

State: Andhra Pradesh

Agriculture Contingency Plan for District: Guntur

1.0 District Agriculture profile					
1.1	Agro-Climatic/Ecological Zone				
	Agro Ecological Sub Region (ICAR)	Eastern Coastal plain, hot sub-humid to semi arid eco region (7.3, 7.2)			
	Agro-Climatic Region (Planning Commission)	East Coast plain and hill region (XI)			
	Agro Climatic Zone (NARP)	Krishna – Godavari Zone, (AP-1)			
	List all the districts or part thereof falling under the NARP Zone	Guntur, Krishna, Prakasam			
	Geographic coordinates of district	Latitude	Latitude	Altitude	
		15°18'0" -16°50'0" N	15°18'0" -16°50'0" E	32m MSL	
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Regional Agricultural Research Station, Lam , Guntur-522 034			
Mention the KVK located in the district	-				
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):	526	36	1 st week of June	2 nd week of October
	NE Monsoon(Oct-Dec):	229	10	3 rd week of October	4 th week of December
	Winter (Jan- Feb)	18	1	-	-
	Summer (March-May)	80	2	-	-
	Annual	853	51	-	-

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)	1139.1	161.9	156.8	18.9	31.0	32.3	34.4	41.5	38.4

1.4	Major Soils (common names like shallow red soils etc.,)		Area ('000 ha)		Percent (%) of total		
	1. Black Cotton Soils		491		72		
	2. Red Soils		116		17		
	3. Coastal Sandy Soils		61		9		
	4. Alluvial Soils		14		2		
Others (specify):							
1.5	Agricultural land use		Area ('000 ha)		Cropping intensity %		
	Net sown area		597.0		134.6		
	Area sown more than once		206.6				
	Gross cropped area		803.6				
1.6	Irrigation		Area ('000 ha)				
	Net irrigated area		373.6				
	Gross irrigated area		427.2				
	Rainfed area		223.4				
	Sources of Irrigation		Number		Area ('000 ha)		Percentage of total irrigated area
	Canals				422.622		77.46
	Tanks				1.82		0.33
	Open wells						
	Bore wells				105.85		19.4
	Lift irrigation				10.9		2.0
	Micro-irrigation						
	Other sources				4.3		0.788
	Total Irrigated Area				545.589		100.0

Pump sets			
No. of Tractors			
Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	No. of blocks/ Tehsils	(%) area	
Over exploited			
Critical	-	-	
Semi- critical	-	-	
Safe	56	-	
Wastewater availability and use	Satisfactory	-	
Ground water quality	Satisfactory		
*over-exploited: ground water utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%			

Area under major field crops (2016-2018)

1.7	Major Field Crops cultivated	Area ('000 ha)					
		<i>Kharif</i>		<i>Rabi</i>		Summer	Total
		Irrigated	Rainfed	Irrigated	Rainfed		
1	Paddy	188.005	–	20.420	–	–	208.425
2	Cotton	–	167.423	–	–	–	167.423
3	Maize	–	0.536	43.15			43.686
4	Blackgram	–	9.7	–	53.1	–	62.8
5	Greengram		4.7		2.2		6.9
6	Redgram	–	25.66	–	1.8	–	27.46
7	Bengalgram				2.63		2.63

1.11	Production and Productivity of major crops (Average of last 5 years: 2016,17,18)	Kharif		Rabi		Summer		Total		Crop residue as fodder ('000 tons)
		Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	
Major Field crops (Crops to be identified based on total acreage)										
1	Paddy	1260.3	6728	128.814	6354	-	-	1389.1	6541	
2	Cotton	499	2329	-	-	-	-	499	2329	
	Bengalgram			49.4	1901			1901	49.4	
3	Blackgram	7.949	743	49.4	891	-	-	57.35	817	
4	Greengram	3.87	736	21.9	939	-	-	25.77	837.5	
5	Redgram	29.4	1052	2.4	1331	-	-	31.8	1191.5	
6	Maize	6.725	7671	403.4	9387	-	-	410.13	8529	
7	Bajra	3.1	1476	0.042	1033	-	-	3.142	1254.5	
8	Sugarcane	765.61	96429			-	-	765.61	96429	
9	Groundnut	2.99	3007	10.7	3875	-	-	13.69	3441	
	Tobacco			22.0	5168	-	-	22.0	5168	
1	Chillies	362.4	2750	17.3	3857			379.7	3303.5	
2	Turmeric							128.4	7292	

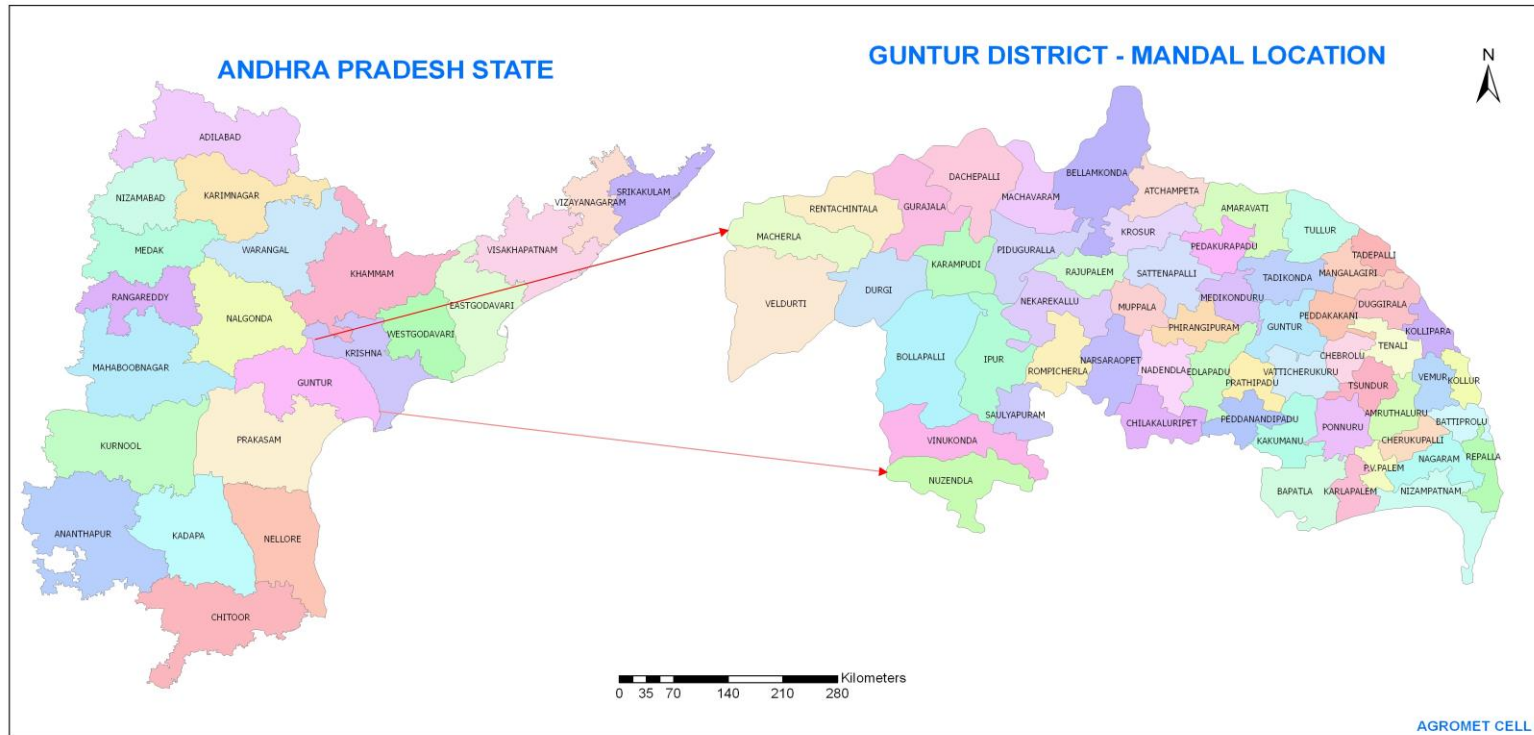
1.12	Sowing window for 5 major field crops (start and end of normal sowing period)	Paddy	Cotton	Redgram	Blackgram/Greengram	Maize
	Kharif- Rainfed	-	June to August 1 st fortnight	June to August 1 st fortnight	June 15 th to July 15 th	-
	Kharif-Irrigated	June 1 st fortnight –	-	-	-	

