

State: Madhya Pradesh
Agriculture Contingency Plan: District Guna

1.0 District Agriculture profile					
1.1	Agro-Climatic/Ecological Zone				
	Agro Ecological Sub Region (ICAR)	Malwa plateau, Vindhyan scrubland and Narmada valley			
	Agro-Climatic Region (Planning Commission)	Gird Zone			
	Agro Climatic Zone (NARP)	Gird Zone			
	List all the districts or part thereof falling under the NARP Zone	Morena, Bhind, Gwalior(1/2 W), Shivpuri and Guna			
	Geographic coordinates of district	Latitude	Longitude	Altitude	
		24 ⁰ 34	77 ⁰ 21		
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Zonal Agricultural Research Station (RVSKVV), Near Commissioner office A-B Road , Morena - 476001 (M. P.) RARS, College of Agriculture, Gwalior (M. P.)			
	Mention the KVK located in the district	KVK , Raghogarh Naka, Aron, Guna Dist 473 101, under JNKVV, Gwalior			
1.2	Rainfall	Average (mm)	Normal Rainy days (number)	Normal Onset (specify week and month)	Normal Cessation (specify week and month)
	SW monsoon (June-Sep):	1116.2		Third week of June 25 MW	Last week of September 39MW
	NE Monsoon(Oct-Dec):	50		4 th week of October 1 st week of November / 43 -44MW	-
	Winter (Jan- March)	-	-		-
	Summer (Apr-May)	-	-		-
	Annual	855	-		-

1.3	Land use pattern of the district (latest statistics)	Geographical area	Cultivable 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 (000ha)	630.8	314.5	101.4	34.4	29.8	76.5	0.0	61.4	4.9	7.9

Source – Directorate of Farmers welfare and Agriculture, Development of Madhya Pradesh, Bhopal, Agriculture Statistics 2009.

1.4	Major Soils	Area ('000 ha)	%
	1. Shallow Soils	638.20	57.79
	2. Medium deep Soils	54.20	4.92
	3. Deep Soil	411.40	37.29
1.5	Agricultural land use	Area ('000 ha)	Cropping intensity %
	Net sown area	314.5	136%
	Area sown more than once	111.9	
	Gross cropped area	426.4	

1.6	Irrigation	Area (000ha)	Percent (%)	
	Net irrigated area	147.8		
	Gross irrigated area	148.0	47	
	Rainfed area	166.5	53	
	Sources of Irrigation	Number	Area (000ha)	% area
	Canals	22	19.9	13.4
	Tanks	32	4.5	3.04
	Open wells	24646	40.1	27.1
	Bore wells	8561	56.9	38.4
	Lift irrigation			
	other Sources	-	26.8	18.1
	Total		148.0	
	Pumpsets			
	Micro – irrigation			
	Groundwater availability and use	No. of blocks	% area	Quality of water
	Cover exploited			
	Critical			
	Semi – critical			
	Safe		54%	
	Wastewater availability and use			

*over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%

Area under major field crops & horticulture etc.

1.7		Major Field Crops Cultivated	Area ('000ha)					
			Kharif		Rabi		Summer	Total
			Kharif	Irrigated	Rainfed	Irrigated	Rainfed	
1	Soybean			182.6				
2	Blackgram			4.7				
3	Maize			14.6				
4	Jowar			8.1				
5	Greengram			2.4				
	Rabi							
1	Wheat				91.8			
2	Gram				83.7			
3	Lentil				1.6			
4	Mustard				11.2			
5	Coriander				0.7			
	Horticulture Crops – Fruits		Total area		Irrigated		Rainfed	
	Fruits							
1	Mango		0.260					
2	Guava		0.410					
	Horticultural Crops – Vegetables		Total area		Irrigated		Rainfed	
1	Potato		0.285					
2	Tomato		0.472					
3	Onion		0.103					
	Horticulture crops - Spices		Total area		Irrigated		Rainfed	
1	Chilly		0.640					
2	Coriander		56.094					
3	Garlic		0.161					
4	Ginger		0.148					
	Medicinal and Aromatic crops		1.363					
1	Ashwagandha		0.148					
2	Basil		0.140					
	Plantation crops		Total area		Irrigated		Rainfed	
1	Mari gold		0.040					
	Fodder Crops		Total area		Irrigated		Rainfed	
	Grazing land							
	Sericulture etc.							
	Other (Specify)							

*If break-up data (irrigated, rainfed) is not available, give total area

1.8	Livestock	Number ('000)		
	Cattle	342.4		
	Buffaloes total	174.1		
	Commercial dairy farms			
	Goat	118.5		
	Sheep	1.3		
	Others (Camel, Pig, Yak etc.)	8.0		
1.9	Poultry			
	Commercial			
	Backyard			
1.10	Fisheries	Area (ha)	Yield (t/ha)	Production (tones)
	Brackish water			
	Fresh water			
	Others			

