State: Madhya Pradesh

Agriculture Contingency Plan for Shivpuri District

1.0 District Agriculture profile					
1.1	**Agro-Climatic/Ecological Zone**				
	Agro Ecological Sub Region (ICAR)	Madhya Bharat plateau and Bundelkhand uplands			
	Agro-Climatic Zone (Planning Commission)	Gird Zone			
	Agro Climatic Zone (NARP)	Gird Zone (Zone -VII)			
	List all the districts or part thereof falling under the NARP Zone	Gwalior, Bhind, Morena, Sheopur, Shivpuri and Guna			
	Geographic coordinates of district headquarters	Latitude		Longitude	Altitude
		77^0 70 ' N		25^0 20 E	521.5 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.)			
	Mention the KVK located in the district	Krishi Vigyan Kendra, Shivpuri (MP)			
1.2	**Rainfall**	Average (mm)	Normal Onset (specify week and month)	Normal Cessation (specify week and month)	Normal Cessation (specify week and month)
	SW monsoon (June-Sep):	816.3	2nd week of June	3 rd week of September	
	NE Monsoon(Oct-Dec):	-	-	-	
	Winter (Jan- March)	-	-	-	-
	Summer (Apr-May)	-	-	-	-
	Annual	816.3	-	-	-

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 (old fallow)
	Area ('000 ha)	995.4	393.9	330.1	60.5	26.1	74.1	3.9	38.1	19	9.5

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

1. 4	Soil	Area ('000 ha)	Per. (%) of Total
	1. Deep soil	299.00	29.19
	2. Medium deep soils	319.60	31.16
	3. Shallow soils	406.80	39.64

* mention colour, depth and texture (heavy, light, sandy, loamy, clayey etc) and give vernacular name, if any, in brackets

1.5	**Agricultural land use**	Area ('000 ha)	Cropping intensity %
	Net sown area	407.88	127
	Area sown more than once	139.07	
	Gross cropped area	545.16	

1.6	**Irrigation**	Area ('000 ha)		
	Net irrigated area	161.62		
	Gross irrigated area	165.62 (40%)		
	Rainfed area	242.262 (60%)		
	Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
	Canals	50	24.595	
	Tanks	117	3.702	
	Open wells	60465	66.198	
	Bore wells	8.961	46.598	
	Lift irrigation schemes		-	
	Micro-irrigation			
	Other sources (please specify)		-	
	Total Irrigated Area		165.62	
	Pump sets			
	No. of Tractors			

	Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	No. of blocks/ Tehsils 08	(%) area	Quality of water (specify the problem such as high levels of arsenic, fluoride, saline etc)
	Over exploited			
	Critical			
	Semi- critical			
	Safe		68%	
	Wastewater availability and use			
	Ground water quality			
*over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%				

1.7 Area under major field crops & horticulture (as per latest figures) (Specify year 2009-10)

1.7	**S.No.**	**Major field crops cultivated**	**Area ('000 ha)**							
			Kharif			***Rabi***				
			Irrigated	**Rainfed**	**Total**	**Irrigated**	**Rainfed**	**Total**	**Summer**	**Grand total**
	1	Soybean	-	112.0	112.0	-	-	-	-	112.0
	2	Maize		34.0	34.0	-	-	-	-	34.0
	3	Ground nut	-	71.0	71.0	-	-	-	-	71.0
	4	Chickpea	-	-	-	65.0	5.0	70.0	-	70.0
	5	wheat	-	-	-	104.0	-	104.0	-	104.0
	Others (specify)	Mustard	-	-	-	79.60	10.52	90.12	-	90.12

	S.No.	**Horticulture crops - Fruits**	**Area ('000 ha)**		
			Total	**Irrigated**	**Rainfed**
	1	**Mango**	**7.0**	**-**	**-**
	2	**Guava**	**96.0**	**-**	**-**
	3	**Lemon**	**23.0**	**-**	**-**
	4	**Others(Papaya,ber, anwala Vegetables)**	**2627**	**2627**	**-**
	5	**-**			
	Others (specify)	**Tomato**	**4.0**		**0.035**