		July 2 nd fortnight				
	Rabi- Rainfed	-	-	September 1 st fortnight – October 1 st fortnight	October 2 nd fortnight – November 1 st fortnight	
	Rabi-Irrigated	December 2 nd fortnight – January 1 st fortnight		October 2 nd fortnight	November 2 nd fortnight – December 1 st fortnight	November 2 nd fortnight – December 1 st fortnight

1.13	What is the major contingency the district is prone to? (Tick mark and mention years if known during the last 10 year period)	Regular	Occasional	None
	Drought		√	
	Flood		√	
	Cyclone	√		
	Hail storm			
	Heat wave			
	Cold wave			
	Frost			
	Sea water intrusion			
	Pests and diseases (specify)	Rice: Stem rot, False smut Blast and BPH Redgram: Wilt, Maruca and SMD Cotton: Sucking pest complex_Pink bollworm Blackgram, Greengram : YMV Maize-Fall armyworm		
	Others (Fog)		√	
1.14	Include Digital maps of the district for	Location map of district within State as Annexure 1	Enclosed: Yes	
		Mean annual rainfall as Annexure 2	Enclosed: Yes	
		Soil map as Annexure 3	Enclosed: Yes	

ANNEXURE-I

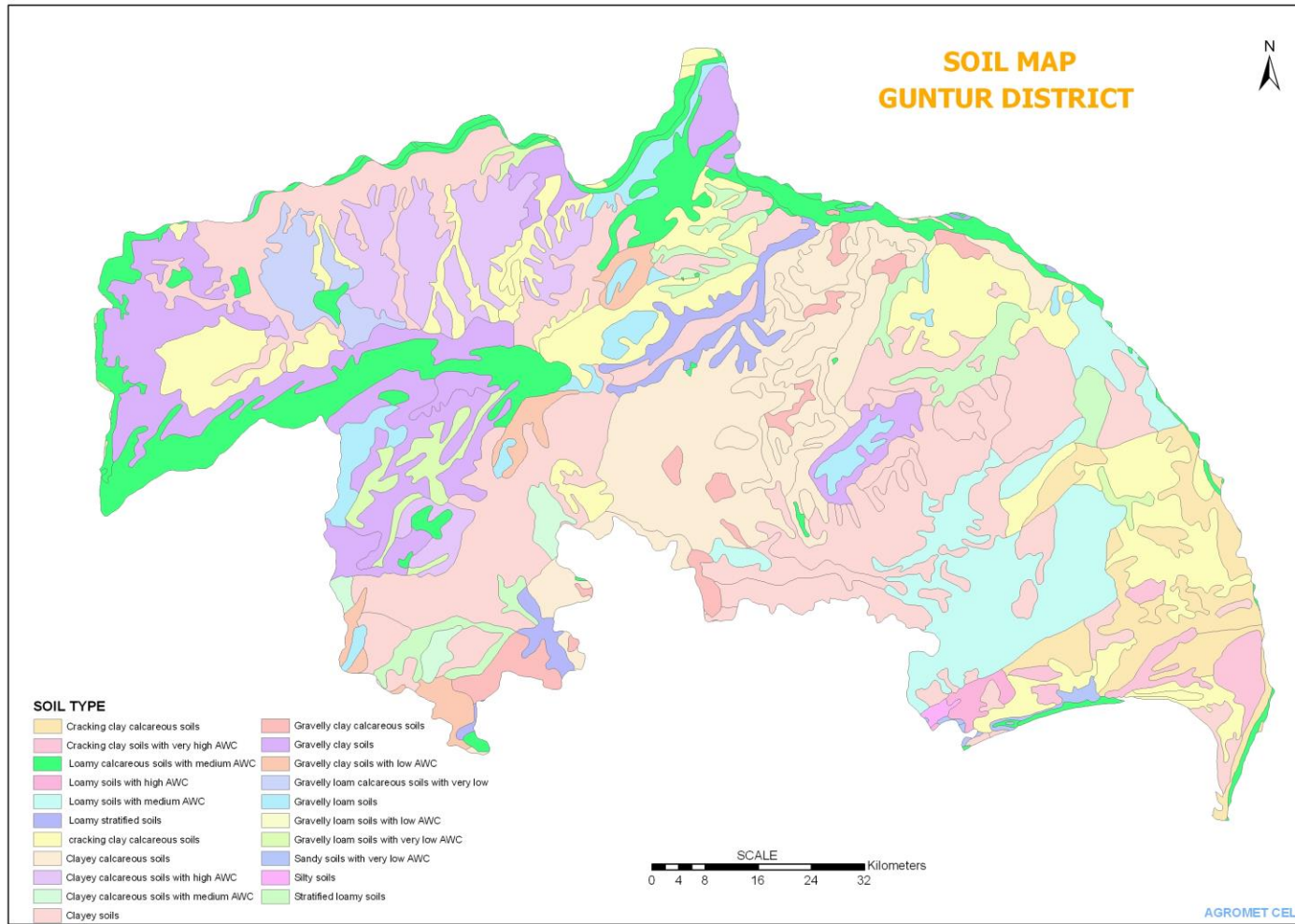
LOCATION MAP OF GUNTUR WITH IN ANDHRA PRADESH



ANNEXURE-II
MEAN ANNUAL RAINFALL



ANNEXURE-III



2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation

Condition		Suggested Contingency measures			
Early season drought (delayed onset)	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delay by 2 weeks (3 rd week of June)	Black soils (Medium deep) – Rainfed	Cotton	No change	Normal practices	
	Red soils (Medium deep)- Rainfed	Cotton			
		Redgram (Sole crop)			
		Redgram + Greengram/Bajra (1:5/1:2)			

Condition		Suggested Contingency measures			
Early season drought (delayed onset)	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delay by 4 weeks (July 1 st week)	Black soils(Medium deep) – Rainfed	Cotton	No change	Normal practices	
	Red soils(Medium	Cotton			

	deep) - Rainfed	Redgram (Sole crop)		Reduce row spacing 180 cm to 150 cm	
		Redgram+Greengram/Bajra (1:5/1:2)		Normal practices	Intercropping with Redgram+Bajra.
Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delay by 6 weeks (July 3 rd week)	Black soils(Medium deep) – Rainfed	Cotton	No change		
	Red soils(Medium deep) - Rainfed	Cotton		Adopt closer spacing of 90X45 cm	
		Redgram (Sole crop)		Reduce row spacing from180 cm to 150 cm	
		Redgram+Bajra (1:5/1:2)		Normal spacing	
		Castor		Adopt a closer spacing of 90X45 cm	

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

Delay by 8 weeks (August 1 st week)	Black soils(Medium deep) – Rainfed	Cotton	No change	Adopt closer spacing of 90 x 45cm	
	Red soils (Medium deep) - Rainfed	Cotton		Adopt closer spacing of 90 X30 cm. Top dressing of fertilizer at 20 days interval	
		Redgram (Sole crop)		Reduce row spacing 180 cm to 90cm	
		Redgram + Greengram / Bajra (1:5/1:2)	Sole crop Redgram		
	Castor	No change	Adopt closer spacing of 90X30 cm		