1.11	Production and Productivity of major crops (Average of last 3 years: 2006, 07, 08)	Kharif		Rabi		Summer		Total	
		Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)
Crop 1	Soybean	193 .2	1058						
Crop 2	Black gram	2.4	501						
Crop 3	Greengram	1.1	464						
Crop 4	Maize	17.1	1165						
Crop 5	Sorghum	5.8	719.0						
Crop 6	wheat			161.9	1839				
Crop 7	Gram			105.4	1258				
Crop 1	Linseed			0.1	604				
Crop 2	Mustered			8.7	778				
Crop 3	Lentil			1.0	629				
Crop 4	Pea			0.2	532				

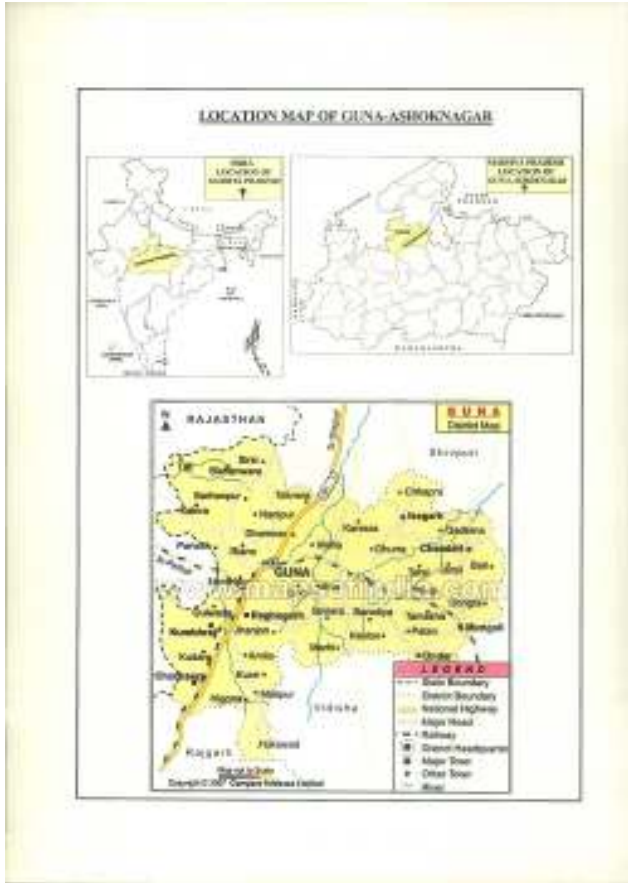
1.12	Sowing window for 5 major crops (start and end of sowing period)	Crop 1: Soybean	2: Urad	3: Make	4: Greengram	5: Sesame
	Kharif- Rainfed	25 th June – 10 July	1 st July – 15 July	15 th July – 11 July	1 st July – 15 July	1 st July - 15 th July
	Kharif-Irrigated					
		Crop 1 : Wheat	2 : Gram	3: Mustard	4 :Lentil	
	Rabi-Irrigated	25 th Nov. – 15 Dec.	25 Oct. – 20 Nov.	25 Oct. – 10 th Nov.	25 oct. 10 Nov.	

1.13	What is the major contingency the district is prone to? (Tick mark)	Regular			Sporadic (specify month of occurrence in brackets)			None
		Severe	Moderate	Mild	Severe	Moderate	Mild	
	Drought					Yes (Beginning of July, end of Sept.)		
	Flood							
	Cyclone							
	Hail storm						Yes(March)	
	Heat wave						Yes(April 1st)	
	Cold wave					Yes (Dec.-Jan)		
	Frost					Yes (Dec-Jan)		
	Sea water inundation							
	Pests and diseases (specify)		Yes(August end) ; December					

1.14	Include Digital maps of the district for	Location map of district with in State as Annexure I	Enclosed: Yes
		Mean annual rainfall as Annexure 2	Enclosed: Yes
		Soil map as Annexure 3	Enclosed: Yes

