State: Madhya Pradesh

Agriculture Contingency Plan: Ashoknagar 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)	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	515 m.	
	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 (RVSKVV) located at Krishi Upaj Mandi Prangan Ashoknagar (M.P.) 473331			
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):	772	34	Third week of June	Last week of September
	NE Monsoon(Oct-Dec):	110	04		
	Winter (Jan- March)	-	-		-
	Summer (Apr-May)	-	-		-
	Annual	882	38		-

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)	467.4	307.1	52.8	27.6	12.5	25.4	0.0	36.2	2.3	3.5

1. 4	**Major Soils**	Area ('000 ha)	Percent (%) of total
	Shallow Soils	638.20	57.79
	Medium deep Soils	54. 20	4. 92
	Deep Soil	411.40	37.29

1.5	**Agricultural land use**	Area ('000 ha)	Cropping intensity %
	Net sown area	307.1	140
	Area sown more than once	68.3	
	Gross cropped area	375.4	

1.6	**Irrigation**	Area (000ha)	Percent (%)	
	Net irrigated area	115.6		
	Gross irrigated area	115.6		
	Rainfed area	191.5		
	Sources of Irrigation	Number	Area (000ha)	% area
	Canals	22	10641	
	Tanks	28	2670	
	Open wells	7245	18365	
	Bore wells	4679	48175	
	Lift irrigation			
	other Sources	-	29268	
	Total			
	Pumpsets	14959		
	Micro – irrigation			
	Groundwater availability and use	No. of blocks 04	% area	Quality of water
	Cover exploited			
	Critical			
	Semi – critical			
	Safe		34%	
	Wastewater availability and use			

1.7 Area under major field crops & horticulture etc.

1.7	S.No.	Major field crops cultivated	Area ('000 ha)							
			Kharif			*Rabi*				
			Irrigated	**Rainfed**	**Total**	**Irrigated**	**Rainfed**	**Total**	**Summer**	**Grand total**
		Kharif								
	1	Soybean		99.14						99.14
	2	Urd		58.83						58.83
	3	Maize		9.72						9.72
	4	Moong		1.13						1.13
		Rabi								
	1	Wheat				122.00				122.00
	2	Gram				126.50				126.50
	3	Lentil				35.00				35.00
	4	Mustard				7.50				7.50

	S.No.	**Horticulture crops – Fruits**	**Area ('000 ha)**		
			Total	**Irrigated**	**Rainfed**
	1	**Mango**	**0.061**		
	2	**Guava**	0.085		
	3	**Orange**	**1.040**		
	4	**Banana**	**0.000**		
		Horticulture crops – Vegetables	**Total**	**Irrigated**	**Rainfed**
	1	**Vegetables**			
	2	Potato	0.291		
	3	Tomato	0.268		
	4	Onion	0.000		
		Horticulture crops – Spices			
	1	Chilly	0.125		
	2	Coriander	2.310		
	3	Ginger	0.000		
	4	Garlic	0.000		
		Medicinal and Aromatic crops	**Total**	**Irrigated**	**Rainfed**
		Plantation crops Flower	**Total**	**Irrigated**	**Rainfed**
		Fodder Crops	**Total area**	**Irrigated**	**Rainfed**

1.8	**Livestock**	**Number ('000)**		
	Cattle	27.175		
	Buffaloes total	93143		
	Commercial dairy farms			
	Goat	85646		
	Sheep	-		
	Others (Pig)	747		
1.9	**Poultry**			
	Commercial	15913		
	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	164.17	1656					164.17	1656
Crop 2	Black gram	58.30	991					58.30	991
Crop 3	moong	0.95	840					0.95	840
Crop 4	wheat			319	2615			319	2615
Crop 5	Gram			177.10	1550			177.10	1550
Crop 6	Lentil			35.00	1000			35.00	1000
Crop 7	Coriander			-	-			-	-
Others	mustard			8.10	1080			8.10	1080

1.12	**Sowing window for 5 major crops (start and end of sowing period)**	Crop 1: Soybean	2: Urd	3: Maize	4: Moong	5: Sesame
	Kharif- Rainfed	25th June – 10 july	1st July – 15 July	15th July – 11 July	1st July – 15 july	1st July - 15th July
	Kharif-Irrigated					
		Crop 1 : Wheat	2 : Gram	3: Mustard	4 :Lentil	
	Rabi-Irrigated	25th Nov. – 15 Dec.	25 Oct. – 20 Nov.	25 Oct. – 10th 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		
	Flood	-	-	-		-	-	-
	Cyclone	-	-	-		-	-	-
	Hail storm	-	-	-		-	-	-
	Heat wave	-	-	-		Yes	-	-
	Cold wave	-	-	-		-	-	-
	Frost	-	-	-		Yes (Des-Jan)	-	-
	Sea water inundation	-	-	-		-	-	-
	Pests and diseases (specify)		-	-		Girdle Beets, Semiloopen pod,		

