State: _Madhya Pradesh

Agriculture Contingency Plan for District: Sidhi

1.0 District Agriculture profile				
1.1	**Agro-Climatic/Ecological Zone**			
	Agro Ecological Sub Region (ICAR)	Central Highlands (Malwa And Bundelkhand), Hot Sub humid (Dry) Eco-sub region (10.3)		
	Agro-Climatic Zone (Planning Commission)	Central Plateau And Hills Region (VIII)		
	Agro Climatic Zone (NARP)	Kymore Plateau and Satpura Hill Zone (MP-4)		
	List all the districts or part thereof falling under the NARP Zone	Satna, Rewa, Katni, Sidhi, Seoni, Jabalpur, Panna		
	Geographic coordinates of district headquarters	Latitude	Longitude	Altitude
		22° 47' to 24° 42' N	**81° 18' to 82° 48' E**	609 m
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	RARS, Rewa		
	Mention the KVK located in the district	Programme Coordinator Krishi Vigyan Kendra, Karaundia, Distt. Sidhi – 486 661		
1.2	**Rainfall**	Normal RF (mm)	Normal Onset	Normal Cessation
	SW monsoon (June-Sep):	1041.5	2nd week of June	1st week of October
	NE Monsoon(Oct-Dec):	51.3		
	Winter (Jan- Feb)	49.3		
	Summer (March-May)	33.5		
	Annual	1175.6	-	-

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)	1039.2	425.5	434.8	83.1	14.5	65.7	0.0	16.6	42.9	28.0

* 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 soils	486.2	46.2
	Medium deep	211.4	20.1
	Shallow soils	353.6	33.6

Source:- NBSS & LUP, Nagpur

1.5	**Agricultural land use**	**Area ('000 ha)**	**Cropping intensity %**
	Net sown area	353.6	136
	Area sown more than once	127.9	
	Gross cropped area	481.5	

(Source : Agriculture Statistics 2009, Directorate of Farmer Welfare and Agriculture Development Madhya Pradesh, Bhopal)

1.6	**Irrigation**	**Area ('000 ha)**		
	Net irrigated area	64.8		
	Gross irrigated area	71.9		
	Rainfed area	288.8		
	Sources of Irrigation	**Number**	**Area ('000 ha)**	**Percentage of total irrigated area**
	Canals	185	13.3	18.4
	Tanks	80	0.8	1.1
	Open wells	12143	30.9	42.9
	Bore wells	2096	15.3	21.2
	Lift irrigation schemes	NA	-	

	Micro-irrigation	NA	-	
	Other sources (reservoir)	161	11.6	16.1
	Total Irrigated Area	-	71.9	-
	Pump sets	10225	-	-
	No. of Tractors	1413	-	-
	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	-	-	High level of saline
	Semi- critical	-	-	
	Safe	08	-	
	Wastewater availability and use	-	-	
	Ground water quality	moderate Sift		
*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**
		Irrigated	***Rainfed***	**Total**	***Irrigated***	***Rainfed***	**Total**		
	Rice	-	-	121.3	-	-	-		121.3
	Pigeonpea	-	-	41.4	-	-			41.4
	Kodo kutki	-	-	40.2	-	-			40.2
	Maize	-	-	37.2	-				37.2
	Blackgram	-	-	20.1	-				20.1
	Sorghum	-	-	16.6	-	-	-		16.6
	Wheat	-	-	-	-		86.7		86.7
	Chickpea	-	-	-	-		37.8		37.8
	Barley	-	-	-	-		19.2		19.2
	Linseed	-	-	-	-		12.9		12.9
	Lentil	-	-	-	-		6.9		6.9

		Total area (ha)	Irrigated	Rainfed
	Mango	319 ha.	-	-
	Banana	5 ha	-	-
	Others (specify)			
		Total area (ha)	**Irrigated**	**Rainfed**
	Potato	1633	1633	-
	Onion	620	620	-
	Tomato	393	393	-
	Okra	106	106	-
	Others (specify)			
		Total area	**Irrigated**	**Rainfed**
	Safed musali	5.65	5.65	-
	Ashwa gandha	4.6	3.8	0.8
	Satavar	2.0	-	2.0

(Source : Agriculture Statistics 2009, Directorate of Farmer Welfare and Agriculture Development Madhya Pradesh, Bhopal)

	Plantation crops	**Total area**	**Irrigated**	**Rainfed**
	-	-	-	-
	Others such as industrial pulpwood crops etc (specify)			
	Fodder crops	**Total area**	**Irrigated**	**Rainfed**
	-	-	-	-
	Others (specify)	-	-	-
	Total fodder crop area	-	-	-
	Grazing land	-	-	-
	Sericulture etc	-	-	-
	Others (Specify)	-	-	-

1.8	**Livestock**	**Male ('000)**	**Female ('000)**	**Total ('000)**
	Non descriptive Cattle (local low yielding)			784.7
	Crossbred cattle			NA
	Non descriptive Buffaloes (local low yielding)			NA
	Graded Buffaloes			174.8
	Goat			340.6
	Sheep			23.4
	Others (Pig,, Horse etc)			11.8
	Commercial dairy farms (Number)			
1.9	**Poultry**	**No. of farms- NA**	**Total No. of birds ('000)**	
	Commercial			
	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**
	13	**-**	**4000**

