State: Madhya Pradesh

Agriculture Contingency Plan: Sehore District

	1.0 District Agriculture profile				
1.1	**Agro-Climatic/Ecological Zone**				
	Agro Ecological Sub Region (ICAR)	Malwa plateau, Vindhyan scrupland and Narmada valley			
	Agro-Climatic Region (Planning Commission)	Central Plateau And Hills Region (VIII) (52%), Western Plateau And Hills Region (IX) (48%)			
	Agro Climatic Zone (NARP)	Malwa Plateau Zone (MP-10) (46%), Vindhya Plateau Zone (MP-5) (42%)			
	List all the districts or part thereof falling under the NARP Zone	Bhopal, Dewas, Indore, Mandsaur, Neemurch, Rajgarh, Ratlam, Sajapur, Ujjain and Sehore			
	Geographic coordinates of district	Latitude	Longitude	Altitude	
		22^0 31' to 23^0 40' North	$76^0$22' to $78^0$08 East	498 MSL	
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Zonal Agricultural Research Station, RAK College of Agriculture, Sehore (M.P.)			
	Mention the KVK located in the district	Ichhawar, District Sehore (M.P.)			
1.2	**Rainfall**	Average (mm)	Normal Onset (specify week and month)	Normal Cessation (specify week and month)	
	SW monsoon (June-Sep):	1261	June 2nd week	September 2nd week	
	NE Monsoon(Oct-Dec):				
	Winter (Jan- March)		-	-	
	Summer (Apr-May)		-	-	
	Annual	1261	-	-	

1.3	**Land use pattern of the district** (latest statistics)	Geographical area	Cultivable area	Forest area	Land under non-agricultural use	Permanent pastures	Cultivable wastel and	Land under Misc. tree crops and groves	Barren and unculti vable land	Current fallows	Other fallows
	Area (Lakh ha)	656.4	385.2	172.6	37.7	36.2	13	0.0	8.0	0.4	3.3

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

1. 4	**Major Soils**	Area (‘000 ha)	Percent (%) of total
	1. Deep soil	406.40	61.87
	2. Medium deep soils	32.8	5.08
	3. Shallow soils	217.00	33.05
1.5	**Agricultural land use**	Area (‘000 ha)	Cropping intensity %
	Net sown area	385.2	158
	Area sown more than once	222.1	
	Gross cropped area	607.3	

1.6	**Irrigation**	Area (‘000 ha)	Percent (%)		
	Net irrigated area	229.7			
	Gross irrigated area	229.7			
	Rainfed area	155.5			
	Sources of Irrigation	Number	Area (‘000 ha)		% area
	Canals	94	41.2		
	Tanks	64	6.3		
	Open wells	33647	83.4		
	Bore wells	20877	53.9		
	Lift irrigation	54588	143.6		
	Other sources		44.9		
	Total				
	Pumpsets				
	Micro-irrigation				
	Groundwater availability and use	No. of blocks	% area	Quality of water	
	Over exploited				
	Critical				
	Semi- critical				
	Safe		62%		
	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 ('000 ha)***					
			Kharif		***Rabi***		**Summer**	**Total**
			Irrigated	***Rainfed***	***Irrigated***	***Rainfed***		
	1	Soybean		265.8				
	2	Maize		21.4				
	3	Sorghum		4.2				
	4	Pigeon pea		6.8				
	5	Wheat			160.1			
	6	Gram				90.1		
	7	Lentil				5.6		
		Horticulture crops - Fruits	**Total area**		**Irrigated**		**Rainfed**	
	1	Mango	0.657					
	2	Guava	0.555					
		Orange	0.587					
		Horticultural crops - Vegetables	**Total area**		**Irrigated**		**Rainfed**	
	1	Tomato	0.790					
	2	Potato	0.235					
		Spices						
	1	Coriander	0.940					
	2	Garlic	1.700					
	3	Chilly	1.020					
		Flower						
		Mari Gold	**0.855**					
		Rose	**0.048**					
		Medicinal and Aromatic crops	**Total area**		**Irrigated**		**Rainfed**	
		Plantation crops	**Total area**		**Irrigated**		**Rainfed**	
		Fodder crops	**Total area**		**Irrigated**		**Rainfed**	
		Total fodder crop area						
		Grazing land						
		Sericulture etc						
		Others (Specify)						