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
Early season drought (Normal onset)					
Normal onset followed by 15-20 days dry spell	Black soils – Rainfed	Cotton	Gap filling to be done by pot watering 7- 10 days after sowing when the crop	When the crop is two weeks old adopt inter-cultivation to	-

after sowing leading to poor germination/crop stand etc.	Red soils - Rainfed	Cotton	stand is poor	conserve moisture Spray 2 % urea solution or 1 % water soluble fertilizers like KNO ₃ , 19-19-19 to supplement nutrition	
		Redgram (sole crop)		Intercultivation to be done after 2 weeks of	
		Redgram+Green gram/Bajra		sowing to conserve soil moisture	
		Castor		Foliar spray of 2% urea to supplement nutrition	
Condition			Suggested Contingency measures		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	Major Farming situation	Normal Crop/cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
At vegetative stage	Black soils – Rainfed	Cotton	Spray 2 % urea or 1% KNO ₃ solution or 1 % water soluble fertilizers like 19-19-19	Frequent intercultivation at 7-10 days interval	
	Red soils - Rainfed	Cotton			
		Redgram (sole crop)			

		Redgram+Greengram/Bajra	Harvest intercrops as fodders if chances of grain yield are poor Supplement the nutrients to the main crop through foliar spray		
		Castor	Spray 2 % urea solution or 1 % water soluble fertilizers like 19-19-19 or KNO ₃ Adopt nipping to allow main spike to develop		

Condition		Suggested Contingency measures			
Mid season drought (long dry spell)	Major Farming situation	Normal Crop/cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
At reproductive stage	Black soils – Rainfed	Cotton	Spray 2 % urea - or 1% KNO ₃ or other water soluble fertilizers 1 % to supplement nutrition	Intercultivation to create soil mulch to conserve moisture	-
	Red soils - Rainfed	Cotton	Spray urea - 2 % or KNO ₃ 1% or other water soluble fertilizers like 19-19-19 to supplement nutrition	Intercultivation to create soil mulch to conserve moisture. Supplemental irrigation, if available	
		Redgram (sole crop)		Intercultivation	

		Redgram+Greengram/Bajra		Spray urea - 2 % or KNO ₃ 1% or other water soluble fertilizers like 19-19-19 to supplement nutrition	
		Castor	Nipping of auxiliary buds to allow the main spike to mature Foliar spray of urea 2 % or KNO ₃ 1% or other water soluble fertilizers 1 % to supplement nutrition		

Condition			Suggested Contingency measures		
			Crop management	Rabi Crop planning	Remarks on Implementation
Terminal drought	Major Farming situation	Normal Crop/cropping system			
	Black soils - Rainfed	Cotton	Spray urea - 2 % or KNO ₃ 1% or other water soluble fertilizers 19-19-19, to supplement nutrition Topping to prevent formation of new vegetative and reproductive flush Supplemental irrigation if available	-	-

	Red soils - Rainfed	Cotton	<p>Spray urea - 2 % or KNO₃ 1% or other water soluble fertilizers 1% to supplement nutrition</p> <p>Topping to prevent formation of new vegetative and reproductive flush</p>		
		Redgram (sole crop)	<p>Spray urea - 2 % or KNO₃ 1% or other water soluble fertilizers 19-19-19 to supplement nutrition</p> <p>Varieties like LRG-52, PRG 158, ASHA with medium duration are to be promoted if terminal drought is a common phenomenon</p>		
		Redgram + Greengram/Bajra			
		Castor	<p>Nipping of auxiliary buds to allow the main spike to mature</p> <p>Foliar spray of urea 2 % or KNO₃ 1% or other water soluble fertilizers 19-19 to supplement nutrition</p>		

2.1.2 Irrigated situation

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

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delayed release of water in canals due to low rainfall	Black soils – Canal irrigated (KWD)	Green manure – Rice – Blackgram/Maize	Green manure – Rice – Greengram/Blackgram/Maize/Jo war	<p>Adopt preventive control measures for rice blast</p> <p>During Rabi season select Blackgram varieties like LBG 787, LBG-752, TBG-104, PU-31, GBG-1 which are early maturing and suitable for delayed sowings</p> <p>Greengram can be grown in rice fallows under late sown conditions</p> <p>Rice fallows.</p> <p>Blackgram - short duration varieties</p>	<p>Seed multiplication of required pulse varieties can be planned and produced during early rabi season in Upland farming situation in the district</p> <p>Linkage with NFSM</p>

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

	Red Soils/Black Soils – Canal irrigated (NSP Command)	Green gram – Rice – Greengram/Maize/Blackgram/Fodder/Jowar	No change	Select medium duration varieties like BPT 5204, NLR 34449, NLR 3041, NLR 145, JGL 384, NLR 4001 etc. which are resistant to blast and suitable for mid kharif season If BPT 5204 is grown adopt special package for given for plant protection	
Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Limited release of water in canals due to low rainfall	Black soils – Canal irrigated (KWD)	Green manure – Rice – Blackgram/Maize	Green manure – Rice – Black gram/Greengram/Jowar/Maize Semi Dry rice	Rice – 1. Adopt alternate wetting and drying upto primordial initiation stage to save water 2. Irrigate upto a depth of 3 – 5 cm from primordial initiation to maturity 3. Take up effective weed control measures either mechanically or through herbicides	Rice - Farmers should be careful in weed management as weeds are the major threat to crop under alternate wetting and drying method of irrigation. They should be properly educated and trained in use of suitable chemical and mechanical control measures

				<p>Rice fallows</p> <ol style="list-style-type: none"> 1. Crops like maize which require more water should be avoided 2. Crops like maize should grown if assured supply of water is available 3. Short duration varieties of crops should be selected. 	<p>Rice fallows –</p> <ol style="list-style-type: none"> 1. Availability of seed of short duration varieties should be ensured through linkage with NFSM 2. Micro irrigation systems – Sprinkler and Drip under different government schemes may be extended.
				<ol style="list-style-type: none"> 4. Water saving micro irrigation systems like Sprinkler irrigation for Grengam and Blackgram may be followed 5. Water loss in open field channels during conveyance can be reduced by using PVC/metallic pipes. 	
	Black soils/Red soils – Canal irrigated (NSP Command)	Greengram – Rice – Blackgram/Greengram/Maize/Fodder	1. Green manure – Rice – Greengram/Blackgram/Jowar/sesamum	For rice and rice fallow crops the agronomic measures as suggested for the above farming situation shall be followed	
			2. Redgram + Greengram/ Bajra/ Jowar	Proper drainage facilities should be created to take up cropping systems as suggested	

			3. Cotton / Redgram (Wherever drainage facilities available)	Proper drainage facilities should be created to take up cropping systems as suggested	
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Condition	Suggested Contingency measures				
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Non release of water in canals under delayed onset of monsoon in catchment	Black soils – Canal irrigated (KWD)	Green manure – Rice – Blackgram/Maize	<ul style="list-style-type: none"> Go for early rabi Green manure – Maize/ Blackgram/ Groundnut/Jowar/Fodder 	Green manure crops should be incorporated Sowing of ID crops (blackgram and groundnut) can be taken from September second fortnight onwards	
	Black soils/Red soils – Canal irrigation (NSP)	<ul style="list-style-type: none"> Greengram/Green manure – Rice – Blackgram/Greengram/ Jowar/Fodder 	<ul style="list-style-type: none"> Greengram/Green manure – Cotton/Redgram/Blackgram / Jowar 	Green manure crops should be incorporated Sowing of upland crops can be taken from September second fortnight onwards	

Condition	Suggested Contingency measures				
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	Heavy soils – irrigated-tankfed	Redgram/Rice	Bengalgram /redgram / cotton/Blackgram / Foxtail millet/ Castor/Sunflower	1. Use recommended seed rate to maintain optimum plant population 2. Foliar spray of nutrients 2% Urea or 1% KNO ₃	
	Light soils- irrigated-tankfed/wells and bore wells	Summer Cotton-paddy	Redgram / Blackgram / Minor millet/Sunflower/ castor/Cowpea/Greengram	1. Timely sowing is advantageous 2. Irrigation at critical stages through Micro irrigation systems	
		Cotton	Maghi Jowar/ Foxtail millet/ Cowpea/ Blackgram/	Use recommended seed rate to maintain optimum plant population	
		Bengalgram	Bengalgram	1. Timely sowing is advised 2. Irrigation at critical stages through sprinkler irrigation systems	