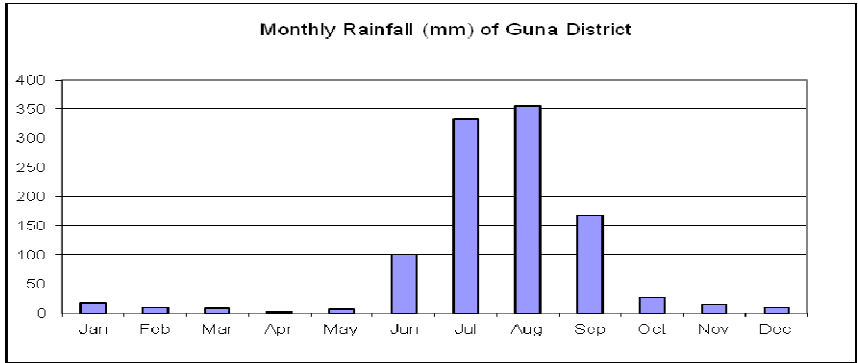
Annexure I

Location map



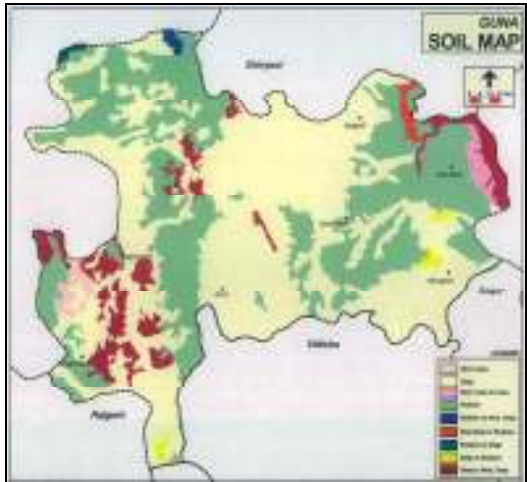
Annexure II

Mean annual rainfall



Annexure III

Soil map



(Source: NBSS&LUP, Amravati Road, Nagpur)

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 including variety	Agronomic measures	Remarks on Implementation
Delay by 2 weeks 1st week of July	Deep soils	Soybean	Soybean (JS – 93-05, JS 9560,)	<ul style="list-style-type: none"> • Ridge & Furrow sowing • Seed treatment with Thirum + Corbidizim mixture @3gm/kg of seed • Apply FYM, biofertilizer • Timely weed control 	Link Agricultural University Department of Agriculture, MPSC, NSC for good quality seed
		Maize	Maize Hybrid: Ganga-2, Ganga Safedi-2 Composite: Jawahar maize – 8 & 12		
	Shallow red soils	Soybean	Early Soybean(JS 93-05 – NRC-7) Maize Hybrid: Ganga-2, Ganga Safedi-2 Composite: Jawahar maize -8 & 12		
		Blackgram	Blackgram(JU- 2, JU-3, JU-86)		
		Greengram	Greengram (TM- 37, K-851)		

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming situation	Normal Crop / Cropping system	Change in crop / cropping system including variety	Agronomic measures	Remarks on Implementation
Delay by 4 weeks 3 rd week July	Deep soils	Soybean	Soybean (JS – 93-05, JS 95-60)	<ul style="list-style-type: none"> • Ridge & Furrow sowing • Seed treatment with Thirum + Corbidizim mixture @3gm/kg of seed • Frequent intercultivation to control weeds and to conserve moisture 	Link Agricultural University Department of Agriculture, MPSC, NSC for good quality seed
		Maize	Maize Hybrid: Ganga-2, Ganga Safedi-2 Composite: Jawahar maize – 8 & 12		
	Shallow red soils	Soybean	Early Soybean(JS 93-05 – NRC-7) Maize Hybrid: Ganga-2, Ganga Safedi-2 Composite: Jawahar maize – 8 & 12		
		Blackgram	Blackgram(JU- 2, JU-3, JU-86)		
		Greengram	Greengram (TM- 37, K-851)		

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming situation	Normal Crop / Cropping system	Change in crop / cropping system including variety	Agronomic measures	Remarks on Implementation
Delay by 6 weeks 1st week of August	Deep soils	Soybean	Sesame(JT11, JT12,TKG-8)	<ul style="list-style-type: none"> Ridge & Furrow sowing Seed treatment with Thirum + Corbidizim mixture @3gm/kg of seed Frequent intercultivation to control weeds and to conserve moisture 	Link Agricultural University, Department of Agriculture, MPSC,NSC for good quality seed
		Maize	Maize Hybrid: Ganga-2, Ganga Safedi-2 Composite: Jawahar maize -8, Jawahar maize -12		
	Shallow red soils	Soybean	Sesame(JT11, JT12,TKG-8)		
		Blackgram	Blackgram(JU- 2, JU-3, JU-86)		
		Greengram	Greengram (TM- 37, K-851)		

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming situation	Normal Crop / Cropping system	Change in crop / cropping system ^c including variety	Agronomic measures	Remarks on Implementation
Delay by 8 weeks 3 rd week of August	Deep soils	Soybean	Sesame(JT11, JT12,TKG-8)	<ul style="list-style-type: none"> Intercultural operation for weeds control and soil mulch Prepare land for <i>rabi</i> crops 	Link Agricultural University Department of Agriculture, MPSC,NSC for good quality seed
		Maize	For fodder		
	Shallow red soils	Soybean	Sesame(JT11, JT12,TKG-8)		
		Blackgram	Plan for Rabi crop		
		Greengram	Plan for Rabi crop		

Condition			Suggested contingency measures	
Early season drought (delayed onset)	Major Farming situation	Normal Crop / Cropping system	Crop management	Soil nutrient and moisture conservation measures
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/ crop stand etc.	Deep soils	Soybean	<ul style="list-style-type: none"> Weed management t in between rows using <i>doura</i>. Gap filling with improved variety if the population is <75% of optimum Thinning, resowing 	Dust mulching/ green leaf mulch, Frequent intercultultural operations
		Maize		
	Shallow red soils	Soybean	<ul style="list-style-type: none"> Life saving irrigation (if available) Re-sowing - if seed is available Gap filling with improved variety if the population is <75% of optimum 	<ul style="list-style-type: none"> Hand weeding Breaking of upper earth crust. Mulching
		Blackgram		
		Greengram		