Source – Economical survey of Madhya Pradesh, Directorate of economics & Statistics, Madhya Pradesh, 2007-2008

1.8	**Livestock**	**Number ('000)**		
	Cattle	346.7		
	Buffaloes total	171.2		
	Commercial dairy farms			
	Goat	88.8		
	Sheep	0.4		
	Others (Camel, Pig, Yak etc.)	10.0		
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	287.9	1083						
Crop 2	Maize	26.2	1224						
Crop 3	Sorghum	7.8	1857						
Crop 4	Tur	4.9	721						
Crop 5	Wheat			307.4	1920				
Crop 6	Gram			85.4	948				
Others	Lentil			3.9	696				
	Major Horticultural crops								
Crop 1									
Crop 2									
Crop 3									

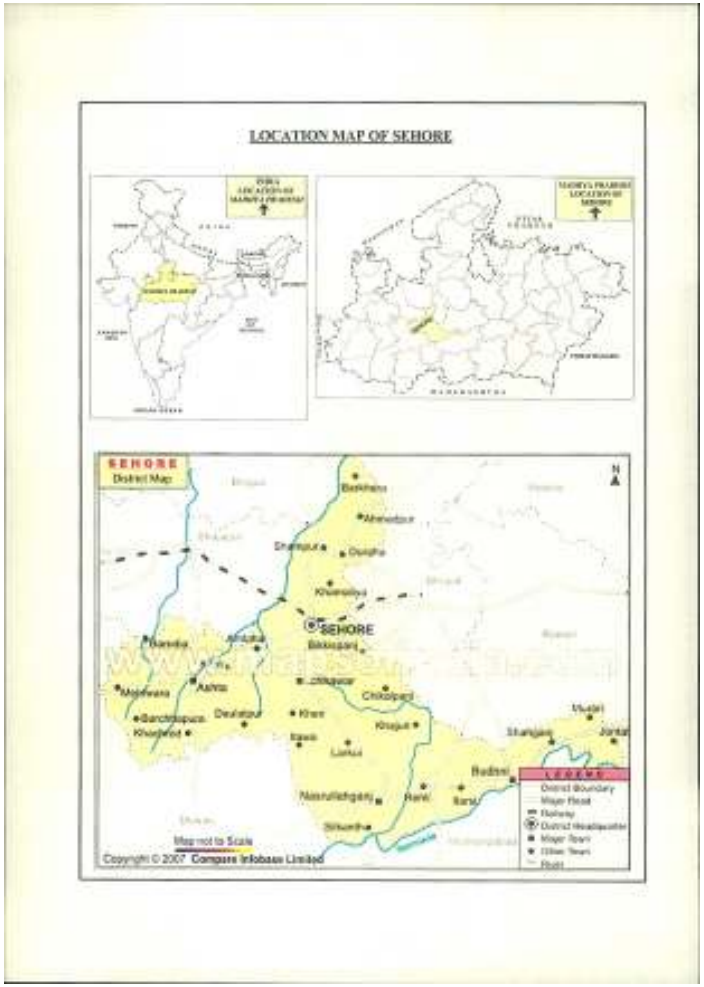
1.12	**Sowing window for 5 major crops (start and end of sowing period)**	Crop 1:Soybean	2: Sorghum/Maize	3: Tur	4: Wheat	5: Gram
	Kharif- Rainfed	15th June to 7th July	15th June to 30th June	15th June to 15th July		
	Kharif-Irrigated					
	Rabi- Rainfed				15th Oct-30th Oct	1st Oct-30 Oct
	Rabi-Irrigated				15th Nov-15th Dec	15th Oct-10Nov