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

2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rain fed 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,)	• Ridge & Furrow sowing • Seed treatment with Thirum + Corbidizim mixture @3gm/kg of seed • Apply FYM, biofertilizer • Timely weed control	Link Agricultural UniversityDepartment 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 **3nd week July**	Deep soils	Soybean	Soybean (JS – 93-05, JS 95-60)	• 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)	• 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 **3rd week ofAugust**	Deep soils	Soybean	Sesame (JT11, JT12,TKG-8)	• Intercultural operation for weeds control and soil mulch • Prepare land for *rabi* 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	• Weed management t in between rows using *doura.* • Gap filling with improved variety if the population is <75% of optimum • Thinning, resowing	Dust mulching/ green leaf mulch, Frequent intercultural operations
		Maize		
	Shallow red soils	Soybean	• Life saving irrigation (if available) • Re-sowing - if seed is available • Gap filling with improved variety if the population is <75% of optimum	• 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	• Intercultural operation for control of weeds and soil mulch • Life saving irrigation (if available) • Spraying of Anti-transperant	• 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	• 20% defoliation in soybean • Insecticidal spray for control of green semi looper in soybean • Spray of anti transparent like VAM-C , Boost etc	• 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	• Life saving irrigation with farm pond water/other sources if feasible • Harvest at physiological maturity	• 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 Lentil Mustard	Wheat (MP-4010, GW-173) Gram (JG-16, JG-130) Lentil (JL-1 & 3) Mustard (JM-1 & 4, Pusa Bold)	• Mulching in rabi crops • Irrigation only at critical stages by check basin/ Border strip method	Awareness needed; Trainings in ATMA,FTC
	Shallow red soils	Lentil Mustard	Lentil (JL-1 & 3) 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 Lentil Mustard	Wheat (MP-4010, GW-173) Gram (JG-16, JG-130) Lentil (JL-1 & 3) Mustard (JM-1 & 4, Pusa Bold)	• Mulching in rabi crops • Irrigation only at critical stages by check basin/ Border strip method	Awareness needed ; Trainings in ATMA,FTC
	Shallow red soils	Lentil Mustard	Lentil (JL-1 & 3) Mustard (JM-1 & 4, Pusa Bold)		

Condition			**Suggested Contingency measures**		
Non release of water in canals under delayed onset of monsoon in catchment	**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 Lentil Mustard	Gram (JG-16, JG-130) Lentil (JL-1 & 3) Mustard (JM-1 & 4, Pusa Bold)	• 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	Lentil Mustard	Lentil (JL-1 & 3) Mustard (JM-1 & 4, Pusa Bold)		

Condition			**Suggested Contingency measures**		
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	**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 Lentil Mustard	Gram (JG-16, JG-130) Lentil (JL-1 & 3) Mustard (JM-1 & 4, Pusa Bold)	• 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	Lentil Mustard	Lentil (JL-1 & 3) Mustard (JM-1 & 4, Pusa Bold)		

Condition			**Suggested Contingency measures**		
Insufficient groundwater recharge 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 Lentil Mustard	Gram (JG-16, JG-130) Lentil (JL-1 & 3) Mustard (JM-1 & 4, Pusa Bold)	• 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	Lentil Mustard	Lentil (JL-1 & 3) 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				
	Suggested contingency measure			
	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 vigor	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 vigor 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 vigor Earthing up operation	Drain excess water Top dressing of nitrogenous fertilizers 20-30kg/ha at optimum soil moisture to gain vigor Earthing up operation	-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 vigor	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	Application of fungicides to check dumping off	Immediate made provision of drainage of water Application n-fertilizers just after drainage	Earthing and application of fungicides Stop harvesting till weather clear	
Vegetables	Application of fungicides to check dumping off	Immediate made provision of drainage of water Application n-fertilizers just after drainage	Earthing and application of fungicides Stop harvesting till weather clear	

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 vigor	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 vigor	Drain excess water Top dressing of nitrogenous fertilizers 20-30kg/ha at optimum soil moisture to gain vigor 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 vigor Earthing up operation	Drain excess water Top dressing of nitrogenous fertilizers 20-30kg/ha at optimum soil moisture to gain vigor Earthling up operation	-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 Fruits	Application of fungicides to check dumping off	Immediate made provision of drainage of water Application n-fertilizers just after drainage	Earthing and application of fungicides Stop harvesting till weather clear	
Vegetables	Application of fungicides to check dumping off	Immediate made provision of drainage of water Application n-fertilizers just after drainage	Earthing and application of fungicides Stop harvesting till weather clear	
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	Spray of mancozeb @ 0.25-0.4%	Trichoderma mixed with FYM	-

	carbofuran 3 G @ 8-10 kg/ha to control shoot borer attack	at 8-10 days interval to control *Turcicum* leaf blight	@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	
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	Application of fungicides to check dumping off	Immediate made provision of drainage of water Application n-fertilizers just after drainage	Earthing and application of fungicides Stop harvesting till weather clear	
Vegetables	Application of fungicides to check dumping off	Immediate made provision of drainage of water Application n-fertilizers just after drainage	Earthing and application of fungicides Stop harvesting till weather clear	

2.3 Floods:NA

Condition	Suggested contingency measure[o]			
Transient water logging/ partial inundation[1]	**Seedling / nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
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**
Heat Wave				
Wheat	• Light irrigation • Provision of Wind breaks	Light irrigation	Light irrigation	Harvest at physiological maturity
Chickpea	-do-	-do-	-do-	-do-
Horticulture				
Fruits	• 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	• 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	• 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.
Vegetables	• 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	• Light irrigation • Smoking during night	• Light irrigation • Smoking during night	• Light irrigation • Smoking during night	• Harvesting of crop as early as possible and marketed or keep in cold store • Store the produce in shed or safe place.
Vegetables	-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				
Fruits	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	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

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.	• 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	• Deworming , • 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 ,	• Treatment of sick animal through camp. • Isolation of sick animals.	Culling of sick animal

	• preparation of water proof shed • provision of dry fodder , • Deworming	• Treatment of sick animals	
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	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) 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			