Bordeaux paste • Spray Imidacloprid 0.3 ml or Dimethoate 2 ml or Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases.	• 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

		damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases.		soon as possible.
Mango	• Spray Carbendazim 1 g or COC 3g per litre to prevent spread of diseases. • 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
Guava	• Drain the excess water as soon as possible • Spray 1% KNO_3 or Urea 2% solution 2-3 times. • Spray Imidacloprid 0.3 ml or Dimethoate 2 ml or Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1 g per litre to prevent spread of diseases. • Provide support to the young plants.	• 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 • Spray 1% KNO_3 or Urea 2% solution 2-3 times. • Spray Imidacloprid 0.3 ml or Diamithoate 2 ml or Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1 g per litre to prevent spread of	• 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 • Spray 1% KNO_3 or Urea 2% solution 2-3 times. • Spray Imidacloprid 0.3 ml or Diamithoate 2 ml or Phosphomidon 2 ml per litre to prevent insect pest damage. • Spray Carbendazim 1g per litre to prevent spread of diseases.	• 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. • Store the fruits in well ventilated place temporarily

		diseases.		before it can be marketed. • Market the fruits as soon as possible. • The unmarketable fruits may be utilized for processing
Horticultural crops – Vegetables				
Beans		• 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. • Spray COC 30 g in 10 liters of water, 2-3 times against leaf spots. • Gap filling must be done immediately	• 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 12 kg MOP + 30 kg Urea per acre as soon as possible. • Spray COC 30 g in 10 liters of water, 2-3 times against leaf spots. • If damage is more ,go for replanting	• Drain the excess water as soon as possible. • Harvest the mature pods as soon as possible. • Store the pods in well ventilated place temporarily before it can be marketed. • Market the pods as soon as possible. • Spray

		• If damage is more ,go for resowing with the same crop or grow alternate crops.		Dithane M-45 2.5 g in 1l of water on the standing crop to prevent spread of diseases
Brinjal	• Grow nursery on raised beds. • Drench the nursery beds with COC 3 g per litre to prevent damping off • If damage is more go for replanting	• 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 12 kg MOP + 30 kg Urea per acre as soon as possible. • Spray COC 30 g in 10 liters of water, 2-3 times against leaf spots. • .If damage is more go for replanting	• 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 12 kg MOP + 30 kg Urea per acre as soon as possible. • Spray COC 30 g in 10 liters of water, 2-3 times against leaf spots.	• 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 fruits and sell

				immediately or go for preparation of processed products.
Tomato	• Grow nursery on raised beds. • Drench the nursery beds with COC 3 g per litre to prevent damping off. • 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 immediteatly • 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 COC 30 g in 10 liters of water, 2-3 times against leaf spots. • 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. • Spray COC 30 g in 10 liters of water, 2-3 times against leaf spots.	• 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.
Chillies	• Grow nursery on raised beds. • Spray COC 30 g+ 1g	• Uprooted plants may be lifted	• Uprooted plants may be lifted and earthed up	• Drain the excess

	Streptocycline in 10 liters of water, 2-3 times against the Bacterial Leaf Spot and Chaenophora blight. • Drench the nursery beds with COC 3 g per litre to prevent damping off	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. • Spray COC 30 g+ 1g Streptocycline in 10 liters of water, 2-3 times against the Bacterial Leaf Spot and Chaenophora blight. • Drench the Nursery beds with COC 3 g per	• 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 Propiconazole 1ml per litre once. • Drench the Nursery beds with COC 3 g per litre to prevent damping off	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. .

		litre to prevent damping off		
Gourds	.	• Drain the excess water as soon as possible • Spray Urea 2% solution 2-3 times. • Topdressing of booster dose of 10 kg MOP + 30 kg Urea per acre as soon as possible. • Spray mancozeb 25 g in 10 liters of water, 2-3 times against leaf spots. • 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	• Drain the excess water as soon as possible • Spray Urea 2% solution 2-3 times. • Topdressing of booster dose of 10 kg MOP + 30 kg Urea per acre as soon as possible. • Spray mancozeb 25 g in 10 liters of water, 2-3 times against leaf spots.	• 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.