Condition			Suggested contingency measures	
	Major Farming situation	Normal Crop / Cropping system	Crop management	Soil nutrient and moisture conservation measures
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period At vegetative stage	Deep soils	Soybean	<ul style="list-style-type: none"> • Intercultural operation for control of weeds and soil mulch • Life saving irrigation (if available) • Spraying of Anti-transperant 	<ul style="list-style-type: none"> • Hand weeding • Breaking of upper earth crust. • Mulching in crop rows
		Maize		
	Shallow red soils	Soybean		
		Blackgram		
		Greengram		

Condition				Suggested Contingency measures
Major Farming situation	Major farming situation	Normal Crop / Cropping system	Crop management	Soil nutrient and moisture conservation measures
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period At flowering/ fruiting stage	Deep soils	Soybean	<ul style="list-style-type: none"> • 20% defoliation in soybean • Insecticidal spray for control of green semi looper in soybean • Spray of anti transparent like VAM-C , Boost etc 	<ul style="list-style-type: none"> • Dust mulching through frequent interculture • Green leaf mulch in between crop rows • Supplemental irrigation through farm pond water/other sources
		Maize		
	Shallow red soils	Soybean		
		Blackgram		
		Greengram		

Condition				
Terminal drought (Early withdrawal of monsoon)	Major Farming situation	Normal Crop / Cropping system	Crop management	Rabi Crop Planning
	Deep soils	Soybean	<ul style="list-style-type: none"> • Life saving irrigation with farm pond water/other sources if feasible • Harvest at physiological maturity 	<ul style="list-style-type: none"> • Utilize the available moisture for rabi sowing • Seeds of wheat, gram be soaked in water for 12-15 hours before sowing
		Maize		
	Shallow red soils	Soybean		
		Blackgram		
		Greengram		

2.1.2 Irrigated situation

Condition			Suggested Contingency measures		
Delayed release of water in canals due to low rainfall	Major Farming situation	Normal Crop / Cropping system	Change in crop / cropping system including variety	Agronomic measures	Remarks on Implementation
1	2	3	4	5	6
	Deep soils	Wheat Gram Coriander Mustard	Wheat (MP-4010, GW-173) Gram (JG-16, JG-130) Coriander (JD-1, Sympo-S33, ACR-1, RCR-436) Mustard (JM-1 & 4, Pusa Bold)	<ul style="list-style-type: none"> Mulching in rabi crops Irrigation only at critical stages by check basin/ Border strip method 	Awareness needed; Trainings in ATMA,FTC
	Shallow red soils	Coriander Mustard	Coriander (JD-1, Sympo-S33, ACR-1, RCR-436) Mustard (JM-1 & 4, Pusa Bold)		

Condition			Suggested Contingency measures		
Limited release of water in canals due to low rainfall	Major Farming situation	Normal Crop / Cropping system	Change in crop / cropping system ^c including variety	Agronomic measures	Remarks on Implementation
1	2	3	4	5	6
	Deep soils	Wheat Gram Coriander Mustard	Wheat (MP-4010, GW-173) Gram (JG-16, JG-130) Coriander (JD-1, Sympo-S33, ACR-1, RCR-436) Mustard (JM-1 & 4, Pusa Bold)	<ul style="list-style-type: none"> Mulching in rabi crops Irrigation only at critical stages by check basin/ Border strip method 	Awareness needed ; Trainings in ATMA,FTC
	Shallow red soils	Coriander Mustard	Coriander (JD-1, Sympo-S33, ACR-1, RCR-436) Mustard (JM-1 & 4, Pusa Bold)		

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures		
			Change in crop / cropping system ^c including variety	Agronomic measures	Remarks on Implementation
1	2	3	4	5	6
Non release of water in canals under delayed onset of monsoon in catchment	Deep soils	Wheat Gram Coriander Mustard	Gram (JG-16, JG-130) Coriander (JD-1, Sympo-S33, ACR-1, RCR-436) Mustard (JM-1 & 4, Pusa Bold)	<ul style="list-style-type: none"> Mulching in rabi crops Irrigation only at critical stages by check basin/ Border strip method Give irrigation using own source of available water plus tank water (conjunctive use) 	Linkage with NSC, MPSC, RVSKVV, farmers' societies, state seed firms/Agri. University and seed corporations for supply of seed and with RKVY for seed drills
	Shallow red soils	Coriander Mustard	Coriander (JD-1, Sympo-S33, ACR-1, RCR-436) Mustard (JM-1 & 4, Pusa Bold)		

