State: Madhya Pradesh
Agriculture Contingency Plan for District: Tikamgarh

1.0 District Agriculture profile				
1.1	**Agro-Climatic/Ecological Zone**			
	Agro Ecological Sub Region (ICAR)	Central Highlands (Malwa And Bundelkhand), Hot Subhumid (Dry) Eco-sub region(10.3)		
	Agro-Climatic Zone (Planning Commission)	Central Plateau And Hills Region (VIII)		
	Agro Climatic Zone (NARP)	Bundelkhand Zone (MP-8)		
	List all the districts or part thereof falling under the NARP Zone	Datia,Tikamgarh and Chhatarpur		
	Geographic coordinates of district headquarters	Latitude	Longitude	Altitude
		24°26'10" to 25°33'15" N	78°25'10" to 79°25'16" E	-
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	ZARS, Kundeswar Road Tikamgarh (M.P.) PIN: – 472 001		
	Mention the KVK located in the district	Programme Coordinator Krishi Vigyan Kendra, Kundeshwar, Distt. Tikamgarh – 472 001		
1.2	**Rainfall**	Normal RF(mm)	Normal Onset	Normal Cessation
	SW monsoon (June-Sep):	971.5	2nd week of June	1st week of October
	NE Monsoon(Oct-Dec):	53.5	-	-
	Winter (Jan- Feb.)	32.6	-	-
	Summer (Mar-May)	12.7	-	-
	Annual	1070.3	-	-

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
	Area ('000 ha)	504.0	292.2	68.6	23.6	24.5	22.8	0.2	72.1	60.6	22.8

* Net sown area + current fallow + old fallow

1. 4	Major Soils (common names like red sandy loam deep soils (etc.,)*	Area ('000 ha)	Percent (%) of total
	Deep soil	111.4	21.8
	Medium deep soils	165.4	32.8
	Shallow soils	227.0	45.0

Source: NBSS & Lup, Nagpur

1.5	Agricultural land use	Area ('000 ha)	Cropping intensity %
	Net sown area	208.8	144
	Area sown more than once	92.2	
	Gross cropped area	301.0	

1.6	Irrigation	Area ('000 ha)		
	Net irrigated area	110.3		
	Gross irrigated area	145.2		
	Rainfed area	98.5		
	Sources of Irrigation	**Number**	**Area ('000 ha)**	**Percentage of total irrigated area**
	Canals	175	6.7	4.6
	Tanks	1148	6.2	4.2
	Open wells	76296	114.4	78.9
	Bore wells	2129	9.6	6.6
	Lift irrigation schemes	NA	-	-
	Micro-irrigation	NA	-	-

	Other sources (reservoir)	8	8.3	5.7
	Total Irrigated Area		145.2	
	Pump sets	52383	-	-
	No. of Tractors	4204	-	-
	Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	No. of blocks/ Tehsils 06	(%) area	Quality of water (specify the problem such as high levels of arsenic, fluoride, saline etc)
	Over exploited			
	Critical			No problematic water
	Semi- critical			
	Safe	6 blocks	100%	
	Wastewater availability and use			
	Ground water quality	Good quality		
*over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%				

1.7 Area under major field crops & horticulture etc. (2008-09)

1.7	**Major Field Crops cultivated**	**Area ('000 ha)**							
		Kharif			***Rabi***			**Summer**	**Total**
	Kharif crops	***Irrigated***	***Rainfed***	**Total**	***Irrigated***	***Rainfed***	**Total**		
	Black gram			36.8				**NA**	36.8
	Soybean			33.2					33.2
	Sesame			19.2					19.2
	Sorghum			13.5					13.5
	Groundnut			11.7					11.7
	Rice			10.0					10.0
	Wheat						111.1		111.1
	Chickpea						35.2		35.2
	Mustard						17.9		17.9
	Barley						17.2		17.2
	Pea						14.3		14.3
	Horticulture crops - Fruits	**Total area**			**Irrigated**		**Rainfed**		
	Guava	00.2					00.2		
	Custard apple	00.1					00.1		
	Mango	00.1					00.1		
	Lime	00.1					00.1		

	Papaya	00.08		00.08
	Others (specify)			

	Horticultural crops - Vegetables	**Total area**	**Irrigated**	**Rainfed**
	Garden pea	8.5		8.5
	Potato	1.8		1.8
	Tomato	1.1		1.1
	Colocasia	0.9		0.9
	Brinjal	0.7		0.7
	Onion	0.6		0.6
	Okra	0.7		0.7
	Medicinal and Aromatic crops	**Total area**	**Irrigated**	**Rainfed**
	Ginger	1.8		1.8
	Chilli	0.7		0.7
	Coriander	0.3		0.3
	Turmeric	0.09		0.0
	Garlic	0.1		0.1

	Plantation crops	**Total area (000 ha.)**	**Irrigated**	**Rainfed**
	Teak wood	4.79	-	4.79
	Mahua	3.75	-	3.75
	Bans			
	Others such as industrial pulpwood crops etc (specify)			
	Fodder crops	**Total area**	**Irrigated**	**Rainfed**
	Berseem	0.20	0.20	-
	Sorghum	0.10	-	0.10
	Total fodder crop area	0.30	0.20	0.10
	Grazing land	14.15		14.15
	Sericulture etc	-		
	Others (Specify)	-		

1.8	**Livestock**	**Male ('000)**	**Female ('000)**	**Total ('000)**
	Non descriptive Cattle (local low yielding)			379.90
	Crossbred cattle			NA
	Non descriptive Buffaloes (local low yielding)			NA
	Graded Buffaloes			154.60
	Goat			249.10
	Sheep			51.20
	Others (Pig, ,horse etc.)			9.00
	Commercial dairy farms (Number)			

1.9	**Poultry**	**No. of farms**	**Total No. of birds ('000)**
	Commercial	50	112
	Backyard	12	12