		complete economical loss), and the contingency period is between June to August, go for resowing		
Horticulture crops – Flowers				
Spices & Plantation crops				
Areca nut and Coconut	• Planting should be done on mounts or bunds • Drainage system suited to local conditions. may be provided to remove surplus water from root zone • Relief drains [shallow] channels are opened at places where water accumulates and connected with main drain to remove water from the surface	• Drain the excess water as soon as possible • Twisted leaves may be cut and removed • .Apply booster dose of NPK fertilizers • .The palms have fallen with root system still having contact with the soil ,they need to be brought to position and provided with soil mound and support	• Drain the excess water as soon as possible • Hanging bunches may be provided with supports wherever possible .Apply booster dose of NPK fertilizers • .The palms have fallen with root system still having contact with soil they need to be brought to position and provided with soil mound and support	• Twisted leaves may be cut and removed • Hanging bunches may be provided with supports wherever possible • Harvest the mature nuts as soon as possible. • Market the produce as soon as possible.
Turmeric		• Drain the excess	• Drain the excess water as	• Drain the

		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. • Spray Propiconazole 1 ml per litre of water, 2-3 times against the occurrence of leaf spots. • Soil drenching with COC 3 g per litre to check the Rhizome rot disease. • In case of severe damage (considered as complete economical loss or	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. • Spray Propiconazole 1 ml per litre of water, 2-3 times against the occurrence of leaf spots. • Spray M-45 @2.5 g per litre of water or bavistin 1 g per litre of water, 2-3 times against the occurrence of leaf spots.	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.

		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.		

2.5 contingency strategies for livestock, poultry & fisheries

General contingency plans

Before the event[s]	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 contingent strategies for Livestock

	Suggested contingency measures		
	Before the event	**During the event**	**After the event**
Drought			
Feed and Fodder availability	Establishment of silvi-pastoral system in CPRs with ***Stylosanthus hamata*** and ***Cenchrus ciliaris*** as grass with ***Leucaena leucocephala*** as tree component (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 every village through supply and establishment of good quality chaff	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	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

	cutters. Establishment of backed yard cultivation of para grass with drain water from bath room/washing area Harvesting and collection of perennial vegetation particularly grasses which grow during monsoon Proper drying, bailing and densification of harvested grass from previous season Creation of permanent fodder, feed and fodder seed banks in all drought prone villages	Provision of emergency grazing/feeding (Cow-calf camps or other special arrangements to protect high productive & breeding stock) Motivate the farmers to mix the dry fodder with available kitchen waste while feeding Arrangements should be made for mobilization of small ruminants across the villages where no drought exits with subsidized road/rail transportation and temporary shelter provision for the shepherds Unproductive livestock should to be culled during severe drought Create transportation and marketing facilities for the culled and unproductive animals Supply silage and or hay on subsidized rates to the farmers having high productive stock Subsidized loans should be provided to the livestock keepers.	

Cyclone	Harvest all the possible wetted grain (rice/maize/bajra etc) and sugar cane tops and use as animal feed. Motivate the farmers to store a minimum quantity of hay (25-50 kg) and concentrates (10-25 kg) per animal in farmer's / LS keepers house/ shed for feeding the animals during cyclone. Stock of anti-diarrheal drugs and electrolytes should be made available for emergency transport Don't allow the animals for grazing in case of early forewarning (EFW) of cyclone Incase of EFW of severe cyclone, shift the animals to safer places.	Treatment of the sick, injured and affected animals through arrangement of mobile emergency veterinary hospitals / rescue animal health workers. Diarrhea out break may happen. Health camps should be organized In severe cases un-tether **or** let loose the animals Arrange transportation of highly productive animals to safer place Spraying of fly repellants in animal sheds	Repair of animal shed Deworm the animals through mass camps Vaccinate against possible disease out breaks like HS, BQ, FMD and PPR Proper dispose of the dead animals / carcasses by burning / deep burying (4-8 feet) with lime powder (1kg for small ruminants and 5kg for large ruminants) in pit Bleach / chlorinate (0.1%) drinking water or water resources Collect drowned crop material, dry it and store for future use Sowing of short duration fodder crops in unsown and water logged areas when crops are damaged and no chance to replant