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures		
			Change in crop / cropping system including variety	Agronomic measures	Remarks on Implementation
1	2	3	4	5	6
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	Deep soils	Wheat Gram Coriander Mustard	Gram (JG-16, JG-130) Coriander (JD-1, Sympo-S33, ACR-1, RCR-436) Mustard (JM-1 & 4, Pusa Bold)	<ul style="list-style-type: none"> Mulching in rabi crops Irrigation only at critical stages by check basin/ Border strip method Give irrigation using own source of available water plus tank water (conjunctive use) 	Awareness needed ; Trainings in ATMA,FTC
	Shallow red soils	Coriander Mustard	Coriander (JD-1, Sympo-S33, ACR-1, RCR-436) Mustard (JM-1 & 4, Pusa Bold)		

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures		
			Change in crop / cropping system ^c including variety	Agronomic measures	Remarks on Implementation
1	2	3	4	5	6
Insufficient groundwater recharge due to low rainfall	Deep soils	Wheat Gram Coriander Mustard	Gram (JG-16, JG-130) Coriander (JD-1, Sympo-S33, ACR-1, RCR-436) Mustard (JM-1 & 4, Pusa Bold)	<ul style="list-style-type: none"> Mulching in rabi crops Irrigation only at critical stages by check basin/ Border strip method Give irrigation using own source of available water plus tank water (conjunctive use) 	Linkage with NSC, MPSC, RVSKVV, farmers' societies, state seed firms/Agril. University and seed corporations for supply of seed and with RKVY for seed drills
	Shallow red soils	Coriander Mustard	Coriander (JD-1, Sympo-S33, ACR-1, RCR-436) Mustard (JM-1 & 4, Pusa Bold)		

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				
1	Suggested contingency measure			
	2	3	4	5
	Vegetative stage	Flowering stage	Crop maturity stage	Post harvest
Soybean	<ul style="list-style-type: none"> Drain excess water Ridge and furrow system of planting Top dressing with N 10-20 kg/ha at optimum soil moisture Intercultivation to loosen the soil and to improve aeration 	<ul style="list-style-type: none"> Drain excess water Intercultivation to loosen the soil and improve aeration Foliar spray with 2% urea/DAP to regain lost vigour 	<ul style="list-style-type: none"> Drain excess water Harvesting on a clear sunny day Shift the produce to safer place 	Dry the produce up to 10- 12 % moisture before storage
Wheat	<ul style="list-style-type: none"> Drain excess water Ridge and furrow system of planting Top dressing with N 20-30 kg/ha at optimum soil moisture to regain vigour Intercultivation to loosen the soil and to improve aeration 	-do-	-do-	-do-

Condition- Continuous high rainfall in a short span leading to water logging				
Suggested contingency measure				
1	2	3	4	5
	Vegetative stage	Flowering stage	Crop maturity stage	Post harvest
Maize	<ul style="list-style-type: none"> • Drain excess water • Top dressing of nitrogenous fertilizers 20-30kg/ha at optimum soil moisture to gain vigour • Earthing 	<ul style="list-style-type: none"> • Drain excess water • Top dressing of nitrogenous fertilizers 20-30kg/ha at optimum soil moisture to gain vigour • Earthing 	-do-	-do-
Sorghum	-do-	-do-	-do-	-do-
Chickpea	<ul style="list-style-type: none"> • Drain excess water • Ridge and furrow system of planting • Top dressing with N 10-20 kg/ha at optimum soil moisture • Intercultivation to loosen the soil and to improve aeration 	<ul style="list-style-type: none"> • Drain excess water • Intercultivation to loosen the soil and improve aeration • Foliar spray with 2% urea/DAP to regain lost vigour 	<ul style="list-style-type: none"> • Drain excess water • Harvesting on a clear sunny day • Shift the produce to safer place 	Dry the produce up to 10- 12 % moisture before storage
Horticulture Fruits	<ul style="list-style-type: none"> • Application of fungicides to check dumping off 	<ul style="list-style-type: none"> • Immediate made provision of drainage of water • Application n-fertilizers just after drainage 	<ul style="list-style-type: none"> • Earthing and application of fungicides • Stop harvesting till weather clear 	
Vegetables	<ul style="list-style-type: none"> • Application of fungicides to check dumping off 	<ul style="list-style-type: none"> • Immediate made provision of drainage of water • Application n-fertilizers just after drainage 	<ul style="list-style-type: none"> • Earthing and application of fungicides • Stop harvesting till weather clear 	
Condition-Heavy rainfall with high speed wind in a short span				
Soybean	<ul style="list-style-type: none"> • Drain excess water • Top dressing with N 10-20 kg/ha at optimum soil moisture 	<ul style="list-style-type: none"> • Drain excess water • Intercultivation to loosen the soil and improve aeration • Foliar spray with 2% urea/DAP to regain lost vigour 	<ul style="list-style-type: none"> • Drain excess water • Harvesting on a clear sunny day • Shift the produce to safer place 	Maintain optimum moisture content in grain by drying before bagging and marketing
Wheat	<ul style="list-style-type: none"> • Drain excess water 	<ul style="list-style-type: none"> • Drain excess water 	<ul style="list-style-type: none"> • Drain excess water 	Maintain optimum moisture of