		Horticulture crops - Vegetables	**Total**	**Irrigated**	**Rainfed**
	1	Potato	**1.200**	**1.200**	-
	2	Onion	**2.11**	**2.11**	-
	3	Cabbage+ cauliflower	**0.500**	**0.500**	-
	4	Tomato	**4.300**	**4.300**	-
	5	Garlic	**0.780**	**0.780**	-
	Others (specify)	Others(lady's finger,arabi , brinjal,chilies, ginger,turmeric, corriendre)	**0.850**	**0.850**	Others (specify)
		Medicinal and Aromatic crops	**Total**	**Irrigated**	**Rainfed**
	1	Safed Musali	-	-	-
	2	Kalmegh	-	-	-
	3	kinwach	-	-	-
	4	Ashwa gandha	-	-	-
	5	Rosh,lemon	-	-	-
	Others (specify)				
		Plantation crops	**Total**	**Irrigated**	**Rainfed**
	1				
	Others (Specify)	Eg., industrial pulpwood crops etc.			
		Fodder crops	**Total**	**Irrigated**	**Rainfed**
	1				
	Others (Specify)				
		Total fodder crop area	**-**	**-**	**-**
		Grazing land	**-**	**-**	**-**
		Sericulture etc	**-**	**-**	**-**
		Others (specify)	**-**	**-**	**-**

1.8	**Livestock**	**Male ('000)**	**Female ('000)**	**Young stock**	**Total ('000)**
	Non descriptive Cattle (local low yielding)	**39.3**	**4.65**	**61.8**	**141.10**
	Crossbred cattle				
	Non descriptive Buffaloes (local low yielding)	**2.0**	**52.**	**44.4**	**96.44**
	Graded Buffaloes				
	Goat			**228.91**	
	Sheep			**61.43**	
	Others Horses, Pig, Yak etc.)			**10.34**	

1.8 Livestock	**Male ('000)**	**Female ('000)**	**Total ('000)**
Non descriptive Cattle (local low yielding)			141.02
Crossbred cattle			-
Non descriptive Buffaloes (local low yielding)			36.49
Graded Buffaloes			68.37
Goat			228.91
Sheep			61.43
Others Horses, Pig, Yak etc.)			-
Commercial dairy farms (Number)			

1.9	**Poultry**	**No. of farms**	**Total No. of birds ('000)**
	Commercial		1037.870
	Backyard		

1.10 **Fisheries** (Data source: Chief Planning Officer)

A. Capture

i) Marine (Data Source: Fisheries Department)	**No. of fishermen**	**Boats**		**Nets**		**Storage facilities (Ice plants etc.)**
		Mechanized	Non-mechanized	Mechanized (Trawl nets, Gill nets)	Non-mechanized (Shore Seines, Stake & trap nets)	
	-	-	-	-	-	-

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

	B. Culture			
		Water Spread Area (ha)	**Yield (t/ha)**	**Production ('000 tons)**
	i) **Brackish water** (Data Source: MPEDA/ Fisheries Department)	-	-	-
	ii) **Fresh water** (Data Source: Fisheries Department)	2267	1.03	2.341
	Others			

1.11 Production and Productivity of major crops (Average of last 5 years: 2004, 05, 06, 07, 08; specify years)

1.11	Name of crop	**Kharif**		**Rabi**		**Summer**		**Total**		**Crop residue as fodder** ('000 tons)
		Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	
Major Field crops (Crops to be identified based on total acreage)										
Crop 1	Soybean	479.6	1000	-	-	-	-	479.6	1000	
Crop 2	Groundnut	91.1	1200	-	-	-	-	91.1	1200	
Crop 3	Maize	45.7	1800	-	-	-	-	45.7	1800	
Crop 4	Chickpea	-	-	87.50	1250	-	-	87.50	1250	
Crop 5	wheat	-	-	243.36	2289	-	-	243.36	2289	
Others	Mustard	-	-	99.22	1100	-	-	99.22	1100	
Major Horticultural crops (Crops to be identified based on total acreage)										
Crop 1	Mango									
Crop 2	Guava									
Crop 3	Lime									
Crop 4	Potato			-				-		
Crop 5	onion			450.9				450.9		
Others	garlic			410.5				410.5		

1.12	**Sowing window for 5 major field crops** (start and end of normal sowing period)	Crop 1: Groundnut	2: Soybean	3: Maize	4: Mustard	5: Chickpea
	Kharif- Rainfed	20June-5July	20June-5July	20June-5July	-	-
	Kharif-Irrigated		1-15 June	-	-	-
	Rabi- Rainfed	-	-	-	25 Sept -5Oct.	1 Oct.-15Oct.
	Rabi-Irrigated	-	-	-	1Oct.-15 Oct.	5 Oct.-15 Nov.