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**
	10	**14**	**789**

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)	6952	1.53	360.10
Others			

1.11 Production and Productivity of major crops

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)										
	Blackgram	17.5	301			NA		17.5	301	
	Soybean	24.7	821					24.7	821	
	Groundnut	14.6	944					14.6	944	
	Sesame	8.1	342					8.1	342	
	Sorghum	11.0	910					11.7	910	
	Rice	6.3	443					6.3	443	
	Wheat			113.2	1569			113.2	1569	
	Chickpea			25.6	1029			25.6	1029	
	Barley			15.9	1612			15.9	1612	
	Pea			6.4	479			6.4	479	
	Mustard			6.2	442			6.2	442	

Major Horticultural crops (Crops to be identified based on total acreage)										
	Fruits	Production	t/ha							
	Guava	09.4	45.0							
	Custard apple	01.1	07.0							
	Mango	00.9	09.0							
	Lime	01.5	16.0							
	Papaya	05.8	76.0							

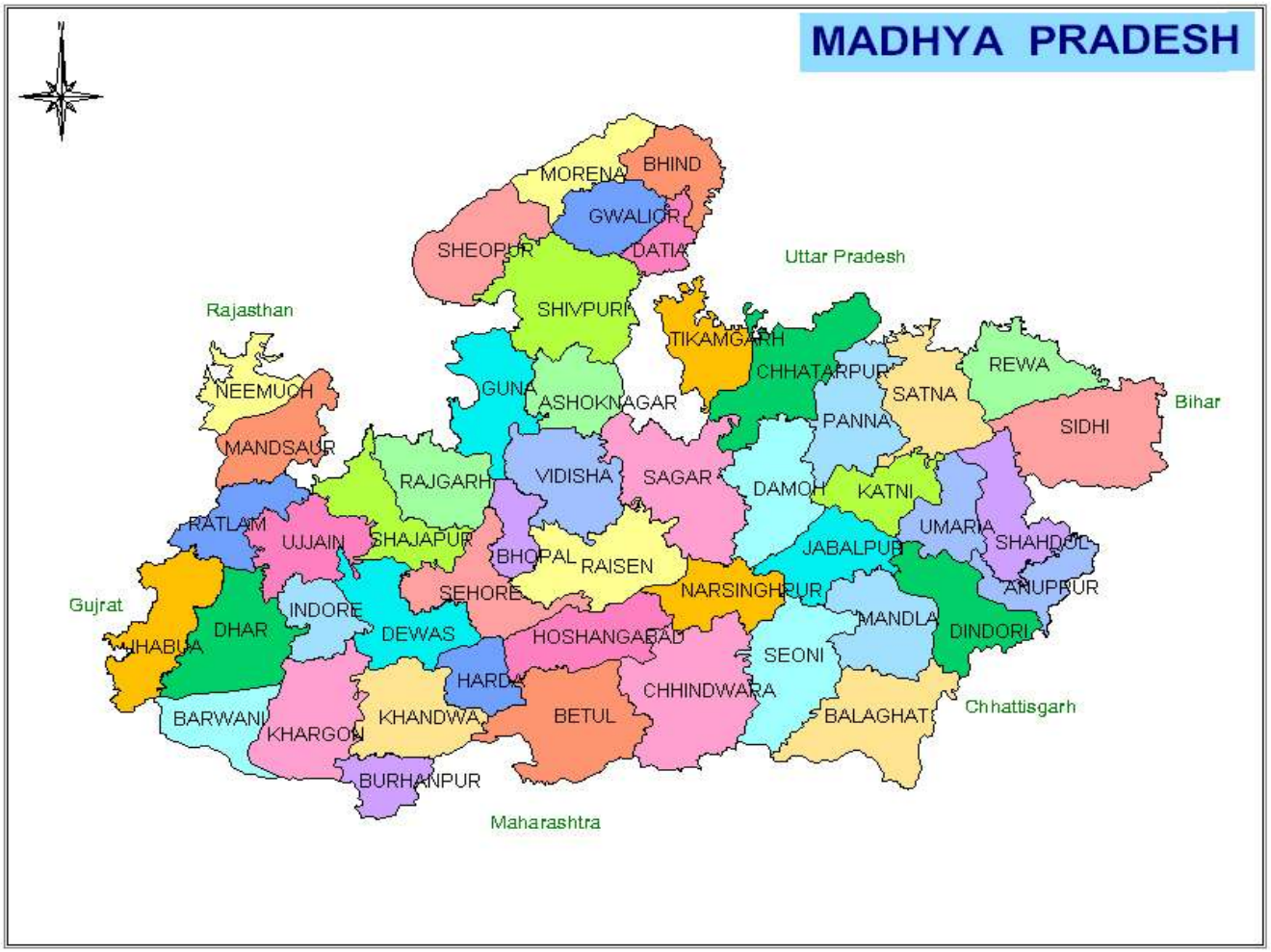
	Vegetables									
	Garden pea	77.1	09.0							
	Potato	37.4	20.0							
	Tomato	22.1	20.0							
	Colocasia	17.6	18.0							
	Brinjal	15.1	21.0							
	Onion	18.4	28.0							
	Okra	14.4	19.0							
	Ginger	22.3	12.0							
	Chilli	04.5	06.0							
	Coriander	00.3	01.0							
	Turmeric	01.06	12.0							
	Garlic	00.4	04.0							

1.12	**Sowing window for 5 major field crops**	**Sorghum**	**Blackgram**	**Soybean**	**Sesame**	**Groundnut**
	Kharif- Rainfed	3rd week of June- 2nd week of July	1st week of July- 2nd week of July	3rd week of June – 2nd week of July (up to 10th July)	1st week of July- 2nd week of July	3rd week of June – 2nd week of July (up to 10th July)
	Kharif-Irrigated	-	-	-	-	-
		Chickpea	**Lentil**	**Pea**	**Wheat**	**Mustard**
	Rabi- Rainfed	1st week of October.- 2nd week of October	1st week of October – 3rd week of October	2nd week of October- 3rd week of October	3rd week of November – 4th week of November	2nd week of October- -4th week of October
	Rabi-Irrigated	3rd week of October – 2nd week of November	2nd week of October – 4th week of October	2nd week of October- 4th week of October	2nd week of November- 3rd week of December	2nd week of October— 2nd week of November