Condition- Continuous high rainfall in a short span leading to water logging				
Suggested contingency measure				
1	2	3	4	5
	Vegetative stage	Flowering stage	Crop maturity stage	Post harvest
	<ul style="list-style-type: none"> • Top dressing of nitrogenous fertilizers 20-30kg/ha at optimum soil moisture to gain vigour 	<ul style="list-style-type: none"> • Top dressing of nitrogenous fertilizers 20-30kg/ha at optimum soil moisture to gain vigour • Adopt need based plant protection measures 	<ul style="list-style-type: none"> • Adopt need based plant protection measures • Harvest on a clear sunny day 	grain by drying
Maize	<ul style="list-style-type: none"> • Drain excess water • Top dressing of nitrogenous fertilizers 20-30kg/ha at optimum soil moisture to gain vigour • Earthing 	<ul style="list-style-type: none"> • Drain excess water • Top dressing of nitrogenous fertilizers 20-30kg/ha at optimum soil moisture to gain vigour • Earthing 	-do-	-do-
Sorghum	-do-	-do-	-do-	-do-
Chickpea	<ul style="list-style-type: none"> • Drain excess water • Foliar spray with 2% urea after cessation of rains 	<ul style="list-style-type: none"> • Drain excess water • Foliar spray with 2% urea after cessation of rains 	<ul style="list-style-type: none"> • Drain excess water • Timely harvest of produce on a clear sunny day 	Shifting to safer place and drying of the produce before bagging and storage
Horticulture				
Crop1- Fruits	Proper drainage and removal of excess water from root zone	Proper drainage and removal of excess water from root zone	Proper drainage and removal of excess water from root zone	
Crop2 - Vegetables	Proper drainage and removal of excess water from root zone	Proper drainage and removal of excess water from root zone	Proper drainage and removal of excess water from root zone	
Outbreak of pests and diseases due to unseasonal rains				
Soybean	<ul style="list-style-type: none"> • Early planting to minimize the incidence of girdle beetle and green semilooper • Foliar spray with 5% NSKE or dimethoate 30EC 1 ml/l to protect against semilooper 	<ul style="list-style-type: none"> • Monitor adult moth activity of Spodoptera through pheromone traps (10 traps/ha) • Apply Quinalphos 25 EC 2ml/l or Emamectin benzoate 5 SG 4g/10 lit to control spodoptera 	-	-
Maize	Whorl application of phorate 10G or carbofuran 3 G @ 8-10 kg/ha to	• Spray of mancozeb @ 0.25-0.4% at 8-10 days interval to	Trichoderma mixed with FYM @10g/kg at 10 days prior to its use	-

Condition- Continuous high rainfall in a short span leading to water logging				
Suggested contingency measure				
1	2	3	4	5
	Vegetative stage	Flowering stage	Crop maturity stage	Post harvest
	control shoot borer attack	control <i>Turcicum</i> leaf blight	in the field can be applied to control stalk rot incidence which is likely during post flowering	
Sorghum	-do-	<ul style="list-style-type: none"> Spray of mancozeb @ 0.25-0.4% at 8-10 days interval to control leaf blight 	-do-	-
Wheat	Spray 0.2 % mancozeb 76% WP against wheat rust.	Spray 0.2 % mancozeb 76% WP against wheat rust	Spray 0.2 % mancozeb 76% WP against wheat rust	-
Chickpea	<ul style="list-style-type: none"> Spray triazophos 40 % EC @ 1-1.5 l/ha in chickpea against pest incidence. “T” shaped pegs placed in late sown chickpea field for biological control of pod borer and for chemical control spraying of Quinolphos 25 EC or Chlorpyriphos 20 EC C or Methyl Parathion 50 EC @ 600 ml dissolve in 500 L of water should be used. Dusting of Felvunerate 0.4% or Endosulphan 4% 15-20 kg or Quinolphos 1.5 WP 20-25 kg /ha with duster. 	<ul style="list-style-type: none"> Spray triazophos 40 % EC @ 1-1.5 l/ha in chickpea against pest incidence. T” shaped pegs placed in late sown chickpea field for biological control of pod borer and for chemical control spraying of Quinolphos 25 EC or Chlorpyriphos 20 EC C or Methyl Parathion 50 EC @ 600 ml dissolve in 500 L of water should be used. Dusting of Felvunerate 0.4% or Endosulphan 4% 15-20 kg or Quinolphos 1.5 WP 20-25 kg/ha with duster. 	<ul style="list-style-type: none"> Spray triazophos 40 % EC @ 1-1.5 l/ha in chickpea against pest incidence. Carry out critical survey of fields for insect and disease attack in crops 	-
Horticulture	Clean cultivation .Proper monitoring , Used of light trap , Pheromone trap ,Used control measure according to situation	Clean cultivation .Proper monitoring , Used of light trap , Pheromone trap ,Used control measure according to situation	Clean cultivation .Proper monitoring , Used of light trap , Pheromone trap ,Used control measure according to situation	