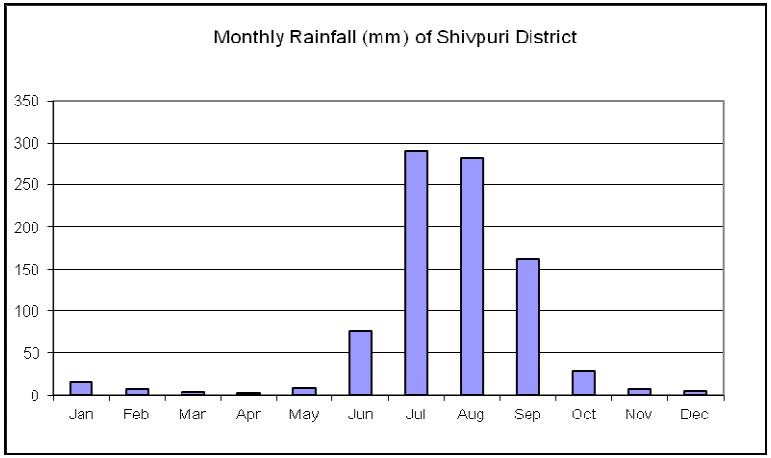
1.13	**What is the major contingency the district is prone to?** (Tick mark)	**Regular**	**Occasional**	**None**
	Drought			
	Flood			
	Cyclone			
	Hail storm			
	Heat wave			
	Cold wave			
	Frost			
	Sea water intrusion			
	Pests and disease outbreak (specify)Girdle beetel ,semilooper in soybean and gram pod borer in chick pea			
	Others (specify)			

1.14	**Include Digital maps of the district for**	Location map of district within 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[c] including variety**	**Agronomic measures**	**Remarks on Implementation**
1	2	3	4	5	6
Delay by 2 weeks	Deep soils	Soybean	Short duration soybean JS 95-60, JS 93-05	-Ridge/BBF sowing of Kharif crops -Select short duration varieties for sowing -Seed dressing with Thirum + carbodezim in equal ratio @3g/kg seed -Line sowing -Cultivate the field on receiving pre monsoon showers	Seed drills under RKVY -Supply of seeds through Farmers' societies
		Black gram local/ indigenous	Sorghum JJ938,JJ1041+ black gram inter cropping		
		Bajra Indigenous	Improved JBV -3		
	Moderate deep soils	Groundnut Soybean	-Improved Variety GG 20 -Soybean(early)	-Ridge/BBF sowing of Kharif crops -Select short duration varieties for sowing -Seed dressing with Thirum+carbodezim in equal ratio @3g/kg seed -Increase seed rate by 10% and reduce inter row spacing (30cm) -Water harvesting and use collected water as life saving irrigation -Cultivate the field on receiving pre monsoon showers -Need based irrigation by sprinkler	

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	Deep soils	Soybean	Short duration soybean JS 95-60, JS 93-05, Sorghum JJ938,JJ1041+ black gram inter cropping and Improved JBV -3	-Select short duration crops - Ridge/BBF sowing of Kharif crops -Select short duration varieties for sowing -Seed dressing with Thirum+carbodezim in equal ratio @3g/kg seed -increase seed rate by 25% and reduce inter row spacing (30cm) -Cultivate the field on receiving pre monsoon showers	-Seed drills under RKVY -Supply of seeds through farmers societies
		Black gram local/ indigenous			
		Bajra Indigenous			
	Moderate deep soils	Groundnut Soybean	Groundnut (GG 20, TAG 24)/green gram JM 721,K851,J45)	-Cultivate the field on receiving pre monsoon showers -Select short duration varieties -Need based irrigation by sprinkler using harvested water	
			Pigeonpea (medium)cv.Asha		
			Pigeonpea (medium)+Black gram(JU2,JU3,JU 86)		
			Brinjal/tomato Kharif onion cv. Red agrifound		