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 beetle and stem fly in Soybean Heliothis in Chickpea, Aphid in Mustard	✓		
	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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BHIND
GWALIOR
SHEOPUR
DATIA
Uttar Pradesh
Rajasthan
SHIVPURI
TIKAMGARH
CHHATARPUR
REWA
NEEMUCH
GUNA
ASHOKNAGAR
SATNA
Bihar
PANNA
SIDHI
MANDSAUR
RAJGARH
VIDISHA
SAGAR
DAMOH
KATNI
RATLAM
UMARIA
UJJAIN
SHAJAPUR
BHOPAL
JABALPUR
SHAHDOL
RAISEN
SEHORE
NARSINGHPUR
ANUPPUR
Gujrat
INDORE
MANDLA
DHAR
DEWAS
HOSHANGABAD
DINDORI
JHABUA
SEONI
HARDA
CHHINDWARA
BARWANI
KHANDWA
BETUL
BALAGHAT
Chhattisgarh
KHARGON
BURHANPUR
Maharashtra


AGROCLIMATIC ZONES
BUNDELKHAND
CENTRAL NARMADA VALLEY
CHATTISGARH PLAIN BALAGHAT
GRID REGION
JHABUA HILLS
KYMORE PLATEAU SATPURA HILLS
MALWA PLATEAU
NIMAR PLAINS
NOTHERN HILL REGION OF CHATTISGARH
SATPURA PLATEAU
VINDHYA PLATEAU
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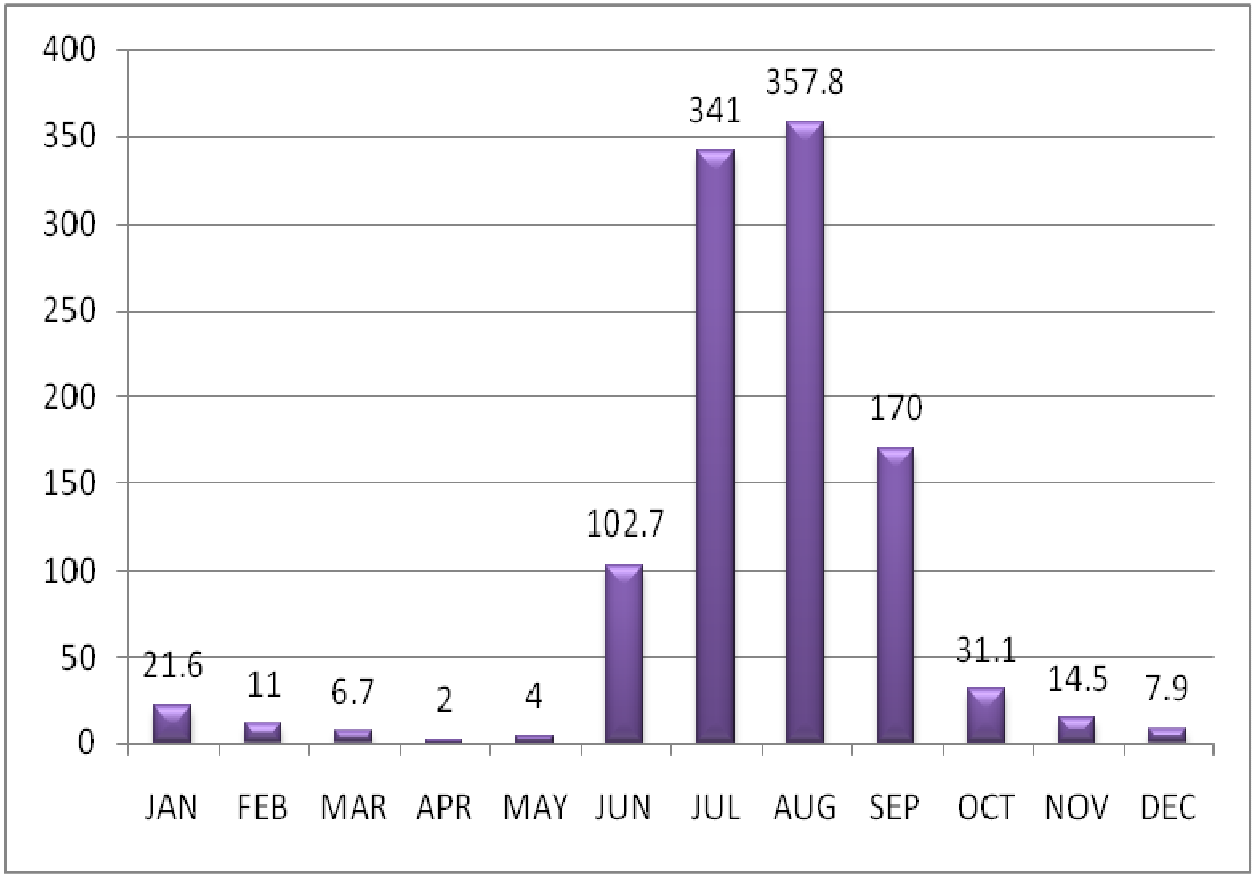
Annexure II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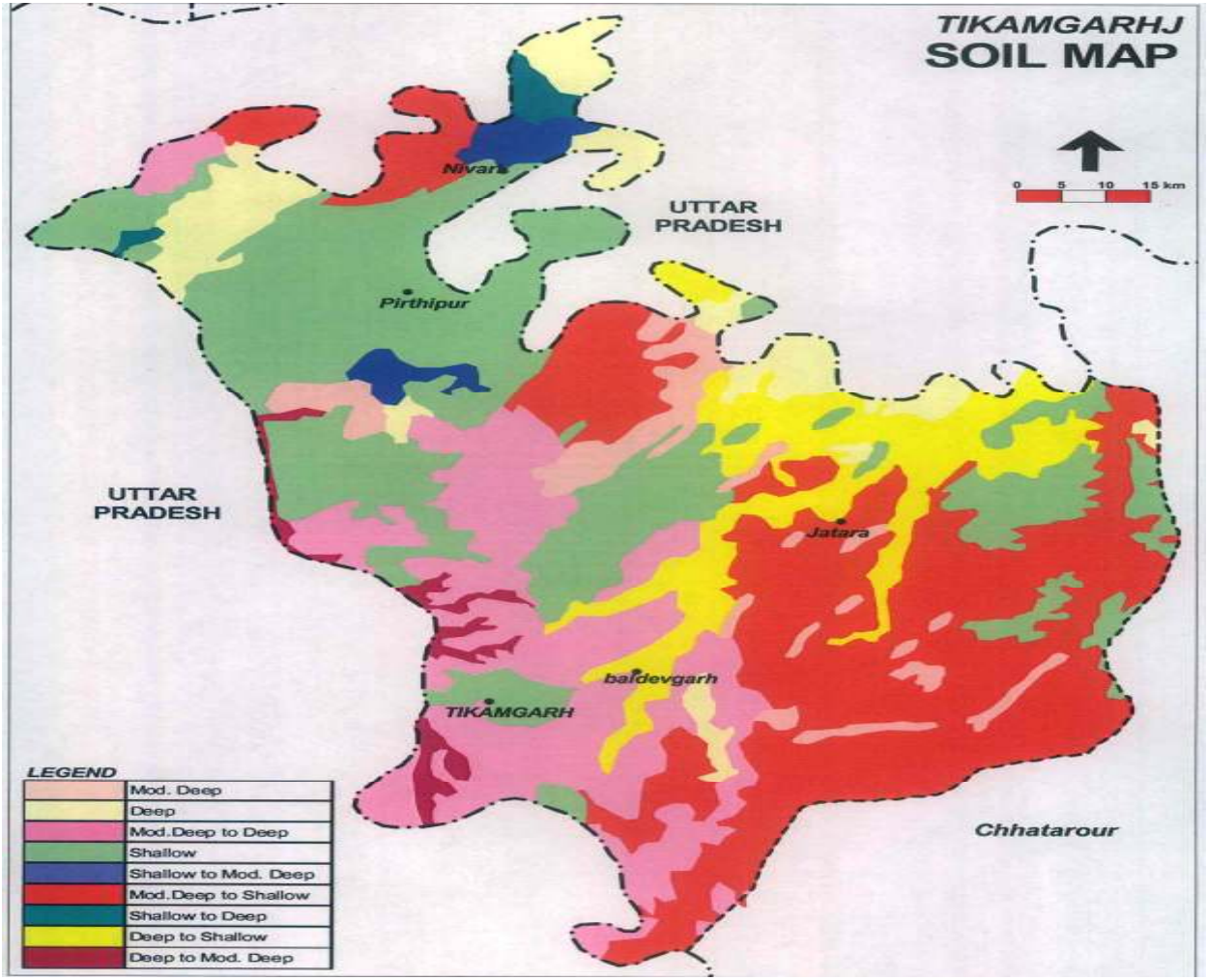
Annexure III