2.3 Floods:NA

Condition	Suggested contingency measure ^o			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Transient water logging/ partial inundation ¹				
Continuous submergence for more than 2 days ²				
Sea water inundation ³				

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
1	2	3	4	5
Heat Wave				
Wheat	Light irrigation Provision of Wind breaks	Light irrigation	Light irrigation	Harvest at physiological maturity
Chickpea	-do-	-do-	-do-	-do-
Horticulture				
Fruits (Mango and guava)	Protect the seedlings by providing the shed Arrangement of wind breaks	Bordeaux paste to exposed bark branches of the tree to protect from Sun scorching Mulching around the base of trunk of the tree	Bordeaux paste to exposed bark branches of the tree to protect from Sun scorching Mulching around the base of trunk of the tree	Harvesting of crop as early as possible and marketed or keep in cold store Store the produce in shed or safe place.
Vegetables (Potato, tomato and onion)	Protect the seedlings by providing the shed Arrangement of wind breaks	Light irrigation at night hours	Application of N-fertilizers	Harvest and marketed as early as possible
Cold wave				
Chick pea	Light irrigation Smoking during night	Light irrigation Smoking during night	Light irrigation Smoking during night	Harvest at physiological maturity
Wheat	-do-	-do-	-do-	-do-
Horticulture				
Fruits (Mango and guava)	Light irrigation Smoking during night	Light irrigation Smoking	Light irrigation Smoking	Harvesting of crop as early as possible and marketed or keep in cold store Store the produce in shed or safe place.

Extreme event type	Suggested contingency measure			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Vegetables (Potato, tomato and onion)	Light irrigation Smoking during night	Light irrigation Smoking during night	Light irrigation Smoking during night	Harvest and marketed as early as possible
Frost				
Wheat	-do-	-do-	-do-	Harvest at physiological maturity
Chick pea	-do-	-do-	-do-	-do-
Horticulture				
Fruits (Mango and guava)	Light irrigation Smoking during night	Light irrigation Smoking during night	Light irrigation Smoking during night	<ul style="list-style-type: none"> Harvesting of crop as early as possible and marketed or keep in cold store Store the produce in shed or safe place.
Vegetables (Potato, tomato and onion)	-do-	-do-	-do-	Harvest and marketed as early as possible
Hailstorm				
Wheat	Re-sowing in case of severe damage	Light and frequent irrigation	Apply 10% additional nitrogen Light and frequent irrigation	Timely harvesting and shifting of produce to safer place in case of early forewarning
Chick pea	-do-	-do-	-do-	-do-
Horticulture				-do-
Fruits (Mango and guava)	Not applicable	Prune damaged branches and twigs and apply Bordeaux paste 1% to avoid fungal infections	Prune damaged branches and twigs and apply Bordeaux paste 1% to avoid fungal infections Apply hormonal spray NAA 20ppm + 1% urea to prevent flower drop	Immediate harvesting, grading and marketing of produce
Vegetables (Potato, tomato and onion)	Re-sowing in case of severe damage	Light and frequent irrigation	Apply 10% additional nitrogen Light and frequent irrigation	Timely harvesting and shifting of produce to safer place in case of early forewarning
Cyclone : NA				

2.5 Contingent strategies for Livestock, Poultry & Fisheries

2.5.1 Livestock

	Suggested contingency measures		
	Before the event ^s	During the event	After the event
1	2	3	4
Drought			
Feed and fodder availability	<ul style="list-style-type: none"> Adoption of fodder bank , use of surplus fodder for silage , urea treatment :4kg Urea 75 litter of water 100 kg fodder. Insurance 	<ul style="list-style-type: none"> Use of reserve fodder Use of stored silage Balance ration Use of chaffed fodder Transportation of fodder from adjoining districts if excess there 	<ul style="list-style-type: none"> Regularly Sprinkling of water on live stock body . Use of wet <i>bhusa</i>. Availing the insurance . Separation of unproductive livestock .
Drinking water	<ul style="list-style-type: none"> Provision of hygienic supply of water . Storage of water in the tank for drinking Excavations of bore wells 	<ul style="list-style-type: none"> Judicious use of stored water Use of potassium permanganate 1ppm Heat treatment of Water before use. 	<ul style="list-style-type: none"> Ensure the cleanliness of drinking water
Health and disease management	<ul style="list-style-type: none"> Deworming , regular vaccination of HS , BQ and FMD provision of mineral mixture , 	<ul style="list-style-type: none"> Treatment of sick animal through camp. Isolation of sick animals . 	Culling of sick animal
Floods			
Feed and fodder availability	Adoption of fodder bank Insurance. Repair of animal shed Shifting of animals from the flood area	Use of reserve fodder Balance ration Use of chaffed fodder Transportation excess fodder from adjoining district	Regularly Sprinkling of water on live stock body .use of wet <i>bhusa</i> . Availing the insurance . Separation of unproductive livestock farm .
Drinking water	Ensure availability of clean hygienic water	Clean water Water after boiling / alum treatment .	Ensure the cleanliness of drinking water
Health and disease management	<ul style="list-style-type: none"> Regular vaccination of HS , BQ and FMD provision of mineral mixture , preparation of water proof shed provision of dry fodder , Deworming 	<ul style="list-style-type: none"> Treatment of sick animal through camp. Isolation of sick animals. Treatment of sick animals 	Culling of sick animal
Cyclone	NA	NA	NA
Feed and fodder availability			
Drinking water			