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 6 weeks (Specify month) 4th week of July	Deep soils	Soybean Black gram local/ indigenous Bajra Indigenous	Sesame TKG-8 Hy. Maize-wheat	-Cultivate the field as when pre monsoon showers received -Select short duration crop/varieties	-Seed drills under RKVY -Supply of seeds through Farmers society. Micro miner scheme
	Moderate deep soils	Groundnut Soybean	Kharif onion cv. Red agri found Maize for fodder Vegetables(sponge guard, cucurbits Kharif onion:Red agri found	-Select short duration varieties -Need based irrigation by sprinkler using harvested water	

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 8 weeks (Specify month)	Deep soils	Soybean Black gram local/ indigenous Bajra Indigenous	Ajwayan Maize/sweet corn for cobs Maize for fodder Jowar / bajra	-Select short duration varieties	Supply of seeds through farmers society, seed village, Micro management management scheme
	Moderate deep soils	Groundnut Soybean	Seasame Maize/sweet corn for cobs--chickpea Maize for fodder-chickpea Vegetables Niger-chickpea	-Select short duration varieties -Need based irrigation using harvested rain water by sprinkler	

***Matrix for specifying condition of early season drought due to delayed onset of monsoon (2, 4, 6 & 8 weeks) compared to normal onset (2.1.1)**

Normal onset (Month and week)	Month and week for specifying condition of early season drought due to delayed onset of monsoon			
	Delay in onset of monsoon by			
	2 wks	**4 wks**	**6 wks**	**8 wks**
June 1st wk	June 3rd wk	July 1st wk	July 3rd wk	Aug 1st wk
June 2nd wk	June 4th wk	July 2nd wk	July 4th wk	Aug 2nd wk
June 3rd wk	July 1st wk	July 3rd wk	Aug 1st wk	Aug 3rd wk
June 4th wk	July 2nd wk	July 4th wk	Aug 2nd wk	Aug 4th wk
July 1st wk	July 3rd wk	Aug 1st wk	Aug 3rd wk	Sep 1st wk
July 2nd wk	July 4th wk	Aug 2nd wk	Aug 4th wk	Sep 2nd wk

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop / Cropping system**	**Crop management**	**Soil nutrient and moisture conservation measures**	**Remarks on Implementation**
1	2	3	4	5	6
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	Deep soils	Soybean Black gram local/ indigenous Bajra Indigenous	-Weed management through intercultural operation between rows using *doura.* -Thinning, - re -sowing	-Dust mulching/ green leaf mulch, -Frequent intercultural operations	Supply of seeds through farmers society, seed village, Micro management management scheme
	Moderate deep soils	Groundnut Soybean	-Improved var. GG-20, early Soybean cv JS 95-60-chickpea -Weed management through intercultural operation between rows using *doura* -Life saving irrigation by sprinkler system -Thinning, -resowing	-Frequent intercultural operations -Dust mulch/green leaf mulch, -Need based irrigation by sprinkler	

Condition		**Suggested Contingency measures**			
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period	**Major Farming situation**	**Normal Crop / Cropping system**	**Crop management**	**Soil nutrient and moisture conservation measures**	**Remarks on Implementation**
1	2	3	4	5	6
At vegetative stage	Deep soils	Soybean Black gram local/ indigenous Bajra Indigenous	-Weed management through intercultural operation between rows -Spray of 2% solution of Mariate of potash -Spraying of PMA @3 ppm solution -Girdle beetle control by spraying of Quinalphos@2 ml /l water	-Frequent intercultural operations -Dust mulching/ green leaf mulch,	Supply of seeds through farmers society, seed village, Micro management management scheme
	Moderate deep soils	Groundnut Soybean	-Weed management through intercultural operation between rows -Spray of 2% solution of Muriate of potash -Spraying of PMA @3 ppm solution -Girdle beetle control by spraying of Quinalphos@2 ml /l water -Life saving irrigation by sprinkler system		