			Application of urea (20-25kg/ha) in the inundated areas and CPR's to enhance the bio mass production.
Floods	In case of early forewarning (EFW), harvest all the crops (Maize, Rice, Bajra, Groundnut) that can be useful as fodder in future (store properly) and also sugar cane tops Don't allow the animals for grazing if severe floods are forewarned Motivate the farmers to store a minimum required quantity of hay (25-50kg) and concentrates (25kgs) per animals in farmer / LS keepers house / shed for feeding animals during floods Arrangement for transportation of animals from low lying area to safer places and also for rescue animal 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.

Andhra Pradesh Contingency plans for FISHERIES / AQUACULTURE			
	Suggested Contingency Measures		
1) Drought	**Before the event**	**During the event**	**After the event**
A. Capture			
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 quality	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 buoys, 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 areas, 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 warnings 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 standing 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 replenish and ensure sufficient dissolved oxygen levels in the pond. Maintenance of salinity levels by pumping in water from creeks.	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 equipment 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			

Contingency Plans for Rabi Crops –Visakhapatnam district

Rainfall distribution:

Month	Visakhapatnam	
	Normal rainfall	No of rainy days
October	205.3	7
November	87.3	3
December	4.6	1
January	10.0	0
February	12.3	0
March –	20.7	1
Total	340.2	12

Coverage of crops and Productivity levels inVisakhapatnam district.

Visakhapatnam district

S.No	Name of the Crop	Normal area ('000 ha)	Production ('000 t)	Productivity (kg/ha)
1.	Paddy	4.6	16	3400
2	Maize	1	6.8	5772
3.	Horsegram	1	1	514

Sowing window for major crops grown in north coastal districts during Rabi

Sl. No.	Name of the Crop	Sowing window
1	Paddy	November Ist FN to December Ist FN – Nursery December, 15th to January 15th – Transplanting
2	Maize	October 15th to November 15th – Rabi January 1st Week to February Ist week -Summer
3	Ragi	November to December 15th
4	Redgram	September 20th to October 20th
5	Greengram	Upland: first fortnight of October Rice fallows: II fortnight of November to 1st fortnight of December
6	Blackgram	
7	Horsegram	IInd FN of September to October Ist FN
8	Groundnut	I fortnight of November to I fortnight of December
12	Sesamum	January
13	Sunflower	November (Irrigated) Rabi 15th January to 1st week of February – Sesamum
14	Bengalgram	October 15th to November 15th

Contingency measures for field crops during Rabi

For crops grown with residual moisture i.e., under rainfed condition:

(a) **Excess residual moisture:**

S.No	Soil type and farming situation	Cropping system	Crop name	Sowing window	Varieties	Management practices /Critical interventions
1.	Rainfed medium soils	Ragi-Greengram/blackgram Groundnut-Greengram/blackgram	Green gram, Blackgram	October October	LGG-460 WGG-37, 42 IPM 2-414 TM96-2 PU-31 TBG-104 GBG-1 LBG -752 LBG -787	Optimum seed rate and seed treatments with imidachloprid @ 5 ml /kg

Less than optimum moisture i.e., 25% less than normal, which can happen due to insufficient rainfall during September/October months. Deficit of 20-40% rainfall

S.No	Soil type	Cropping system	Crop name	Sowing window	Variety	Management practices
	Red sandy loams	Groundnut-Horsegram	Horsegram	October	CRIDA 18 R, CRIDA 22 R	Optimum seed rate of 10 kg/ac and spraying pre emergence weedicidependimethaline

(c) **Severe limitation in moisture. Deficit of rainfall during September / October months by more than 40%.**

S.No	Soil type	Cropping system	Crop name	Sowing window	Variety	Management practices
1.	Red sandy loams with clay base	Rice-Fallow	No crop /Sunnhemp for fodder	December 1st week	Local or SH-4	Use of optimum seed rate of 10 kg/ac

No crop can be recommended under 40% deficit moisture as North Coastal zone soils are light textured with poor WHC and futility status.