	Suggested contingency measures		
	Before the event ^s	During the event	After the event
Health and disease management			
cold wave			
Shelter/environment management	<ul style="list-style-type: none"> Plan of proper housing , Collection of waste gunny bags for shelter. 	<ul style="list-style-type: none"> Use of gunny bag to cover the window. 	<ul style="list-style-type: none"> To obtain the milk production level with curative measure
Health and disease management	<ul style="list-style-type: none"> Vaccination Storage of balanced ration Storage of medicines 	<ul style="list-style-type: none"> Treatment of sick animals Balanced ration Use of warm water Inhalation of <i>Eucalyptus</i> water 	Culling of sick animals
Heat wave			
Shelter/environment management	Provision of proper shade Provision of trees Reflector paints over roof	Provision of cold water	
Health and disease management			

2.5.2 Poultry

	Suggested contingency measures			Convergence/linkages with ongoing programs, if any
	Before the event ^a	During the event	After the event	
1	2	3	4	5
Drought	Insurance of birds		Materialized the benefit of insurance	
Shortage of feed ingredients	Storage of food ingredients			
Drinking water	Storage of drinking water			
Health and disease management	Deworming Vaccination Deticking of shed Provision of rapid growing strain	Use of high weight gain breeding stock Treatment of sick birds	Culling of sick birds	
Floods				
Shortage of feed ingredients	Storage of poultry feed Storage of mineral mixture	Use of stored feed Offer dry feed Avoid dampness in feed to minimize the chances of aflotoxins	Optimum feeding to maintain egg production and proper weight	

Drinking water	Storage of clean drinking water			
Health and disease management	Provision of Vaccination Deworming	Proper Vaccination	Culling of sick birds	
Cyclone				
Shortage of feed ingredients				
Drinking water				
Health and disease management				
Heat wave and cold wave				
Shelter/environment management	Repair of sheds Use of sprinklers for maintenance of temperature	Protection of birds from heat		Culling of sick birds
Health and disease management	Deworming Vaccination	Vaccination		
		Deworming		
		Deticking		

2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event ^a	During the event	After the event
1	2	3	4
1) Drought			
A. Capture			
Marine	-	-	-
Inland			
(i) Shallow water depth due to insufficient rains/inflow	Harvesting of fish Shifting of small sized fishes to in small storage water bodies such as Plastic or cemented structures	Harvesting of fish Shifting of small sized fishes to in small storage water bodies such as Plastic or cemented structures Provision of net-shed over the tank	Safe disposal of first event of runoff for storage of only clean water Waste ware should be protected by net for stay of fishes in the tank.
(ii) Changes in water quality	Apply the lime to neutralize the concentrated water	Apply the lime to neutralize the concentrated water	-
(iii) Any other	-	-	-

B. Aquaculture			
(i) Shallow water in ponds due to insufficient rains/inflow			
(ii) Impact of salt load build up in ponds / change in water quality			
(iii) Any other			
2) Floods			
A. Capture			
Marine			
Inland			
(i) Average compensation paid due to loss of human life			
(ii) No. of boats / nets/damaged			
(iii) No.of houses damaged			
(iv) Loss of stock			
(v) Changes in water quality			
(vi) Health and diseases			
B. Aquaculture			
(i) Inundation with flood water			
(ii) Water contamination and changes in water quality			
(iii) Health and diseases			
(iv) Loss of stock and inputs (feed, chemicals etc)			
(v) Infrastructure damage (pumps, aerators, huts etc)			
(vi) Any other			
3. Cyclone / Tsunami : No any possibilities of event in the district			
A. Capture	-	-	-
Marine	-	-	-
(i) Average compensation paid due to loss of fishermen lives	-	-	-
(ii) Avg. no. of boats / nets/damaged	-	-	-
(iii) Avg. no. of houses damaged	-	-	-
Inland	-	-	-

B. Aquaculture	-	-	-
(i) Overflow / flooding of ponds	-	-	-
(ii) Changes in water quality (fresh water / brackish water ratio)	-	-	-
(iii) Health and diseases	-	-	-
(iv) Loss of stock and inputs (feed, chemicals etc)	-	-	-
(v) Infrastructure damage (pumps, aerators, shelters/huts etc)	-	-	-
(vi) Any other	-	-	-
4. Heat wave and cold wave			
A. Capture			
Marine	-	-	-
Inland	Net-shed	-	-
B. Aquaculture			
(i) Changes in pond environment (water quality)			
(ii) Health and Disease management			
(iii) Any other			

^a based on forewarning wherever available