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

Condition	Suggested Contingency measures				
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Insufficient groundwater recharge due to low rainfall	Bore well irrigated red soils and black soils	Maize, Groundnut , Rice	Redgram/Castor/Cotton/Blackgram/ Greengram/ /Sesamum/ Jowar (Maghi)	1. Timely sowing is advised 2. Irrigation at critical stages through Micro irrigation systems 3. Irrigation at critical stages may be followed instead of intensive irrigations	
Any other condition (specify)					

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

Condition - Continuous high rainfall in a short span leading to water logging				
Crop	Suggested contingency measure			
	Vegetative stage	Flowering stage	Crop maturity stage	Post harvest
Rice	<ul style="list-style-type: none"> • Drain the excess water as early as possible • Apply 20 kg N + 10 kg K /ha after draining excess water • Take up gap filling either with available nursery or by splitting the tillers from the surviving hills • Take up proper weed control 	<ul style="list-style-type: none"> • Drain the excess water as early as possible • Apply 20 kg N + 10 kg K /ha after draining excess water • Take up suitable plant protection • Measures for BPH • Rodents: Fumigate the burrow with luminium phosphide 2 pellets of 0.6 g per burrow. 	<ul style="list-style-type: none"> • Drain the excess water as early as possible • Take up suitable plant protection measures against grain pest and diseases • Cut worm: Spray Chlorpyrifos 2.5 ml or DDVP 1.0 ml or Endosulfan 2.0 ml • Rodents: Fumigate the burrow with aluminium 	<ul style="list-style-type: none"> • Drain out water and spread sheaves loosely in the field or field bunds where there is no water stagnation • Stack the sheaves • Spray common

	<ul style="list-style-type: none"> measures Take up suitable plant protection measures against pest & disease outbreaks Leaf folder: Spray <u>Chlorpyrifos@2.5ml</u> or Acephate 1.5g or Cartaphydrochloride 2.0g / l or apply 8.0kg Cartaphydrochloride granules per acre. Sheath blight: Apply recommended nitrogen in 3-4 splits. Spray Propiconazole 1.0 ml or Hexaconazole 2.0 ml or validamycin 2.0 ml /l at 15 days interval based on need. Blast : remove weeds on the bunds Spray Tricyclozole 0.6/ml or Edifenphos 1.0 ml Bacterial leaf blight: Avoid application of excess Nitrogen. 	<p>Poison bait with bromadiolone</p> <ul style="list-style-type: none"> False smut: Spray Carbendzism 1.0g or COC 2.5g at weekly interval Sheath blight: Apply recommended nitrogen in 3-4 splits. Spray Propiconazole 1.0 ml or Hexaconazole 2.0 ml or validamicin 2.0 ml /lt at 15 days interval Blast : remove weeds on the bunds Spray Tricyclozole 0.6ml or Edifenphos 1.0 ml Bacterial leaf blight: Nitrogen management 	<p>phosphide 2 pellets of 0.6 g per burrow. Poison bait with bromadiolone</p>	<p>salt 5% on panicles to prevent germination and spoilage of straw from moulds</p> <ul style="list-style-type: none"> Thresh after drying the sheaves properly Ensure proper grain moisture before storing Application of 40 - 60 kg/content <8% common salt per acre on sheaves if water is not receded Application of 30 - 40 kg common salt in layer while heaping.
Cotton	<ul style="list-style-type: none"> Drain the excess water as early as possible in black soils Apply 20 kg N + 10 kg K /ha after draining excess water Take up inter cultivation at 	<ul style="list-style-type: none"> Drain the excess water as early as possible Apply 20 kg N + 10 kg K /ha after draining excess water To spray KNO₃ 1 % or water 	<ul style="list-style-type: none"> Drain the excess water as early as possible To spray KNO₃ 1% or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% 	<ul style="list-style-type: none"> Dry the produce properly before baling and sending to market

	<p>optimum soil moisture condition to loosen and aerate the soil and to control weeds</p> <ul style="list-style-type: none"> • To spray KNO₃ 1 % or water soluble fertilizers like 19-19-19 to support nutrition • Spray fungicides like Copper oxy chloride 0.3 % or Carbendazim 0.1 % or Mancozeb 0.25% two to three times by rotating the chemicals • Take up timely control measures against sucking pests 	<p>soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition</p> <ul style="list-style-type: none"> • Spray fungicides like Copper oxy chloride 0.3 % or Carbendazim 0.1 % or Mancozeb 0.25% two to three times by rotating the chemicals to control Bacterial leaf blight, wilt alternaria leaf spot and grey mildew • Take up timely control measures against sucking pests and bollworms. 	<p>to support nutrition</p> <ul style="list-style-type: none"> • Spray fungicides like Copper oxy chloride 0.3 % or Carbendazim 0.1 % or Mancozeb 0.25% against boll not. • Take up timely control measures against bollworms and whitefly 	
Redgram	<ul style="list-style-type: none"> • Drain the excess water as early as possible • Apply 20 kg N + 10 kg K /acre after draining excess water • Take up inter cultivation at optimum soil moisture status to loosen and aerate the soil and to control weeds • To spray KNO₃ 1 % or water soluble fertilizers like 19-19-19 to support nutrition 	<ul style="list-style-type: none"> • Drain the excess water as early as possible • To spray KNO₃ 1 % or water soluble fertilizers like 19-19-19, to support nutrition • Take up timely control measures against possible outbreak of pod borer complex, maruca , Helicovera etc. 	<ul style="list-style-type: none"> • Drain the excess water as early as possible • Allow the crop to dry completely before harvesting 	<ul style="list-style-type: none"> • Spread the bundles drenched in rain on field bunds or drying floors to quicken the drying • Thresh the bundles after they are dried properly • Dry the grain to proper moisture per cent before bagging and storing to prevent

				deterioration in quality during storage
Blackgram	<ul style="list-style-type: none"> • Drain the excess water as early as possible • Apply 4-5 kg N /acre after draining excess water • To spray KNO₃ 1 % or water soluble fertilizers like 19-19-19 to support nutrition • Spray fungicides like Copper oxy chloride 0.3 % or Carbendazim 0.1 % or Mancozeb 0.25% two to three times by rotating the chemicals • Take up timely control measures against sucking pests whitefly that transmits YMV 	<ul style="list-style-type: none"> • Drain the excess water as early as possible • Apply 4-5 kg N /acre after draining excess water • To spray KNO₃ 1 % or water soluble fertilizers like 19-19-19, to support nutrition • Spray fungicides like Copper oxy chloride 0.3 % or Carbendazim 0.1 % or Mancozeb 0.25% • Take up timely control measures against the outbreak of pests like <i>Spodoptera</i> etc. 	<ul style="list-style-type: none"> • Drain the excess water as early as possible • Allow the crop to dry completely before harvesting 	<ul style="list-style-type: none"> • Spread the bundles drenched in rain on field bunds or drying floors to quicken the drying • Thresh the bundles after they are dried properly • Dry the grain to proper moisture per cent before bagging and storing to prevent deterioration in quality during storage
Maize	<ul style="list-style-type: none"> • Drain the excess water as early as possible • Apply 20 kg N + 10 kg K/ha after draining excess water • Take up inter cultivation and at optimum soil moisture condition to loosen and aerate the soil and to control weeds 	<ul style="list-style-type: none"> • Drain the excess water as early as possible • Apply 20 kg N + 10 kg K /ha after draining excess water • Spray KNO₃ 1 % or water soluble fertilizers like 19-19-19, to support nutrition • Take up timely control 	<ul style="list-style-type: none"> • Drain the excess water as early as possible • Allow the crop to dry completely before harvesting 	<ul style="list-style-type: none"> • Harvest the cobs after they are dried up properly. • Dry the grain to optimum moisture condition before