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop / Cropping system**	**Crop management**	**Soil nutrient and moisture conservation measures**	**Remarks on Implementation**
1	2	3	4	5	6
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period **At flowering/ fruiting stage**	Deep soils	Soybean Black gram local/ indigenous Bajra Indigenous	-20% defoliation in soybean, and sorghum -Spraying of PMA @3ppm solution -Insecticidal spray for control of green semi looper in soybean and late shoot borer in sorghum	--	Supply of seeds through farmers society, seed village, Micro management management scheme
	Moderate deep soils	Groundnut Soybean	-20% defoliation in soybean, and sorghum -Supplemental irrigation by sprinkler system -Spraying of PMA @3ppm solution -Insecticidal spray for control of green semi looper in soybean and late shoot borer in sorghum		

Condition			Suggested Contingency measures		
Terminal drought (Early withdrawal of monsoon)	**Major Farming situation**	**Normal Crop / Cropping system**	**Crop management**	**Rabi Crop Planning**	**Remarks on Implementation**
1	2	3	4	5	6
	Deep soils	Soybean Black gram local/ indigenous Bajra Indigenous	-Reduce the plant population in sorghum by uproot the plants from alternate row Water spray Harvest at physiological maturity	-	Supply of seeds through farmers society, seed village, Micro management management scheme
	Moderate deep soils	Groundnut Soybean	Reduce the plant population in sorghum by uproot the plants from alternate row Life saving irrigation Harvest at physiological maturity Supplemental irrigation	seed priming i.e Sowing of soaked seed of safflower /gram	

2.1.2 Drought - Irrigated situation

Condition			Suggested Contingency measures		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
1	2	3	4	5	6
Delayed release of water in canals due to low rainfall	Deep soil	Chickpea	Chickpea	-Dry sowing followed by irrigation -Balanced fertilization -Application of wormi compost @3-4 t/ha .	Supply of seeds through farmers society, seed village, Micro management management scheme
		Wheat Lok-1	Wheat :MP 3020, HW 2004, Harshita		
	Moderate Deep soil	Chickpea	Chickpea JG 130		

Condition			Suggested Contingency measures		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
1	2	3	4	5	6
Limited release of water in canals due to low rainfall	Deep soil	Chickpea Wheat Lok-1	Chickpea JG 130 Wheat :MP 3020, HW 2004, Harshita	Dry sowing followed by irrigation -Balanced fertilization -Application of wormi compost @3-4 t/ha	Supply of seeds through farmers society, seed village, Micro management management scheme
	Moderate Deep soil	Chick pea	Chickpea JG JG 130, Wheat :HW 2004, Harshita		

Condition			Suggested Contingency measures		
	Major Farming situation[f]	**Normal Crop/ cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
1	2	3	4	5	6
Non release of water in canals under delayed onset of monsoon in catchment	Deep soil	Chick pea Wheat Lok-1	Chickpea JG130,SafflowerJSI 97	Seed priming in water for 12-15 hrs	Supply of seeds through farmers society, seed village, Micro management management scheme
	Moderate Deep soil	Chick pea	Chickpea JG130,SafflowerJSI 97	Seed priming in water for 12-15 hrs	

Condition			Suggested Contingency measures		
	Major Farming situation[f]	**Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
1	2	3	4	5	6
Insufficient groundwater recharge due to low rainfall	Deep soil	Chick pea Wheat Lok-1	Soybean JS 95 60, Black gram (JU 86) Maize/sorghum+black gram	-Mulching in kharif and rabi crops -Supplemental irrigation by sprinkler	Awareness needed ; Trainings in ATMA,FTC
	Moderate Deep soil	Chick pea	Early groundnut-chickpea small seeded /safflower		