Source: NBSS & LUP, Nagpur

MAP OF THE TIKAMGARH DISTRICT WITH MICRO-FARMING SITUATION

AES-I	Undulating topography, Light soils, Rainfed
AES-II	Heavy to Medium soils, Irrigated
AES-III	Medium to Light soils, Irrigated partially rainfed

MAP OF TIKAMGARH DISTRICT

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**
Delayed 2 weeks 4th week of June	Shallow sandy soils (Padua)	Soybean	No change	1. Blade harrowing (Bakhar) for moisture conservation 2. Seed treatment with mixture of Thiram (1.5g) + Carbendazim (1.5g) /kg seed followed by treated with biofertilizers. 3. Intercultivation	Seed source SAU;s, NSC, Beej Nigam
		Blackgram			
		Greengram			
	Red medium soils (Rakar soils)	Maize	No change		
		Soybean			
		Sesame			
		Ground nut			
		Kodo			
	Black soils (Kabar and Mar soils)	Rice	No change	1.For early maturing varieties, adopt 15x15 cm geometry but seedlings are not more than 18 to 21 days old 2. Blade harrowing (Bakhar) for moisture conservation 3.Seed treatment with mixture of Thiram (1.5g) + Carbendazim (1.5g) /kg seed followed by treated with biofertilizers. 4.Intercultivation	
		Pigeonpea			

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**
Delayed 4 weeks 2nd week of July	Shallow sandy soils (Padua)	Soybean	Avoid Soybean (Can be sow upto 10th july) Prefer Blackgram/ Greengram	1. For early maturing varieties, adopt 15x15 cm geometry but seedlings are not more than 18 to 21 days old 2. Blade harrowing (Bakhar) for moisture conservation	Seed source SAU;s, NSC, Beej Nigam
		Blackgram	LBG-20,Azad-1,Azad-3		
		Greengram	PDM-139,HUM-1		
	Red medium soils (Rakar soils)	Maize	**Sesame:** TKG-21,TKG-22,JTS-8,TKG-306 **Blackgram:** LBG-20,Azad-1,Azad-3 **Greengram:** PDM-139,HUM-1		
		Soybean	Don't sow soybean (Can be sow upto 10th july) Prefer Blackgram/ Greengram and sesame **Sesame:** TKG-21,TKG-22,JTS-8,TKG-306 **Blackgram:** LBG-20,Azad-1,Azad-3 **Greengram:** PDM-139,HUM-1		
		Sesame	TKG-21,TKG-22,JTS-8,TKG-306		
		Groundnut	JM-24		
		Kodo	Vamban-1,GPUK-3		
	Black soils (Kabar and Mar soils)	Rice	Pusa-1121,JR-201	1. For early maturing varieties, adopt 15x15 cm geometry but seedlings are not more than 18 to 21 days old 2. Blade harrowing (Bakhar) for moisture conservation	
		Pigeonpea	UPAS-120,JKM-7,JA-4		