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						September	
	Flood							
	Cyclone							
	Hail storm							
	Heat wave							
	Cold wave							
	Frost						January	
	Sea water inundation							
	Pests and diseases (specify)							

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

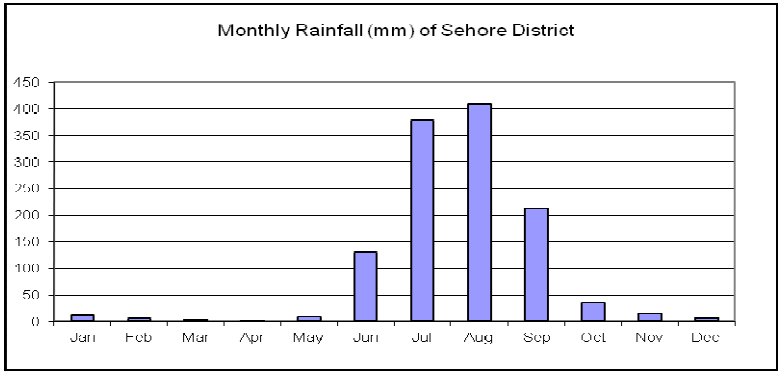
Annexure I

Location map



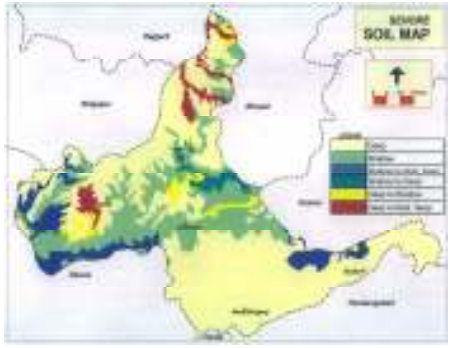
Annexure II

Mean Monthly 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**
1	2	3	4	5	6
Delay by 2 weeks **4th week of June**	Deep soil	Soybean	JS-93-05, Js 95-60	• Ridge sowing of kharif crops • Seed dressing with Thiram + carbendazim in equal ratio @3g/kg seed • Frequent interculture to create soil mulch	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
		Maize	Maize (JM-216, JM-8, JM-12)		
		Sorghum	JJ-938, JJ-1041, JJ-1022, CSH-18		
		Pigeon pea	ICPL-87, ICPL87-119,		
	Shallow soil	Soybean	JS-93-05, Js 95-60	• Seed dressing with Thiram + carbendazim in equal ratio @3g/kg seed • Frequent interculture to create soil mulch • Weed mulching	
		Maize	Maize (JM-216, JM-8, JM-12)		
		Sorghum	JJ-938, JJ-1041, JJ-1022, CSH-18		
		Pigeon pea	ICPL-87, ICPL87-119,		

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
1	2	3	4	5	6
Delay by 4 weeks **2nd week of July**	Deep soil	Soybean	JS-93-05, JS 95-60	• Seed dressing with Thiram + carbendazim in equal ratio @3g/kg seed • Use biofertilizer (Rhizobium culture) • Planting on ridge and furrow system • 25 % higher seed rate	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
		Maize	Maize (JM-216, JM-8, JM-12)		
		Sorghum	JJ-938, JJ-1041, JJ-1022, CSH-18		
		Pigeon pea	ICPL-87, ICPL87-119,		
	Shallow soil	Soybean	JS-93-05, JS 95-60		
		Maize	Maize (JM-216, JM-8, JM-12)		
		Sorghum	JJ-938, JJ-1041, JJ-1022, CSH-18		
		Pigeon pea	ICPL-87, ICPL87-119,		