For crops grown with groundwater

(a) **Above normal rainfall in Kharif coupled with good distribution**

Soil type	Cropping system	Crop name	Sowing window	Variety	Management practices
Red loams with clay base	Rice-Rice	Paddy	November II FN to December II FN	MTU 1010,MTU 1121 MTU 1156, MTU 1153, NLR 34449 RGL 1880	Spraying Zn @ 0.2 % and management against blast disease.
Red loams with clay base	Rice-pulse	Greengram/blackgram	December II fortnight	LGG-460 WGG-37 WGG 42, IPM 2-414, TM96-2	Timely weed control
Red loams with clay base	Rice-Maize	Maize	December II fortnight	DHM 117, DHM 119, DHM 121	Timely weed control
Red loams with clay base	Rice-Sunflower or Sugarcane - Sunflower	Sunflower	January I FN	LSFH-171, KBSH-44, DRSF-113, NDSH 1012	Seed treatment, Thinning, Borax spray0.2 %

Red loams with clay base	Sugarcane-Sugarcane-Paddy-Sesame	Sugarcane	December – January (Early varieties) January – February (Midlate varieties)	87A298, 2003V46,2003A255, 2000A225 etc	Sett treatment, trash mulching, IPM for borer management, use of disease free seed for YLD management.

(b) Normal rainfall

S.No	Soil type	Cropping system	Crop name	Sowing window	Variety	Management practices
1	Red loams with clay base	Rice-pulse	Greengram/blackgram	December II fortnight	LGG-460 WGG-37 WGG 42, IPM 2-414, TM96-2, PU-31 TBG-104, GBG-1, LBG -752 LBG -787	Timely weed control
2	Red loams with clay base	Rice-Maize	Maize	December II fortnight	DHM 117, DHM 119, DHM 121	Timely weed control
3.	Red loams with clay base	Rice-Sunflower	Sunflower	January	LSFH-171, KBSH-44, DRSF-113, NDSH 1012	Thinning Borax spray0.2 %

4.	Red loams with clay base	Sugarcane-Sugarcane-Paddy-Sesame	Sugarcane	3rd week of December to December to 3rd of January (early varieties), -- 1st week of February to 3rd week of March (mid late varieties)	87A298, 2003V46,2003A255, 2000A225 etc	1.Trash mulching @ 1.25t/ac within 3days of planting Release of Trichogrammachilonis,

(c) Deficient rainfall in Kharif season (25-50% deficient)

S.No	Soil type	Existing cropping system	Suggested cropping system	Sowing window	Variety	Management practices
1	Red loams with clay base	Rice-pulse	Sunhemp as green manure	November II FN to December I FN	Local or SH-4	Optimum seed rate of 10 kg/ac (pre soaked seed)

For crops grown with Canal Irrigations: The scenario would be based on the storage available in the reservoirs. : **-- This situation does not exists in Visakhapatnam district**

a. Limited release of water

Soil type	Cropping system	Crop name	Sowing window	Variety	Management practices
Red loams with clay base	Rice – Maize Rice – Groundnut	Maize Groundnut	Dec. II FN to January II FN November 15th to December 15th	DHM 117, DHM 119, DHM 121 TAG -24, Dharani, K6, K-9, Nityaharitha	Seed treatment with imidacloprid @ 5 ml/kg seed. Management of Fall Army worm in maize Seed treatment with imidacloprid 2 ml fb tebuconaole and seed treatment with rhyzobiumculture in groundnut. Application of gypsum @ 200 kg/ac

b. Delayed release of water

Soil type	Cropping system	Crop name	Sowing window	Variety	Management practices
Red loams with clay base	Rice –Pulse	Black gram Green gram with land preparation	December II fortnight to January I fortnight	Greengram: LGG-460 WGG-37 WGG 42, IPM 2-14, TM96-2, Blackgram:	

				PU-31 TBG-104, GBG-1, LBG -752, LBG -787	

Temperature related stresses for field crops

S.No	Crop name	Stage of crop growth	Threshold temperature *	Suggested practices	Management
1. 2 3 4	Greengram, blackgram, maize Sugarcane	Reproductive Formative	>40 ^{0}C >40 ^{0}C	Protective irrigation Protective irrigation	Protective irrigation Protective irrigation