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

Condition	Suggested contingency measure			
1	2	3	4	**5**
Continuous high rainfall in a short span leading to water logging	**Vegetative stage**	**Flowering stage**	**Crop maturity stage**	**Post harvest**
Pear millet	Drain excess water Inter cultivation to increase aeration Ridge and furrow system of planting Top dressing of 20kg N/ha after reseding water	Drain excess water Inter cultivation to increase aeration Ridge and furrow system of planting Top dressing of 20kg N/ha after reseding water	Drain excess water Harvest the produce on clear sunny day	dry the produce up to 10-12%moisture level before storage
Sorghum	---do---	---do---	---do---	---do---
wheat	Drain excess water Top dressing of 20kg N/ha after reseding water	Drain excess water Top dressing of 20kg N/ha after reseding water	Drain excess water Harvest the produce on clear sunny day	dry the produce up to 10-12%moisture level before storage
Mustard	---do---	---do---	---do---	---do---
chickpea	---do---	---do---	---do---	---do---
Horticulture				
Fruits (Mango, Guava and lemon)	Proper nutrition and protect of trees from insect pest and disease	Immediate made provision of drainage of water	Fruit harvest at proper stage . Care from insect pest and disease . proper nutrition and	Grading , shorting and produce placed in proper way to avoid rotten .

		*Application n-fertilizers just after drainage , if need apply plant hormones	irrigation .	
Vegetables(Tomato, potato and onion)	Proper nutrition and protect of crops from insect pest and disease	Immediate made provision of drainage of water *Application n-fertilizers just after drainage , if need apply growth hormones and micronutrient.	Crop harvest at proper stage according to market need . Care from insect pest and disease . proper nutrition and irrigation .	Stored properly .Timely send to market to avoid quality deteriorations
Heavy rainfall with high speed winds in a short span[2]				
Pearmillet	Drain excess water Inter cultivation to increase aeration Ridge and furrow system of planting Top dressing of 20kg N/ha after reseding water	Drain excess water Inter cultivation to increase aeration Ridge and furrow system of planting Top dressing of 20kg N/ha after reseding water	Drain excess water Harvest the produce on clear sunny day	dry the produce up to 10-12%moisture level before storage
Maize	Drain excess of water Earthing at 20 DAS Line sowing Gap filling Wind breaks	Gap filling Wind breaks Top dressing of N after water receding	Gap filling Wind breaks Top dressing of N after water receding	Gap filling Wind breaks Top dressing of N after water receding
Soybean	Drain excess of water Gap filling Wind breaks	Gap filling Wind breaks Top dressing of N after water receding	Gap filling Wind breaks Top dressing of N after water receding	Gap filling Wind breaks Top dressing of N after water receding
wheat	-do-	-do-	-do-	-do-
Mustard	-do-	-do-	-do-	-do-
chickpea	-do-	-do-	-do-	-do-
Horticulture				
Fruits (Mango, Guava and lemon)	-do-	-do-	-do-	-do-

Vegetables(Tomato, potato and onion)	-do-	-do-	-do-	-do-
Outbreak of pests and diseases due to unseasonable rains				
Pearl millet				
Maize				
wheat				
Mustard				
Chickpea				

2.3 Floods: NA

Condition	**Suggested contingency measure[o]**			
1	2	3	4	**5**
Transient water logging/ partial inundation[1]	**Seedling / nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Horticulture	NA	NA	NA	NA
Continuous submergence for more than 2 days[2]				
Horticulture	NA	NA	NA	NA
Sea water intrusion[3]	NA	NA	NA	NA