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 **4th week of July**	Shallow sandy soils (Padua)	Soybean Blackgram Greengram	Don't sow soybean (Can be sow upto 10th july), Maize, Blackgram, Greengram and sesame Prefer to sow Kodo, Castor, Niger **Kodo :** Vamban-1,GPUK-3	1. Blade harrowing (Bakhar) for moisture conservation 2. 100 kg seed /ha required for lehi system in rice. 3. Intercropping of Niger with Pigeonpea	Seed source SAU;s, NSC, Beej Nigam
	Red medium soils (Rakar soils)	Maize Soybean Sesame Ground nut Kodo	Don't sow soybean (Can be sow upto 10th july), Maize, sesame and groundnut. Prefer to sow Kodo, Castor, Niger, Cluster bean, Finger millet **Cluster bean(gaur):** Bundel Gaur-1. Bundel Gaur-2,AGFRI-212-9, AGFRI-2365-2,Durgapur Safed **Finger millet(Mandua):** JNR-852 **Kodo :** Vamban-1,GPUK-3 **Kakun** : ISC-201		

	Black soils (Kabar and Mar soils)	Rice	Pusa-1121,JR-201		
		Pigeonpea	Don't sow pigeonpea Prefer Kodo, Kutki, Niger.		
			Finger millet(Mandua): JNR-852		
			Cluster bean(gaur): Bundel Gaur-1. Bundel Gaur-2,AGFRI-212-9, AGFRI-2365-2,Durgapur Safed		
			Cow pea : C-152,Pusa dofasali,Pusa faguni		

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**
Delayed by 8 week **2nd week of August**	Shallow sandy soils (Padua)	Soybean	Don't sow soybean (Can be sow upto 10th july), Maize, Blackgram, Greengram and sesame Prefer to sow Kodo, Castor, Niger **Kodo :** Vamban-1,GPUK-3 **Fodder sorghum**: MP Chari,Jawahar Chari-6,Jawahar Chari-69,Pusa chari-23	1. Blade harrowing (Bakhar) for moisture conservation 2. Intercropping of Sesame and niger with Pigeonpea. 3. Ploughing and planking to conserved the moisture of the field for rabi crop 4. Sowing of Sesame and Blackgram as intercrop 5. Don't sown soybean, Rice, Sorghum and Maize 6. Preparation of field for Rabi crops	Seed source SAU;s, NSC, Beej Nigam
		Blackgram			
		Greengram			
	Red medium soils (Rakar soils)	Maize	Don't sow soybean (Can be sow upto 10th july), Maize, sesame and groundnut.		
		Soybean			
		Sesame			
		Ground nut			

		Kodo	Prefer to sow Kodo, Castor, Niger, Cluster bean, Finger millet **Cluster bean(gaur):** Bundel Gaur-1. Bundel Gaur-2,AGFRI-212-9, AGFRI-2365-2,Durgapur Safed **Finger millet(Mandua):** JNR-852 **Kodo :** Vamban-1,GPUK-3 **Kakun** : ISC-201 **Fodder sorghum**: MP Chari,Jawahar Chari-6,Jawahar Chari-69,Pusa chari-23		
	Black soils (Kabar and Mar soils)	Rice	No change **Fodder sorghum**: MP Chari,Jawahar Chari-6,Jawahar Chari-69,Pusa chari-23 **Finger millet(Mandua):** JNR-852		
		Pigeonpea	Don't sow pigeonpea Prefer Kodo, Kutki, Niger.		
			Finger millet(Mandua): JNR-852		
			Cluster bean(gaur): Bundel Gaur-1. Bundel Gaur-2,AGFRI-212-9, AGFRI-2365-2,Durgapur Safed		
			Cow pea : C-152,Pusa dofasali,Pusa faguni		

Condition			Suggested Contingency measures		
Early season drought **(Normal onset)**	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	Shallow sandy soils (Padua)	Soybean	Line sowing of short duration varieties if the plant population <30%	Weeding With hand wheel hoe; Interculture for dust mulching	-
		Blackgram	Thinning to maintain plant population		
		Green gram			
	Red medium soils (Rakar soils)	Maize	Ridge and furrow method of sowing(Maize) if the plant population <30%	Weeding With hand wheel hoe; Interculture for dust mulching	
		Soybean	Weeding and interculture		
		Sesame	Weeding and interculture		
		Ground nut	Gap filling		
		Kodo	Weeding and interculture		
		Pigeonpea	Thinning /Gap filling Resowing if the plant population is < 30%.		
	Black soils (Kabar and Mar soils)	Rice	Weeding and interculture; Gap filling	Weeding With hand wheel hoe;	
		Pigeonpea	Thinning /Gap filling Resowing if the plant population is < 30%.	Weeding With hand wheel hoe; Interculture for dust mulching	

Condition			Suggested Contingency measures		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**
At vegetative stage	Shallow sandy soils (Padua)	Soybean	Give life saving/ supplemental irrigation if available Maintain optimum plant population Adopt plant protection measures	Weeding With hand wheel hoe; Interculture for dust mulching	-
		Blackgram			
		Green gram			

	Red medium soils (Rakar soils)	Maize Soybean Sesame Ground nut Kodo Pigeonpea	Weeding and interculture Give life saving/ supplemental irrigation if available Maintain optimum plant population Adopt plant protection measures	Conservation furrows Life saving irrigation Use of uprooted weeds use as mulch for moisture conservation. Ridges are made after 15-20 lines of crops for the moisture conservation	
	Black soils (Kabar and Mar soils)	Rice Pigeonpea	Weeding and interculture; Give life saving/ supplemental irrigation if available Maintain optimum plant population Adopt plant protection measures		