	<ul style="list-style-type: none"> • Earthenup the crop for anchorage • Spray KNO₃ 1 % or water soluble fertilizers like 19-19-19 to support nutrition • Take up timely control measures for Pink stem borer, sheath blight and Turcicum leaf blight 	measures for sheath blight and post flowering stalk rots		storing
Condition - Heavy rainfall with high speed winds in a short span				
Rice	Measures similar to above given for heavy rainfall situation as above	In addition to the above measures lift the lodged hills and tie them together to keep them erect	In addition to the above measures, lift the lodged plants and tie them together keep erect	In addition to the above measures, for water logging taken up measures to minimize blowing away of produce due to high velocity winds.
Cotton	In addition to the measures for removing excess water, Lift the fallen plants if any and firm up the soil around the base of the stem	Lift the fallen plants if any and firm up the soil around the base of the stem Bacterial leaf blight: Spray plantomycin 16g per acre	Similar measures as in water lagged situation. Additional by pick the net cotton at the earliest	Dry the produce under sun before sending to market
Redgram	Lift the lodged plants if any and firm up the soil around the base of the stem	Lift the lodged plants if any and firm up the soil around the base of the stem	Harvest the pods from uprooted plants as soon as the field condition permits and	Dry the produce under sun before thrashing and

	Apply 4-5 kg N /acre after draining excess water	Takeup timely pest control measures for pod borers and wilt	transport to drying floor	sending to market.
Blackgram	Similar measures as in water logged situation as above.	Similar measures as in water logged situation as above.	Harvest the crop as soon as the field condition permits	Dry the produce under sun before sending to market
Maize	Drain out the excess water from the field as early as possible Earthing-up for better anchorage	Drain out the excess water from the field as early as possible	Drain out the excess water from the field as early as possible Allow the crop to dry completely before harvesting	Harvest the cobs after they are dried up properly. Dry the grain to optimum moisture condition before storing
Horticulture				
Condition - Outbreak of pests and diseases due to unseasonal rains				
Rice	Stem rot and Sheath blight - need based plant protection measures to be initiated based on incidence levels	BPH, Blast, Sheath blight incidence may increase due to unseasonal rains - need based plant protection measures to be initiated	Climbing cutworm and neck blast	-
Cotton	Jassids, Wilt and root rot, Bacterial leaf blight - Need based plant protection measures to be initiated	Jassids, <i>Spodoptera</i> , Wilt and root rot, Bacterial leaf blight, Grey mildew - Need based plant protection measures to be initiated	Dusky cotton bug, Grey mildew - Need based plant protection measures to be initiated	Dry the seed cotton properly after picking and store it under shade in aerated place
Redgram	Wilt and root rot - Need based plant protection measures to be initiated	Wilt and root rot. Need based plant protection measures to be initiated	-	

Blackgram	Spodoptera - Need based plant protection measures to be initiated	Spodoptera, Leaf spots, Powdery mildew - Need based plant protection measures to be initiated	Spodoptera, Rust - Need based plant protection measures to be initiated	
Maize	-	Jassids, Wilt and Stalk rot	Post flowering Stalk rots may aggravate , if unseasonal rains occurs	

2.3 Floods

Condition	Transient water logging/partial inundation and Continuous submergence for more than 2 days			
	Suggested contingency measure			
	Seedling / Nursery stage	Vegetative stage	Reproductive stage	At harvest
Rice	To drain out the excess water at the earliest 2. Apply booster dose of 0.2 kg N/40 sq. m Spray micronutrients like Zn, Fe two to three times at 4 -5 days interval Take up proper weed control measures	To drain out the excess water at the earliest by farming drainage channels if there is a gradient and if not by using motors Apply a booster dose of 20 kg N/acre Spray ZnSO ₄ 0.2 % if it is less than 45 days after transplanting Take up need based plant protection measures Timely plant protection measures for pest and disease	To drain out the excess water at the earliest by farming drainage channels if there is a gradient and if not by using motors Take up need based plant protection measures	Drain out water .Spread sheaves loosely in field or field bunds where there is no water stagnation by farming drainage channels if there is a gradient and if not by using motors Spray common salt at % on panicles to prevent germination and spoilage of straw from moulds Thresh after drying the sheaves properly Ensure proper grain moisture before storing

		<p>out break</p> <p>Take up gap filling either with available nursery or by splitting the tillers from the surviving hills if the gaps are < 30% if more go for replanting</p>		
Cotton	<p>To drain out the excess water at the earliest by farming drainage channels if there is a gradient and if not by using motors</p> <p>Take up the gap filling at the earliest</p> <p>Inter cultivate at optimum field moisture condition</p> <p>Apply 20 kg N + 10 kg K /ha after draining excess water</p> <p>To spray KNO₃ 1 % or water soluble fertilizers like 19-19-19 to support nutrition</p> <p>Take up plant protection measures against possible pests and disease incidence</p> <p>Select short duration</p>	<p>To drain out the excess water at the earliest by farming drainage channels if there is a gradient and if not by using motors</p> <p>Inter cultivate at optimum field moisture condition</p> <p>Apply 20 kg N + 10 kg K /ha after draining excess water</p> <p>To spray KNO₃ 1 % or water soluble fertilizers like 19-19-19 to support nutrition</p> <p>Spray of micronutrients two times at 7-10 days interval</p> <p>Take up plant protection measures against possible pests and disease incidence</p>	<p>To drain out the excess water at the earliest</p> <p>by farming drainage channels if there is a gradient and if not by using motors 5</p> <p>To spray KNO₃ 1 % or water soluble fertilizers like 19-19-19 to support nutrition</p> <p>Take up plant protection measures against possible pests and disease incidence</p>	<p>Kapas picking should be done carefully to prevent admixtures with waste plant material</p>

	<p>hybrids</p> <p>Adopt closer spacing of 90X45 or 90X30 cm</p>			
Redgram	<p>To drain out the excess water at the earliest</p> <p>Take up the gap filling at the earliest</p> <p>Inter cultivate at optimum field moisture condition</p> <p>Apply 4-5 kg N/acre after draining excess water</p>	<p>To drain out the excess water at the earliest</p> <p>Take up the gap filling at the earliest</p> <p>Inter cultivate at optimum field moisture condition</p> <p>Apply 4-5 kg N/acre after draining excess water</p>	<p>To drain out the excess water at the earliest</p> <p>To spray KNO₃ 1 % or water soluble fertilizers like 19-19-19 to support nutrition</p> <p>Take up plant protection measures against possible pests and disease incidence</p>	<p>To drain out the excess water at the earliest</p> <p>Harvest the crop when the field condition permits</p> <p>Drying of bundles should be done on elevated places like filed bunds or drying floors</p>
Blackgram	<p>To drain out the excess water at the earliest</p> <p>Take up the gap filling at the earliest</p> <p>Take up weed control either mechanically or through weedicides</p> <p>Apply 4-5 kg N/acre after draining excess water</p> <p>Take up plant protection measures against possible pests</p>	<p>To drain out the excess water at the earliest</p> <p>Take up weed control either mechanically or through weedicides</p> <p>Apply 4-5 kg N/acre after draining excess water</p> <p>To spray KNO₃ 1 % or water soluble fertilizers like 19-19-19 to support nutrition</p> <p>Take up plant protection measures against possible pests and disease incidence</p>	<p>To drain out the excess water at the earliest</p> <p>Apply 4-5 kg N/acre after draining excess water</p> <p>To spray KNO₃ 1 % or water soluble fertilizers like 19-19-19 to support nutrition</p> <p>Take up plant protection measures against possible pests</p>	<p>Drain out the excess water at the earliest</p> <p>Harvest the crop after the fields are dried up</p>

	and disease incidence		and disease incidence	
Maize	<p>To drain out the excess water at the earliest</p> <p>Takeup weed control either mechanically or through weedicides</p> <p>Intercultivation and earthing up to be done</p> <p>Apply 20 kg N + 10 kg K /acre after draining excess water</p> <p>Take up plant protection measures against possible pests and disease incidence</p>	<p>To drain out the excess water at the earliest</p> <p>Takeup weed control either mechanically or through weedicides</p> <p>Intercultivation and earthing up to be done</p> <p>Apply 20 kg N + 10 kg K /acre after draining excess water</p> <p>Take up plant protection measures against possible pests and disease incidence</p>	<p>To drain out the excess water at the earliest</p> <p>Take up plant protection measures against possible pests and disease incidence</p>	<p>To drain out the excess water at the earliest</p> <p>Cob picking to be done after they are dried fully</p>