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**
1	2	3	4	5	6
Delay by 6 weeks **4th week of July**	Deep soil	Soybean	Sweet corn(Sugar 75)75-Potato or Hy. Maize-wheat or Kharif onion	• Seed dressing with Thiram + carbendazim in equal ratio @3g/kg seed • Planting on ridge and furrow system • 25 % higher seed rate • Need based irrigation using harvested rain water by sprinkler	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
		Maize			
		Sorghum	Maize / sweet corn for cobs		
		Pigeon pea	Maize for fodder		
	Shallow soil	Soybean	Sweet corn(Sugar 75)75-Potato or Hy. Maize or Kharif onion		
		Maize			
		Sorghum	Maize / sweet corn for cobs		
		Pigeon pea	Maize for fodder		

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**
1	2	3	4	5	6
Delay by 8 weeks **2nd week of Aug**	Deep soil	Soybean Maize Sorghum Pigeon pea	Horse gram Sunflower Chandrasur Maize/sweet corn for cobs	Need based irrigation using harvested rain water by sprinkler	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 soil	Soybean Maize Sorghum Pigeon pea	Horse gram Sunflower Chandrasur Maize/sweet corn for cobs		

Condition		**Suggested contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop / Cropping system**	**Crop management**	**Soil nutrient and moisture conservation measures**
1	2	3	4	5
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	Deep soil	Soybean Maize Sorghum Pigeon pea	• Weed management through intercultural operation between rows using *doura* • Gap filling with improved variety if the population is <75% of optimum • Resow the crop if the damage will be severe	• Dust mulching • Green leaf mulch in between crop rows
	Shallow soil	Soybean Maize Sorghum Pigeon pea		

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 soil	Soybean Maize Sorghum Pigeon pea	• Weed management through intercultural operation between rows • Spray 2% solution of Murat of potash • Girdle beetle control by spraying of Quinalphos@2 ml / l water in Soybean	• Dust mulching through frequent interculture • Green leaf mulch in between crop rows • Supplemental irrigation through farm pond water/other sources • Top dressing of 10-20 kg N/ha to both the components after relief of dry spell
	Shallow soil	Soybean Maize Sorghum Pigeon pea		

Condition	Major Farming situation	Suggested contingency measures		
		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 soil	Soybean Maize Sorghum Pigeon pea	• 20% defoliation in soybean • Insecticidal spray for control of green semi looper in soybean • Spray of anti transparent • Insecticidal spray for control of late shoot borer in sorghum	• Dust mulching through frequent interculture • Green leaf mulch in between crop rows • Supplemental irrigation through farm pond water/other sources
	Shallow soil	Soybean Maize Sorghum Pigeon pea		

Condition			Suggested Contingency measures	
Terminal drought	**Major Farming situation**	**Normal Crop / Cropping system**	**Crop management**	**Rabi Crop Planning**
1	2	3	4	5
(Early withdrawal of monsoon)	Deep soil	Soybean	• Reduce the plant population in sorghum by uproot the plants from alternate row • Supplemental irrigation	• Prepare land either for rabi chickpea/safflower • Seed priming i.e Sowing of soaked seed of safflower/Chickpea • If the damage is very severe, plan for short duration crops like horsegram/fodder legumes
		Maize		
		Sorghum		
		Pigeon pea		
	Shallow soil	Soybean		
		Maize		
		Sorghum		
		Pigeon pea		

2.1.2 Drought - Irrigated situation

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/ cropping system**	**Change in crop/ cropping system**	**Agronomic measures**	**Remarks on Implementation**
1	2	3	4	5	6
Delayed release of water in canals due to low rainfall	Deep soil	Chickpea Wheat Lentil	Chickpea JG 130 Wheat HW 2004, Harshita Potato(Kufari early)	-Dry sowing followed by irrigation -Balanced fertilization -Application of vermi compost @3-4 t/ha . -Select short duration varieties for sowing -Seed dressing with Thirum+carbodezim in equal ratio @3g/kg seed -Water harvesting and use collected water as life saving irrigation -Cultivate the field on receiving pre monsoon showers -Need based irrigation by sprinkler	Management of seed under RKVY, NFSM, ISOPAM etc
	Shallow black soil	Chickpea Wheat Lok-1 Lentil	Chickpea JG 130 Wheat :HW 2004, Harshita Safflower JSF 7,JSF73 Potato(Kufari early)		