Condition			**Suggested Contingency measures**		
Mid season drought (long dry spell)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**
At flowering/ fruiting stage	Shallow sandy soils (Padua)	Soybean Blackgram Green gram	Give life saving/ supplemental irrigation if available Adopt plant protection measures	Weeding With hand wheel hoe; Interculture for dust mulching Conservation furrows Life saving irrigation Ridges are made after 15-20 lines of crops for the moisture conservation Intercultivation	-
	Red medium soils (Rakar soils)	Maize Soybean Sesame Ground nut Kodo Pigeonpea	Give life saving/ supplemental irrigation if available Adopt plant protection measures		
	Black soils (Kabar and Mar soils)	Rice Pigeonpea	Give life saving/ supplemental irrigation if available Adopt plant protection measures		

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**
	Shallow sandy soils (Padua)	Soybean Blackgram Green gram	Give life saving/ supplemental irrigation if available	Plan for wheat, if pre sowing irrigation is available (JW-17,HW-2004) Mustard short duration varieties- Pusa Agarani	-
	Red medium soils (Rakar soils)	Maize Soybean Sesame Ground nut Kodo Pigeonpea	Give life saving/ supplemental irrigation if available	Plan to sow for rabi Mustard (short duration varieties- Pusa Agarani) ,Linseed (JLS-9,vegetables)	
	Black soils (Kabar and Mar soils)	Rice Pigeonpea	Give life saving/ supplemental irrigation if available	Plan to sow for rabi crops like wheat if pre sowing irrigation is available (JW-17,HW-2004) **Lentil(**JL-3,DPL-62,Pea-JM-6) **Pea-**JM-6	

2.1.2 Irrigated situation

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delayed release of water in canals due to low rainfall	**Not applicable**				
Limited release of water in canals due to low rainfall					
Non release of water in canals under delayed onset of monsoon in catchment					

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	Shallow to medium soils (Rakar & Padua)soil)	Sorghum (Jowar)	Prefer fodder sorghum (MP Chari,Jawahar Chari-6,Jawahar Chari-69,Pusa chari-23)	Adopt spacing of 45X12 cm, Apply 100:50:40 NPK Kg/ha	
		Maize (Makka)	Prabhat, Prabha	Adopt spacing of 60X25 cm, Apply 120:60:40 NPK Kg/ha	
		Sesame	JTS-8, TKG-306	Adopt spacing of 30x10 cm, Apply 60:40:20 NPK Kg/ha	
	Heavy soils (Kabar and Mar)	Rice	-	**Rice**- Adopt water saving methods like direct seeded rice, SRI Cultivation, Aerobic rice Adopt plant planking to conserve the moisture for rabi cropping	

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]**
Insufficient groundwater recharge due to low rainfall	Shallow to medium soils (Rakar & Padua)soil)	Black gram	LBG-20, Azad-1, PU-19, PDU-1	Adopt spacing of 30X10 cm, Apply 20:60:20: NPK Kg/ha+Rhizo+PSB@2.5 Kg/ha Follow the seed @15Kg/ha	
		Green gram	PDM-139,HUM-1	Adopt spacing of 30X10 cm, Apply 20:60:20: NPK Kg/ha+Rhizo+PSB@2.5 Kg/ha Follow the seed @15Kg/ha	

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]**
		Sesame	TKG-21,TKG-22,JTS-8,TKG-306	Adopt spacing of 30X10 cm, Apply 20:60:20: NPK Kg/ha+Rhizo+PSB@2.5 Kg/ha Follow the seed @15Kg/ha	
	Heavy soils (Kabar and Mar)	Kodo	Vamban-1,GPUK-3	Adopt spacing of 40x08 cm, Apply 40:20:20 NPK Kg/ha Follow the seed @15Kg/ha	
		Sorghum	JS 1041, CHS -15	Adopt spacing of 45x10cm Apply 80 : 40 : 20 NPK Kg/ha Follow the seed @15Kg/ha	

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

Condition	Suggested contingency measure			
Continuous high rainfall in a short span leading to water logging	**Vegetative stage**	**Flowering stage**	**Crop maturity stage**	**Post harvest**
Blackgram /Sesame	Provide drainage care should be taken that rain water does not stagnate in the field -Planting on ridge and furrow.	Care should be taken that rain water does not stagnate in the field. Interculture operation to improve soil aeration.	-Drain excess rain water. -Harvesting of crop in clear weather. -Keep the harvested produce in safe place.	Produce should be placed under shade. or protect the produce by tarpaulin kept in T floor. Sundry of the produce.

Rice	Drain the excess water as early as possible Apply 20 kg N + 10 kg K /ha after draining excess water Take up gap filling either with available nursery or by splitting the tillers from the surviving hills Take up suitable plant protection Measures in anticipation of pest & disease out breaks	Drain the excess water as early as possible Apply 20 kg N + 10 kg K /ha after draining excess water Take up suitable plant protection Measures in anticipation of pest & disease out breaks	Drain the excess water as early as possible Take up suitable plant protection measures in anticipation of pest & disease out breaks	Drain out water and spread sheaves loosely in field or field bunds where there is no water stagnation Spray common salt at 5% on panicles to prevent germination and spoilage of straw from moulds Thresh after drying the sheaves properly Ensure proper grain moisture before storing
Wheat	Care should be taken that rain water does not stagnate in the field. -top dressing of nitrogenous fertilizers.	Care should be taken that rain water does not stagnate in the field. Interculture operation to improve soil aeration.	Drain excess rain water. -Harvesting of crop in clear weather. -Keep the harvested produce in safe place.	- Produce should be placed under shade. Protect the produce by tarpaulin kept in T floor. Sun dry of the produce.
Chickpea	Care should be taken that rain water does not stagnate in the field. -Planting in ridge and furrow. -Interculture operation for aeration.	Care should be taken that rain water does not stagnate in the field. -Planting in ridge and furrow. -Interculture operation for aeration. - Spray of 2% DAP.	Drain excess rain water from field. -Harvesting of crop in clear weather. -Keep the harvested produce in safe place.	- Produce should be placed under shade. Protect the produce by tarpaulin kept in T floor. Sun dry of the produce.
Horticulture	-			
Heavy rainfall	NA			