2.4 Extreme events: Heat wave (v) / Cold wave/Frost/ Hailstorm /Cyclone (v)

	Suggested contingency measure			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Rice	<ul style="list-style-type: none"> To drain out the excess water at the earliest by farming drainage channels if there is a gradient and if not by using motors Apply booster dose of 0.2 kg N/40 sq. m 	<ul style="list-style-type: none"> To drain out the excess water at the earliest by farming drainage channels if there is a gradient and if not by using motors Apply booster dose of 20 kg N/Acre Spray ZnSO₄ 0.2 % if it is less than 45 days after transplanting 	<ul style="list-style-type: none"> To drain out the excess water at the earliest by farming drainage channels if there is a gradient and if not by using motors Takeup need based plant protection 	<ul style="list-style-type: none"> Drain out water spread sheaves loosely in field or field bunds where there is no water stagnation Spray common salt at 5% to prevent germination of seed and spoilage of straw from moulds Thresh after drying the sheaves

	<ul style="list-style-type: none"> • Spray micronutrients like Zn, Fe 2-3 times at 4 -5 days interval • 4. Takeup proper weed control measures 	<ul style="list-style-type: none"> • Takeup need based plant protection measures 	<p>measures</p> <ul style="list-style-type: none"> • Lodged plants to be lifted and tied together to make them stand erect 	<p>properly</p> <ul style="list-style-type: none"> • Ensure proper grain moisture before storing
Cotton	<ul style="list-style-type: none"> • To drain out the excess water at the earliest by farming drainage channels if there is a gradient and if not by using motors • Inter cultivate at optimum field moisture condition • Apply 20 kg N + 10 kg K /acre after draining excess water 	<ul style="list-style-type: none"> • To drain out the excess water at the earliest by farming drainage channels if there is a gradient and if not by using motors • Inter cultivate at optimum field moisture condition • Earthing up to be done to provide anchorage to plants • Apply 20 kg N + 10 kg K /acre after draining excess water • To spray KNO₃@1 % or water soluble fertilizers like 19-19-19, to support nutrition • Spray of micronutrients two times at 7-10 days interval • Take up plant protection measures against possible pests and disease incidence 	<p>measures</p> <ul style="list-style-type: none"> • To drain out the excess water at the earliest by farming drainage channels if there is a gradient and if not by using motors • To spray KNO₃ @1 % or water soluble fertilizers like 19-19-19 to support nutrition • Earthing up to be done to provide anchorage to plants • Spray of micronutrients two times at 7-10 days interval • Take up plant protection measures against possible pests and disease incidence 	<p>properly</p> <ul style="list-style-type: none"> • Kapas picking should be done carefully to prevent admixtures with waste plant material

Redgram	<ul style="list-style-type: none"> • To drain out the excess water at the earliest by farming drainage channels if there is a gradient and if not by using motors • Inter cultivate at optimum field moisture condition • Apply 4-5 kg N/acre after draining excess water 	<ul style="list-style-type: none"> • To drain out the excess water at the earliest by farming drainage channels if there is a gradient and if not by using motors • Inter cultivate at optimum field moisture condition • Apply 4-5 kg N/acre after draining excess water 	<ul style="list-style-type: none"> • To drain out the excess water at the earliest by farming drainage channels if there is a gradient and if not by using motors • To spray KNO₃@ 1 % or water soluble fertilizers like 19-19-19 to support nutrition • Take up plant protection measures against possible pests and disease incidence 	<ul style="list-style-type: none"> • To drain out the excess water at the earliest by farming drainage channels if there is a gradient and if not by using motors • Harvest the crop when the field condition permits • Drying of bundles should be done on elevated places like filed bunds or drying floors
Blackgram	<ul style="list-style-type: none"> • To drain out the excess water at the earliest by farming drainage channels if there is a gradient and if not by using motors • Takeup weed control either mechanically or through weedicides • Apply 4-5 kg N/acre after draining excess water 	<ul style="list-style-type: none"> • To drain out the excess water at the earliest by farming drainage channels if there is a gradient and if not by using motors • Takeup weed control either mechanically or through weedicides • Apply 4-5 kg N/acre after draining excess water • To spray KNO₃ @1 % or water soluble fertilizers like 19-19-19 to support nutrition 	<ul style="list-style-type: none"> • To drain out the excess water at the earliest by farming drainage channels if there is a gradient and if not by using motors • Apply 4-5 kg N/acre after draining excess water • To spray KNO₃ @1 % or water soluble fertilizers like 19-19- 	<ul style="list-style-type: none"> • Drain out the excess water at the earliest by farming drainage channels if there is a gradient and if not by using motors • Harvest the crop after the fields are dried up

		<ul style="list-style-type: none"> • Take up plant protection measures against possible pests and disease incidence 	<p>19 to support nutrition</p> <ul style="list-style-type: none"> • Take up plant protection measures against possible pests and disease incidence 	
Maize	<ul style="list-style-type: none"> • To drain out the excess water at the earliest by farming drainage channels if there is a gradient and if not by using motors • Intercultivation and earthing up to be done • Apply 20 kg N + 10 kg K /ha after draining excess water • Take up plant protection measures against possible pests and disease incidence 	<ul style="list-style-type: none"> • To drain out the excess water at the earliest by farming drainage channels if there is a gradient and if not by using motors • Takeup weed control either mechanically or through weedicides • Intercultivation and earthing up to be done • Apply 20 kg N + 10 kg K /ha after draining excess water • Take up plant protection measures against possible pests and disease incidence 	<ul style="list-style-type: none"> • To drain out the excess water at the earliest by farming drainage channels if there is a gradient and if not by using motors • Take up plant protection measures against possible pests and disease incidence 	<ul style="list-style-type: none"> • To drain out the excess water at the earliest by farming drainage channels if there is a gradient and if not by using motors • Cob picking to be done after they are dried fully

Contingency Plans for Rabi Crops for Krishna Zone

Guntur District

1. Rainfall Information

		Oct – Dec	Jan – Mar
(a) Normal rainfall during <i>Rabi</i> season	:	229	-
(b) Number of rainy days	:	10	-

2. Rabi crops cultivated

2a Area Production statistics

S. No	Cropping System	Crop name	Area '000 ha	Production '000 t	Productivity Kg/ha
1		Paddy	22.3	189.2	6221
2		Maize	54.5	358.4	9576
3		Jowar	19.6	230.0	7141
4		Blackgram	49.8	30.0	984
5		Greengram	30.3	34.2	1120
6		Redgram	1.2	1.4	1254
7		Bengalgram	17.1	47.9	1934
8		Groundnut	3.4	10.4	4695
9		Chilli	3.2	3.3	5482
10		Tobacco	3.5	--	--

2b Source wise (Water) cultivated area

Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
Canals		422.622	77.46
Tanks		1.82	0.33
Open wells			
Bore wells		105.85	19.4
Lift irrigation		10.9	2.0
Micro-irrigation			
Other sources		4.3	0.788
Total Irrigated Area		545.589	100.0