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/ cropping system**	**Change in crop/ cropping system**	**Agronomic measures**	**Remarks on Implementation**
1	2	3	4	5	6
Limited release of water in canals due to low rainfall	Deep soils	Chickpea	Chickpea JG 130 Wheat HW 2004, Harshita Potato(Kufari early)	Dry sowing followed by irrigation -Balanced fertilization -Application of wormi compost @3-4 t/ha -Select short duration varieties for sowing -Seed dressing with Thirum + carbodezim in equal ratio @3g/kg seed -Water harvesting and use collected water as life saving irrigation -Cultivate the field on receiving pre monsoon showers -Need based irrigation by sprinkler - Give irrigation using own source of available water plus tank water (conjunctive use)	Management of seed under RKVY, NFSM, ISOPAM etc
		Wheat			
		Lentil			
		Chickpea			
	Shallow soils	Wheat Lok-1	Chickpea JG 130 Wheat HW 2004, Harshita Potato(Kufari early)		
		Lentil			

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/ cropping system**	**Change in crop/ cropping system**	**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 black soils	Chickpea	Chickpea JG 130, JAKI-92-18 Wheat HW 2004, Harshita Potato(Kufari early)	-Seed priming in water for 12-15 hrs - Give irrigation using own source of available water plus tank water (conjunctive use)	Awareness needed; Trainings in ATMA,FTC
		Wheat			
		Lentil			
	Shallow black soils	Chickpea	Chickpea JG 130, JAKI-92-18 Wheat HW 2004, Harshita Potato(Kufari early)		
		Wheat Lok-1			
		Lentil			

Condition			Suggested Contingency measures		
	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
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	Deep black soils	Chickpea Wheat Lentil	Chickpea JG 130, JAKI-92-18 Wheat HW 2004, Harshita Potato(Kufari early)	• Mulching in *kharif* and *rabi* crops • Supplemental irrigation by sprinkler	Awareness needed; Trainings in ATMA,FTC
	Shallow black soils	Chickpea Wheat Lok-1 Lentil	Chickpea JG 130, JAKI-92-18 Wheat HW 2004, Harshita Potato(Kufari early)		

Condition			Suggested Contingency measures		
	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
Insufficient groundwater recharge due to low rainfall	Deep black soils	Chickpea Wheat Lentil	Chickpea JG 130, JAKI-92-18 Wheat HW 2004, Harshita Potato(Kufari early)	• Mulching in *kharif* and *rabi* crops • Supplemental irrigation by sprinkler	Awareness needed; Trainings in ATMA,FTC
	Shallow black soils	Chickpea Wheat Lok-1 Lentil	Chickpea JG 130, JAKI-92-18 Wheat HW 2004, Harshita Potato(Kufari early)		

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

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**
Soybean	• 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	• Drain excess water • Intercultivation to loosen the soil and improve aeration • Foliar spray with 2% urea/DAP to regain lost vigour	• 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	• 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-
Maize	• Drain excess water • Top dressing of nitrogenous fertilizers 20-30kg/ha at optimum soil moisture to gain vigour • Earthing	• 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	• 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	• Drain excess water • Intercultivation to loosen the soil and improve aeration • Foliar spray with 2% urea/DAP to regain lost vigour	• 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	-do-	-do-	-do-	-do-