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

Extreme event type	**Suggested contingency measure[r]**			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Frost : some time (Occurring)				
Heat wave :some time (Occurring	NA	NA	NA	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**
1	2	3	4
Feed and fodder availability	Adoption of fodder bank. Use of surplus fodder for silage. Urea treatment : 4 kg Urea + 75 litter of water solution spray on 100 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 Use unconventional feeds as a source of roughage, use urea treated roughage, use urea molasses block as a source of nitrogen and energy. Use low quality processed with mild acid and alkali treatment	Feeding green feed/ fodder and conventional feed. 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 Water treated with quick lime
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 Vaccination & deworming
Floods			
Feed and fodder availability	Adoption of fodder bank Hay and silage making Insurance. Repair of animal shed Shifting of animals from the flood area	Use unconventional feeds -Use of reserve fodder -Balance ration -Use of chaffed fodder -use roughages processed with mild acid and alkali -Transportation excess fodder from ad joining district	Regularly Sprinkling of water on live stock body . -Feeding green feed/ fodder and conventional feed -use of wet bhusa. -Availing the insurance. ----Separation of unproductive livestock
Drinking water	Ensure availability of clean hygienic water Water be treated with quick lime lime	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 ,Deworming	Treatment of sick animal through camp. solation of sick animals. Treatment of sick animals in houses	Culling of sick animal -use antidote in poisoning case
Cyclone	**(Not occur in the district)** NA		NA
Feed and fodder availability	-		
Drinking water	-		
Health and disease management	-		
cold wave			
Shelter/environment management	• House of animal should be N-S direction • Plan of proper housing , • Collection of waste gunny bags for shelter	• availability of full sun rays in animal shed, keep animal body warm • Use of gunny bags to cover the windows during night hours	Adopt curative measures to obtain the milk production level -Keep environment uniformly to recover animal
Health and disease management	Ensure storage of antibiotics, B-complex, liver tonic, anti-inflammatory drugs, anti-stress drugs, vaccines etc for the event Storage for balanced ration	Treatment of sick animals Balanced ration Use of warm water Inhalation of *Eucalyptus* water	Vaccination & deworming Culling of sick animals
Heat wave			
Shelter/environment management	Provision of proper shade Provision of trees Reflector paints over roof , two times bathing of animals	Provision of cold water Keep environment uniformly to recover animal	Vaccination & deworming
Health and disease management	-Ensure storage of antibiotics, B-complex, liver tonic, anti-inflammatory drugs, anti-stress drugs, vaccines etc for the event -Use suitable drugs depending on condition.	Vaccination & deworming	

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	**Keep watch on mortality and adopt measures**	**Materialized the benefit of insurance**	
Shortage of feed ingredients	-Storage of food ingredients	Mineral mixture feeding, use unconventional feed in feeding of poultry ration, use animal protein source like fish meal, silk worm pupa, blood meal by products of slaughter house etc, ration should be made from locally available feed ingredients.	Feeding high quality balance fee	
Drinking water	-Storage of Sanitized drinking water	Judicious use of stored water	Fresh 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	Vaccination and deworming 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	Open the curtain for proper aeration and drying of litter. 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 and deworming, use anti fungal and liver tonic during feeding and drinking	Culling of sick birds Vaccination and deworming	
Cyclone: Not occur in the district				
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 -Storage of local available food grains/feed ingredients	-Down the curtain of windows -lighting in the shed in cold condition -maintain the temperature of shed	Feeding high quality balance feed	Culling of sick birds
Health and disease management	Deworming Vaccination	Vaccination and deworming, use anti stress drugs and liver tonic during feeding and drinking.	Vaccination and deworming	
		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	• All the fish should be marketed • Shifting of small sized fishes into 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 -Dry ponds should be treated with lime	• - 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. • After onset of monsoon and ponds fill with water seedling the fish seed
(ii Impact of heat and salt load build up in ponds / change in water quality	Apply the lime to neutralize the concentrated water	Apply the lime to neutralize the concentrated water	• - 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. • After onset of monsoon and ponds fill with water seedling the fish seed
(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	Keeps net in west wear of ponds	Protect the fish to flow with runoff water	
(ii) Water contamination and changes in water quality	Lime treatment should be done.	Lime treatment and $KMnO_4$ treatment 2 ppm	No seedling of new fish seed
(iii) Health and diseases	Lime treatment should be done.	Lime treatment and $KMnO_4$ treatment 2 ppm	No seedling of new fish seed
(iv) Loss of stock and inputs (feed, chemicals etc)	Manufactured feed should be given in ponds	Manufactured feed should be given in ponds	Natural feed should be available in ponds
(v) Infrastructure damage (pumps, aerators, huts etc)	Dust and debris should be clean in west wear.	Continuous Dust and debris cleans in west wear.	-
(vi) Any other			

3. Cyclone / Tsunami : No any possibilities of event in the district			
A. Capture	NA	NA	NA
B. Aquaculture	NA	NA	NA
4. Heat wave and cold wave			
A. Capture			
Marine	-	-	-
Inland	Net-shed	-	-
B. Aquaculture			
(i) Changes in pond environment (water quality)	Showering of water by pump for proper O_2 in water	Showering of water by pump for proper O_2 in water	-
(ii) Health and Disease management	$KMnO_4$ treatment 2 ppm	$KMnO_4$ treatment 2 ppm	-
(iii) Any other	-	-	-