3. Sowing window information

S. No.	Soil type	Cropping system	Crop name	Optimum sowing window
1	Deltaic black sandy loams	Rice-pulse	Blackgram/greengram	November 2 nd fortnight – December 1 st fortnight
2		Rice-Maize/Jowar	Maize/Jowar	November 2 nd fortnight – December 1 st fortnight
3		Rice-Rice	Rice	December 1 st and 2 nd fortnight
4	Black soils	Pulse-Bengalgram	Bengalgram	October 15 th to November 15 th
5			Redgram	September 1 st fortnight – October 1 st

				fortnight
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4. Contingency measures Field crops

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

(a) Excess residual moisture

S. No.	Soil type	Cropping system	Crop name	Sowing time	Variety	Management practices
1	Black soils	Bengalgram/ Greengram/ jowar/ Ragi	Bengalgram	2 nd week of Oct to 4 th Week of Nov	JG-11, NBeG-49, NBeG-47, KAK-2, Vihar, NBeG-399	Spray alternatively 19-19-19 & KNO ₃ @ 10 g/L of water each at the time of flowering and pod formation
2	Black soils		Jowar	October 15 th to November 15 th	NTJ1, NTJ3, MJ 278 NTJ 2647	Spray 2% urea and 1 % KNO ₃ each at the time of flowering and ear head formation
3	Black soils		Greengram	Nov 3 rd week to Dec 1 st week in rice fallows	LGG 407 LGG0460 WGG-42 IPM- 2-14	Spray 2% urea and 1 % KNO ₃ each at the time of flowering and ear head formation
4	Black soils		Ragi	Nov- Dec	PPR 1012 Maruthi Champavathi	Spray 2% urea and 1 % KNO ₃ each at the time of flowering and ear head formation

(b) 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 time	Variety	Management practices
1	Black soils	Bengalgram/ Greengram/ jowar/ Ragi	Bengalgram	2 nd week of Oct to 4 th Week of Nov	JG-11, NBeG-49, NBeG-47, KAK-2, Vihar, NBeG-399	Spay alternatively 19-19-19 & KNO3 @ 10 g/L of water each at the time of flowering and pod formation
2	Black soils		Jowar	October 15 th to November 15 th	NTJ1, NTJ3, MJ 278	Spray 2% urea and 1 % KNO3 each at the time of flowering and ear head formation
3	Black soils		Greengram	Nov 3 rd week to Dec 1 st week in rice fallows	LGG 407 LGG0460 WGG-42	Spray 2% urea and 1 % KNO3 each at the time of flowering and ear head formation
4	Black soils		Ragi	Nov- Dec	Champavathi	Spray 2% urea and 1 % KNO3 each at the time of flowering and ear head formation

(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 time	Variety	Management practices
1	Black soils	Bengalgram/ Greengram/ Jowar/ Ragi	Bengalgram	2 nd week of Oct to 4 th Week of Nov	JG-11, NBeG-49, NBeG-47, KAK-2, Vihar, NBeG-399	Spray alternatively 19-19-19 & KNO ₃ @ 10 g/L of water each at the time of flowering and pod formation
2	Black soils		Jowar	October 15 th to November 15 th	NTJ1, NTJ3, MJ 278	Spray 2% urea and 1 % KNO ₃ each at the time of flowering and ear head formation
3	Black soils		Greengram	Nov 3 rd week to Dec 1 st week in rice fallows	LGG 407 LGG0460 WGG-42	Spray 2% urea and 1 % KNO ₃ each at the time of flowering and ear head formation
4	Black soils		Foxtail millet	2 nd fort night to Jan 1 st fort night Dec	Suryanadhi	Spray 2% urea and 1 % KNO ₃ each at the time of flowering and ear head formation

For crops grown with groundwater

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

S. No.	Soil type	Cropping system	Crop name	Sowing time	Variety	Management practices
1	Black soils/Red soils	Rice-Rice	Rice	2 nd week of Oct to 4 th Week of Nov	NLR-34449 MTU-1156 MTU-1153 MTU-1121	1. Need based application of pesticides to manage insect pests and diseases, 2. Inter cultivation practices 3. Life saving irrigation with micro irrigation systems at critical growth stages 4. Conservation furrow methods 5. Foliar spray of 2% urea Or 1% KNO ₃
			Maize	3 rd week of November to 1 st week of January	DHM-115, 117, KH-510 Private hybrids	
			Blackgram	2 nd week of Oct to 4 th week of Nov	TBG-104, GBG-1, PU-31, LBG-752	
2	Sandy loams	Rice-G.nut	Groundnut	2 nd week of November to 2 nd week of December	TAG 24, K-6, K-9, Kadiri Harithandra, Dharani	Seed treatment, Pre and post emergence application of weedicides, gypsum application, need based application of pesticides to manage insect pests and diseases, irrigation at critical growth stages or based on soil moisture condition

(b) Normal rainfall

S. No.	Soil type	Cropping system	Crop name	Sowing time	Variety	Management practices
1	Black soils/Red soils	Rice-Rice	Maize	3 rd week of November to 1 st week of January	DHM-115, 117, KH-510 Private hybrids	1.Need based application of pesticides to manage insect pests and diseases, 2.Inter cultivation practices 3.Life saving irrigation with micro irrigation systems at critical growth stages 4.Conservation furrow methods 5. Foliar spray of 2% urea or 1% KNO ₃
			Blackgram	2 nd week of Oct to 4 th week of Nov	TBG-104, GBG-1, PU-31, LBG-752	
			Jowar	2 nd week of Oct to 4 th week of Nov	NTJ-2,4 NJ-2647, CSH-9, 14, 16,	
2	Sandy loams	Rice-G.nut	Groundnut	2 nd week of November to 2 nd week of December	TAG 24, K-6, K-9, Kadiri Harithandra, Dharani	Seed treatment, Pre and post emergence application of weedicides, gypsum application, need based application of pesticides to manage insect pests and diseases, irrigation at critical growth stages or based on soil moisture condition

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

S. No.	Soil type	Cropping system	Crop name	Sowing time	Variety	Management practices
1	Black soil		Bengalgram	2 nd week of Oct to 4 th Week of Nov	JG-11, NBeG-49, KAK-2, Vihar, NBeG-399	Foliar spray Life saving irrigation through micro irrigation system
2			Jowar	2 nd week of Oct to 4 th week of Nov	NTJ-2,4 NJ-2647, CSH-9, 14,	

					16,	Seed treatment, Pre and post emergence application of weedicides, need based application of pesticides to manage insect pests and diseases, irrigation at critical growth stages or based on soil moisture condition
3			Blackgram	2 nd week of Oct to 4 th week of Nov	TBG-104, GBG-1, PU-31, LBG-752	
5			Horsegram	3 rd week of Sept to 1 st OCT	CRIDA-18R CRIDA-22B	

(d) Scanty rainfall in *Kharif* season

S. No.	Soil type	Cropping system	Crop name	Sowing time	Variety	Management practices
	Rain black soils/ red soils	Fallow- bengalgram/ Jowar/ blackgram/ Cowpea/ Sesamum	Horsegram/	3 rd week of Sept to 1 st OCT	CRIDA-18R CRIDA-22B	1.Foliar spray with 2% Urea 2.Life saving irrigation through micro irrigation system
			Greengram	2 nd week of Oct to 4 th week of Nov	TM-96-2, WGG- 42, IPM-2-14,	
			Fodder jowar			

• **Management practices for unseasonal rains**

Condition - Continuous high rainfall in a short span leading to water logging and Heavy rainfall with high speed winds in a short span				
Crop	Vegetative stage	Flowering stage	Crop maturity stage	Post harvest