with high speed wind in a short span	

Outbreak of pests and diseases due to unseasonable rains				
Rice	Control Rice hispa by clipping of seedlings Tips- to remove eggs masses of stem borers and rice hispa-or apply cholorpyriphos 20 EC @500 ml/ha. **Disease**- control bacterial leaf blight, leaf streak, brown spot, by applying streptocycline (250ppm).	For same pest apply trichogramma or crysopha @ 40000-50000 eggs/ha. Use NPV 250 LE/ha Use Bt formulations 1 lt./ha. **Disease** control of bacterial leaf blight, leaf streak, brown spot by applying streptocycline (250ppm).	Control of important Disease viz. rice blast Brown spot, false smut etc by applying Propiconzol (0.6ml/lit)/ Henzconazole(0.2%) etc.	Well drying prior to storage place should be of moisture proof rodent proof etc.
Blackgram	Greater incidence of semi looper and cattter piller for control apply Choloropyriphos 20 EC @ 500 ml/ ha. Apply Dithane M-45 @ 2.5 gm/lt. of water to control cercospora disease	-	-	-
Soybean	Control of semi looper, girdle betle, stem Fly by applying Trizopphas 40 EC or Profenofos 50 EC @ 800 ml/ha	Incidence of tobacco caterpillar, bihar hairy caterpillar. Trichogramma @ 40000-50000 eggs/ha. Use NPV 250 LE/ha Use Bt formulations 1. lit./ha	Control of pod borer and Cercospora, bacterial blight	Well drying prior to storage place should be of moisture proof rodent proof etc.
Pigeonpea	Incidence of leaf Webber, blister beetle and girdle beetle etc. and incidence of phytopthera Disease Quinalphos 1.5% or cholorpyriphos 1.5% Endosulphon 2% or methyle parathion 2%	Incidence of pod fly, pod borer, pod bug and plume moth. *Bacillus thuringeinsis* @ 1.5 kg /ha HaNPV@ 500 LE/ ha + 0.1% UV retardant + 0.% jaggery	Incidente of pod fly, pod borer, Pod bugs and plume moth Against pod fly Dimethoate 30 EC @ 0.03% Against gram pod borer Dusting @ 20-25 kg/ha Fenvalerate 0.4% or quinalphos 1.5% Or Cholorpyriphos 1.5% Endosulphan 2% or methyle Parathion 2%	

Sesame	Sesame leaf rollor, Sesame hawk moth, bihar hairy caterpillar, apply choloropyriphos 20EC @ 500 ml/ ha, Quinolphos 50 EC @ 800 ml/ha	Capsule borer Gall fly	Capsule borer, gall fly, apply Triazophos 40 EC or Profenofos 50 EC @ 800mli/ha	
Horticulture				
Tomato	Avoid water stagnation	Stacking of plants		

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]	Not applicable			
Sea water intrusion[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				
Rice	Light and repeated irrigation at the appearance of hair line cracks in soil surface, Correct iron deficiency with 0.5% iron sulphate spray.	Repeated irrigation at the appearance of hair line cracks in soil surface, pounding of water for 15 days after transplanting to check Fe deficiency and for crop establishment.	Repeated irrigation at the appearance of hairline cracks in soil surface	Harvest crop at physiological maturity
Blackgram, Pigeonpea, Sesame	Protect the crop with the help of light irrigation; wind breaks are necessary where cold and heat wave in regular	Protect the crop with the help of light irrigation; wind breaks are necessary where cold and heat wave in regular	Protect the crop with the help of light irrigation; wind breaks are necessary where cold and heat wave in regular	Harvest at physiological maturity
Horticulture				
Vegetables	Protect the crop with the help of light irrigation, wind breaks are necessary where	Protect the crop with the help of light irrigation; wind breaks are necessary where cold and heat wave in regular	Protect the crop with the help of light irrigation; wind breaks are necessary where cold and heat wave in regular	Harvest at physiological maturity

	cold and heat wave in regular			
Cold wave				
Chick pea Wheat	Light irrigation Smoke generation at night time to rise temperature	Light irrigation Smoke generation at night time to rise temperature	Light irrigation Smoke generation at night time to rise temperature	Harvest at physiological maturity
Frost				
Chickpea, Lentil, Pigeonpea	Protect the crop with the help of light irrigation; Smoke generation at night time to rise temperature ; Wind breaks are necessary where cold and heat wave in regular	Protect the crop with the help of light irrigation, Smoke generation at night time to rise temperature ; Wind breaks are necessary where cold and heat wave in regular	Protect the crop with the help of light irrigation, Smoke generation at night time to rise temperature ; Wind breaks are necessary where cold and heat wave in regular	Harvest at physiological maturity
Hailstorm	Not applicable			
Cyclone	Not applicable			

2.5 Contingent strategies for Livestock, Poultry & Fisheries

2.5.1 Livestock

	Suggested contingency measures		
	Before the event	During the event	After the event
Drought			
Feed and fodder availability	As the district is occasionally prone to drought the following practices may be implemented to prevent fodder shortage problem Sowing of cereals (fodder varieties of Sorghum/ Bajra) and leguminous crops (Lucerne, Berseem, Horse gram, Cowpea) during North-East monsoon under dry land system for fodder production. Collection of soybean and chick pea stover for use as feed supplement during drought Preserving the green maize fodder as silage Encourage fodder production with Bajra – stylo-Bajra on rotation basis and also to cultivate short-term fodder crops like sunhemp	Harvest and use biomass of dried up crops (Rice, wheat, Maize, Soybean, Black gram, Green gram, chick pea etc.,) material as fodder Harvest all the top fodder available (Subabul, Glyricidia, Pipol, Prosopis etc) and feed the LS during drought Concentrate ingredients such as Grains, brans, chunnies & oilseed cakes, low grade grains etc. unfit for human consumption should be procured from Govt. Godowns for feeding as supplement for high productive animals	Encourage progressive farmers to grow multi cut fodder crops of sorghum/bajra/maize with input subsidy Supply of quality stem cuttings of Hybrid napier (CO1), paragrass, guinea grass etc., well before monsoon Encourage growing fodder crops like Berseem in winter and Juar in summer season Flushing the stock to recoup Replenish the feed and fodder