Condition-Heavy rainfall with high speed wind in a short span				
Soybean	• Drain excess water • Top dressing with N 10-20 kg/ha at optimum soil moisture	• Drain excess water • Intercultivation to loosen the soil and improve aeration • Foliar spray with 2% urea/DAP to regain lost vigour	• 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	• Drain excess water • Top dressing of nitrogenous fertilizers 20-30kg/ha at optimum soil moisture to gain vigour	• Drain excess water • Top dressing of nitrogenous fertilizers 20-30kg/ha at optimum soil moisture to gain vigour • Adopt need based plant protection measures	• Drain excess water • Adopt need based plant protection measures • Harvest on a clear sunny day	Maintain optimum moisture of grain by drying
Maize	• Drain excess water • Top dressing of nitrogenous fertilizers 20-30kg/ha at optimum soil moisture to gain vigour • Earthing	• 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	• Drain excess water • Foliar spray with 2% urea after cessation of rains	• Drain excess water • Foliar spray with 2% urea after cessation of rains	• 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	-do-	-do-	-do-	-do-
Outbreak of pests and diseases due to unseasonal rains				
Soybean	• 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	• 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 control shoot borer attack	• Spray of mancozeb @ 0.25-0.4% at 8-10 days interval to control *Turcicum* leaf blight	Trichoderma mixed with FYM @10g/kg at 10 days prior to its use in the field can be applied to control	-

			stalk rot incidence which is likely during post flowering	
Sorghum	-do-	• 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	• 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.	• 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.	• 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				
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	
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	

2.3 Floods: NA

Condition	Suggested contingency measure			
Transient water logging/ partial inundation	**Seedling / nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Continuous submergence for more than 2 days				
Sea water intrusion	NA			

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

Extreme event type	Suggested contingency measure[r]			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Heat Wave	NA			
Cold wave	NA			
Frost				
Chick pea	• 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.
Horticulture ?				
Hailstorm	NA			
Cyclone	NA			

2.5 Contingent strategies for Livestock, Poultry & Fisheries

2.5.1 Livestock

Drought	**Suggested contingency measures**		
	Before the event[s]	**During the event**	**After the event**
Feed and fodder availability	Adoption of fodder bank , use of surplus fodder for silage , urea treatment :4kg Urea 75 litter of water 100 kg fodder. Insurance	Use of reserve fodder Use of stored silage Balance ration Use of chaffed fodder Transportation of fodder from ad joining districts if excess there	Regularly Sprinkling of water on live stock body . Use of wet *bhusa*. Availing the insurance . Separation of unproductive livestock .
Drinking water	Provision of hygienic supply of water . Storage of water in the tank for drinking Excavations of bore wells .	Judicious use of stored water . Use of potassium permanganate 1ppm Heat treatment of Water before use.	Ensure the cleanlinell of drinking water
Health and disease management	De-worming, regular vaccination of HS , BQ and FMD provision of mineral mixture	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 ad joining district	Regularly Sprinkling of water on live stock body .use of wet bhusa. 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	Regular vaccination of HS , BQ and FMD provision of mineral mixture , preparation of water proof shed provision of dry fodder , De-worming	Treatment of sick animal through camp. Isolation of sick animals. Treatment of sick animals	Culling of sick animal
Drinking water	Provision of hygienic supply of water . Storage of water in the tank for drinking Excavations of bore wells .	Judicious use of stored water. Use of potassium permanganate 1ppm Heat treatment of Water before use.	Ensure the cleanlinell of drinking water

Health and disease management	De-worming , regular vaccination of HS , BQ and FMD provision of mineral mixture ,	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 ad joining district	Regularly Sprinkling of water on live stock body .use of wet bhusa. 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	Regular vaccination of HS , BQ and FMD provision of mineral mixture , preparation of water proof shed provision of dry fodder , De-worming	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			
Health and disease management			
cold wave			
Shelter/environment management	Plan of proper housing , Collection of waste gunny bags for shelter.	Use of gunny bag to cover the window.	To obtain the milk production level with curative measure
Health and disease management	Vaccination Storage of balanced ration Storage of medicines	Treatment of sick animals Balanced ration Use of warm water Inhalation of *Eucalyptus* 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**	
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	De-worming Vaccination De-ticking 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 De-worming	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	De-worming Vaccination	Vaccination		
		De-worming		
		De-ticking		

2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event[a]	**During the event**	**After the event**
1) Drought			
A. Capture			
Marine	-	-	-
Inland			
(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)			

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			