Rice	<ul style="list-style-type: none"> • Drain the excess water as early as possible • Apply 20 kg N + 10 kg K /ha after draining excess water • Take up gap filling either with available nursery or by splitting the tillers from the surviving hills • Take up suitable plant protection Measures in anticipation of pest & disease out breaks 	<ul style="list-style-type: none"> • Drain the excess water as early as possible • Apply 20 kg N + 10 kg K /ha after draining excess water • Take up suitable plant protection Measures in anticipation of pest & disease out breaks 	<p>Drain the excess water as early as possible</p> <p>Take up suitable plant protection measures in anticipation of pest & disease out breaks</p>	<p>Drain out water and spread sheaves loosely in field or field bunds where there is no water stagnation</p> <p>Spray common salt at 5% on panicles to prevent germination and spoilage of straw from moulds</p> <p>Thresh after drying the sheaves properly Ensure proper grain</p> <ul style="list-style-type: none"> • Moisture before storing
Blackgram/ Greengram/Bengalgram	<p>Drain the excess water as early as possible</p> <p>Apply 4-5 kg N /ha after draining excess water</p> <p>Spray KNO₃ 1 % or water soluble fertilizers like 19-19-19, at 1% to support nutrition</p> <p>Spray fungicides like Copper oxy chloride 0.3 % or Carbendazim 0.1 % or Mancozeb 0.25% two to three times by rotating the chemicals</p> <ul style="list-style-type: none"> • Take up timely control measures 	<p>Drain the excess water as early as possible</p> <p>Apply 4-5 kg N /ha after draining excess water</p> <p>Spray KNO₃ 1 % or water soluble fertilizers like 19-19-19 at 1% to support nutrition</p> <p>Spray fungicides like Copper oxy chloride 0.3 % or Carbendazim 0.1 % or</p>	<p>Drain the excess water as early as possible</p> <ul style="list-style-type: none"> • Allow the crop to dry completely before harvesting 	<ul style="list-style-type: none"> • Spread the bundles drenched in rain on field bunds or drying floors to quicken the drying • Thresh the bundles after they are dried properly Dry the grain to proper • moisture per cent before • bagging and storing to prevent deterioration in quality during storage

	against the out break of pests like Spodoptera etc.	Mancozeb 0.25% two to three times by rotating the chemicals Take up timely control measures against the out break of pests like Spodoptera etc.		
Maize	<ul style="list-style-type: none"> • Drain the excess water as early as possible • Apply 20 kg N + 10 kg K /ha after draining excess water • Take up inter cultivation and at optimum soil moisture condition to loosen and aerate the soil and to control weeds • Earthen up the crop for anchorage Spray KNO₃ 1 % or water soluble fertilizers like 19-19-19 at 1% to support nutrition • Take up timely control measures for Pink stem borer, sheath blight and Turicum leaf blight 	<ul style="list-style-type: none"> • Drain the excess water as early as possible • Apply 20 kg N + 10 kg K /ha after draining excess water • Spray KNO₃ 1 % or water soluble fertilizers like 19-19-19-19 at 1% to support nutrition • Take up timely control measures for sheath blight and post flowering stalk rots 	<ul style="list-style-type: none"> • Drain the excess water as early as possible • Allow the crop to dry completely before harvesting 	Harvest the cobs after they are dried up properly. Dry the grain to optimum moisture condition before storing

For crops grown with Canal Irrigation: The scenario would be based on the storage available in the reservoirs.

a. Limited release of water

S. No.	Soil type	Cropping system	Crop name	Sowing window	Variety	Management practices
1	Black soil &	Rice – Rice	Maize	3 rd week of November to 1 st	DHM-115, 117, KH-510 Private	Foliar spray of urea 2 % or KNO ₃ 1%, ZnSO ₄ and FeSO ₄ spray; Spraying of copper oxy chloride or mancozeb etc. to manage fungal diseases. Intercultivation to reduce soil moisture

	Red soils			week of January	hybrids		
			Rice	2 nd week of Oct to 4 th Week of Nov	NLR-34449 MTU-1156 MTU-1153 MTU-1121	Direct sowing with drum seeder	
2			Jowar	2 nd week of Oct to 4 th week of Nov	NTJ-2,4, NJ-2647, CSH-9, 14, 16,	Seed treatment, Pre and post emergence application of weedicides, need based application of pesticides to manage insect pests and diseases, irrigation at critical growth stages or based on soil moisture condition	
3			Bengalgram	2 nd week of Oct to 4 th Week of Nov	JG-11, NBeG-49, KAK-2, Vihar		
4				Groundnut	2 nd week of November to 2 nd week of December	TAG 24, K-6, K-9, Dharani	Seed treatment, Pre and post emergence application of weedicides, gypsum application, need based application of pesticides to manage insect pests and diseases, irrigation at critical growth stages or based on soil moisture condition
5				Blackgram	2 nd week of Oct to 4 th week of Nov	TBG-104, GBG-1, PU-31	

b. Delayed release of water

Head reach:

S. No.	Soil type	Cropping system	Crop name	Sowing window	Variety	Management practices
1	Black soils/Red soils	Rice-Rice	Rice	2 nd week of Oct to 4 th Week of Nov	NLR-34449 MTU-1156 MTU-1153 MTU-1121	Seed treatment, Pre and post emergence application of weedicides, need based application of pesticides to manage insect pests and diseases, irrigation at critical growth stages or based on soil moisture condition

Middle reach:

S. No.	Soil type	Cropping system	Crop name	Sowing window	Variety	Management practices
1	Black soils/Red soils	Rice-Rice	Rice	2 nd week of Oct to 4 th Week of Nov	NLR-34449 MTU-1156 MTU-1153 MTU-1121	Direct sowing with drum seeder

Tail end:

S. No.	Soil type	Cropping system	Crop name	Sowing window	Variety	Management practices
1	Black soil & Red soils	Rice – Rice	Jowar	2 nd week of Oct to 4 th week of Nov	NTJ-2,4, NJ-2647, CSH-9, 14, 16,	Seed treatment, Pre and post emergence application of weedicides, need based application of pesticides to manage insect pests and diseases, irrigation at critical growth stages or based on soil moisture condition
2			Greengram	2 nd week of Oct to 4 th week of Nov	TM-96-2, WGG-42, IPM-2-14,	Seed treatment, Pre and post emergence application of weedicides, gypsum application, need based application of pesticides to manage insect pests and diseases, irrigation at critical growth stages or based on soil moisture condition
3			Groundnut	2 nd week of November to 2 nd week of December	TAG 24, K-6, K-9, , Dharani	
			Blackgram	2 nd week of Oct to 4 th week of Nov	TBG-104, GBG-1, PU-31, LBG-752	

6. Contingency measures for Horticulture Crops (vegetables)

S. No.	Crop Name	Specific management practices to be taken up following excess/deficient/scanty rainfall	Time of intervention	Remarks

7. Temperature related stresses for field and horticulture crops:

Excess temperatures/Less than normal temperatures

S.No	Crop name	Stage of crop growth	Threshold temperature*	Suggested management practices

* Temperature increase or decrease over normal and for number of days . For example, increase of 3 degrees over normal for a period of 5 days

8. **Management practices for livestock** (to cover shelter management during cold or heat waves, production/regulation of fodder in rabi season in deficient monsoon years/ excess monsoon rainfall years etc),

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

(a) Excess (rainfall during September/October months) residual moisture

S. No.	Soil type	Cropping system	Fodder name	Variety	Management practices

(b) Normal rainfall (rainfall during September/October months) residual moisture

S. No.	Soil type	Cropping system	Crop name	Variety	Management practices

(b) 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	Fodder name	Variety	Management practices

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

S. No.	Soil type	Cropping system	Fodder name	Variety	Management practices

For fodder crops (mostly perennial fodder varieties as sole fodder crop) grown with groundwater

S. No.	Soil type	Fodder name	Variety	Management practices

Livestock management during severe cold waves/heat waves

Nutritional management	Shelter management	Health management	Miscellaneous, if any