		during drought Promotion of Horse gram as contingent crop and harvesting it at vegetative stage as fodder Continuous supplementation of minerals and vitamin to prevent infertility. Encourage mixing available kitchen waste with dry fodder while feeding to the milch animals	banks
Drinking water	Adopt various water conservation methods at village level to improve the ground water level for adequate water supply. Identification of water resources De-silting of ponds Rain water harvesting and create water bodies/watering points (when water is scarce use only as drinking water for animals) Construction of drinking water tanks in herding places/village junctions/relief camp locations Community drinking water trough can be arranged in sandies /community grazing areas	Adequate supply of drinking water. Restrict wallowing of animals in water bodies/resources; Add alum in stagnated water bodies	Watershed management practices shall be promoted to conserve the rainwater. Bleach (0.1%) drinking water / water sources Provide clean drinking water
Health and diseases management	Procure and stock emergency medicines and vaccines for important endemic diseases of the area All the stock must be immunized for endemic diseases of the area Surveillance and disease monitoring network to be established at Joint Director (Animal Husbandry) office in the district Adequate refreshment training on draught management to be given to VAS, Jr.VAS, LI with regard to health & management measures Procure and stock multivitamins & area specific mineral mixture	Carryout deworming to all animals entering into relief camps Identification and quarantine of sick animals Constitution of Rapid Action Veterinary Force Performing ring vaccination (8 km radius) in case of any outbreak Restricting movement of livestock in case of any epidemic Tick control measures be undertaken to prevent tick borne diseases in animals Rescue of sick and injured animals and their treatment Organize with community, daily lifting of dung	Keep close surveillance on disease outbreak. Undertake the vaccination depending on need Keep the animal houses clean and spray disinfectants Farmers should be advised to breed their milch animals during July-September so that the peak milk production does not coincide with mid summer

		from relief camps	
Floods	**NA**		
Cyclone	NA		
Heat wave and cold wave			
Heat wave	i) Plantation around the shed ii) H_2O sprinklers / foggers in the shed **iii)** Application of white reflector paint on the roof **iv)** Thatched sheds should be provided as a shelter to animal to minimize heat stress	Allow the animals early in the morning or late in the evening for grazing during heat waves Feed green fodder/silage / concentrates during day time and roughages / hay during night time in case of heat waves Put on the foggers / sprinklers /fans during heat weaves in case of high yielders (Jersey/HF crosses) In severe cases, vitamin 'C' and electrolytes should be added in H_2O during heat waves.	Feed the animals as per routine schedule Allow the animals for grazing (normal timings)
Cold wave	Covering all the wire meshed walls / open area with gunny bags/ polyethylene sheets (with a mechanism for lifting during the day time and putting down during night time)	Allow for grazing between 10AM to 3PM during cold waves Add 25-50 ml of edible oil in concentrates and fed to the animal during cold waves Apply / sprinkle lime powder in the animal shed during cold waves to neutralize ammonia accumulation	Feed the animals as per routine schedule Allow the animals for grazing (normal timings)
Insurance	Encouraging insurance of livestock	Listing out the details of the dead animals	Submission for insurance claim and availing insurance benefit Purchase of new productive animals

2.5.2 Poultry

	Suggested contingency measures		
	Before the event	During the event	After the event
Drought			
Shortage of feed ingredients	Storing of house hold grain like maize, broken rice etc, in to use as feed in case of severe drought	Supplementation only for productive birds with house hold grain Supplementation of shell grit (calcium) for laying birds	Supplementation to all survived birds

		Culling of weak birds	
Drinking water		Use water sanitizers or offer cool hygienic drinking water	
Health and disease management	Culling of sick birds. De-worming and vaccination against RD and IBD	Mixing of Vit. A,D,E, K and B-complex including vit C in drinking water (5ml in one litre water)	Hygienic and sanitation of poultry house Disposal of dead birds by burning / burying with lime powder in pit
Floods	**NA**		
Cyclone	NA		
Heat wave and cold wave			
Shelter/environment management	**Heat wave:** Provision of proper shelter with good ventilation	In severe cases, foggers/water sprinklers/wetting of hanged gunny bags should be arranged Don't allow for scavenging during mid day	Routine practices are followed
	Cold wave: Provision of proper shelter Arrangement for brooding Assure supply of continuous electricity	Close all openings with polythene sheets In severe cases, arrange heaters Don't allow for scavenging during early morning and late evening	Routine practices are followed
Health and disease management	De-worming and vaccination against RD and fowl pox	Supplementation of house hold grain Provide cool and clean drinking water with electrolytes and vit. C In hot summer, add anti-stress probiotics in drinking water or feed	Routine practices are followed

2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event	During the event	After the event
Drought			
Shallow water in ponds due to insufficient rains/inflow	1. Restricted release of water from reservoir. 2. Supplementary water harvest structures like pond and tanks have to be developed. 3. Renovation and maintenance of existing	1. Restrict lifting of water for irrigation purpose of crops 2. Catch the stock, market the produce to reduce the density of population in ponds.	1. Excavate the ponds to increase the depth. 2. Try to release water into the pond if it rains in off-season

	water harvest structures		
Impact of heat & salt load build up in ponds / change in water quality	1. Prepare to release water into the habitat	1. Mixing of water from the water harvest structure like ponds and tanks into the fish habitat.	1. Monitoring the water quality and health of aquatic organisms
Floods	**NA**		
Cyclone	**NA**		
Heat wave and cold wave			
Management of pond environment	Good water quality to be maintained, Water depth to be maintained	Recirculation of water and pruning	Water treatment with lime
Health and diseases management	Prophylactic measures to be taken	Maintain good quality water in ponds	Treatment of pond water with lime and medicines