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)	48043.10		
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)	
	Rice	88.0	750					88.0	750	
	Maize	39.2	1082					39.2	1082	
	Pigeon pea	15.6	456					15.6	456	
	Kodo kutki	12.6	301					12.6	301	
	Sesame	7.2	340					7.2	340	
	Blackgram	5.0	415					5.0	415	
	Wheat			66.0	790			66.0	790	
	Chickpea			16.2	431			16.2	431	
	Barley			15.5	806			15.5	806	
	Linseed			3.7	271			3.7	271	
	Rape Mustard			3.3	428			3.3	428	
	Lentil			2.82	406			2.8	406	
Major Horticultural crops (Crops to be identified based on total acreage) -NA										

(Source : Agriculture Statistics 2009, Directorate of Farmer Welfare and Agriculture Development Madhya Pradesh, Bhopal)

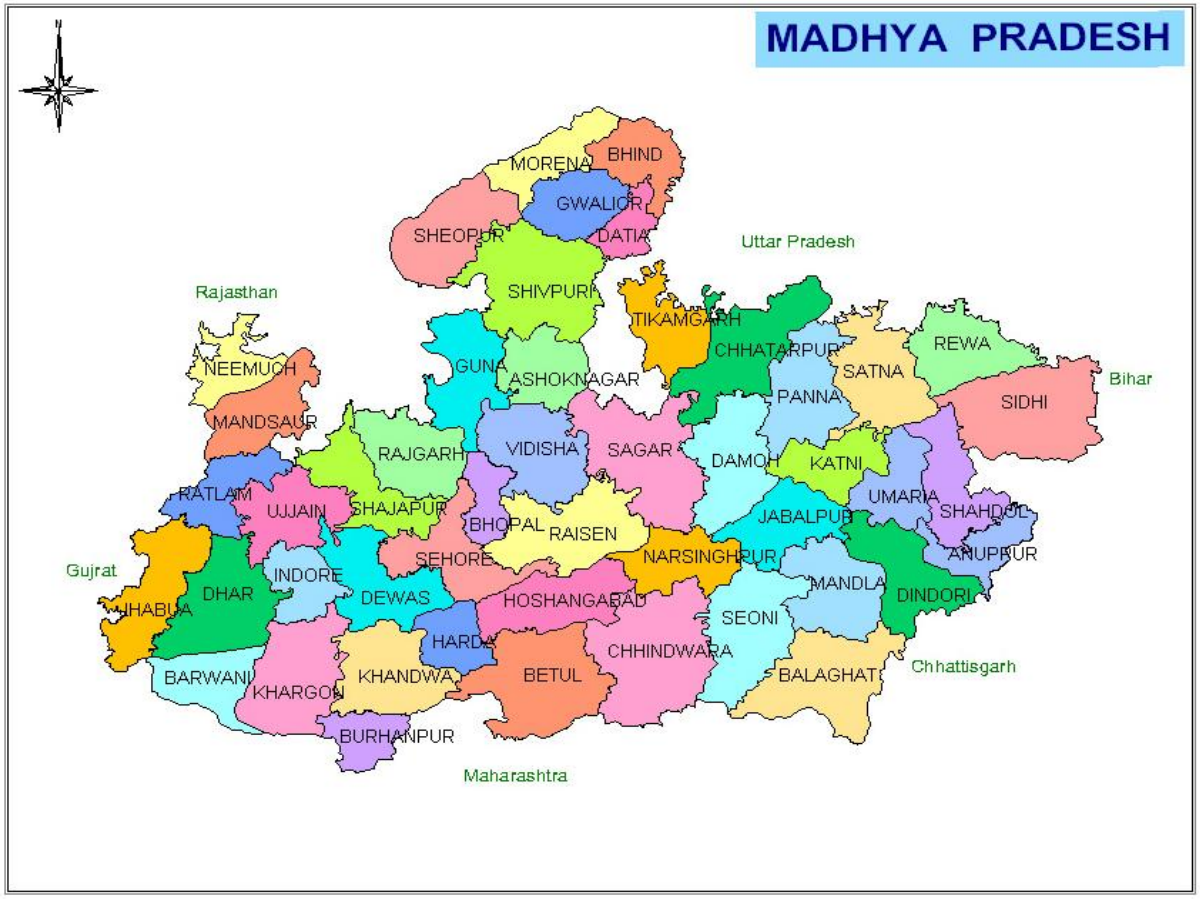
1.12	**Sowing window for 5 major field crops (start and end of normal sowing period)**	**Rice**	**Maize**	**Pigeonpea**	**Blackgram**	
	Kharif- Rainfed	3rd week of June- 2nd week of July	3rd week of June- 1st week of July	3rd week of June – 2nd week of July	1st week of July – 2nd week of July	
	Kharif-Irrigated	2nd week of June – 3rd week of July	3rd week of June – 1st week of July	3rd week of June – 1st week of July	1st week of July – 2nd week of July	
		Wheat	**Chickpea**	**Lentil**	**Linseed**	**Mustard**
	Rabi- Rainfed	1st week of November - 3rd week of November	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 October -4th week

						of October
	Rabi-Irrigated	2nd week of November - 2nd week of December	2nd week of November - 4th week of November	2nd week of October - 4th week of October	4th week of October to 2nd week of November	2nd week of October -4th week of October

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) wilt in pulse crop , YVM in Blackgram, Greengram, Sterility in Pigeonpea, Pod borers and Powdery mildew due to humidity	✓		
	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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MORENA
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
UJJAIN
SHAJAPUR
BHOPAL
RAISEN
UMARIA
JABALPUR
SHAHDOL
SEHORE
NARSINGHPUR
ANUPPUR
Gujrat
INDORE
DHAR
DEWAS
HOSHANGABAD
MANDLA
DINDORI
JHABUA
SEONI
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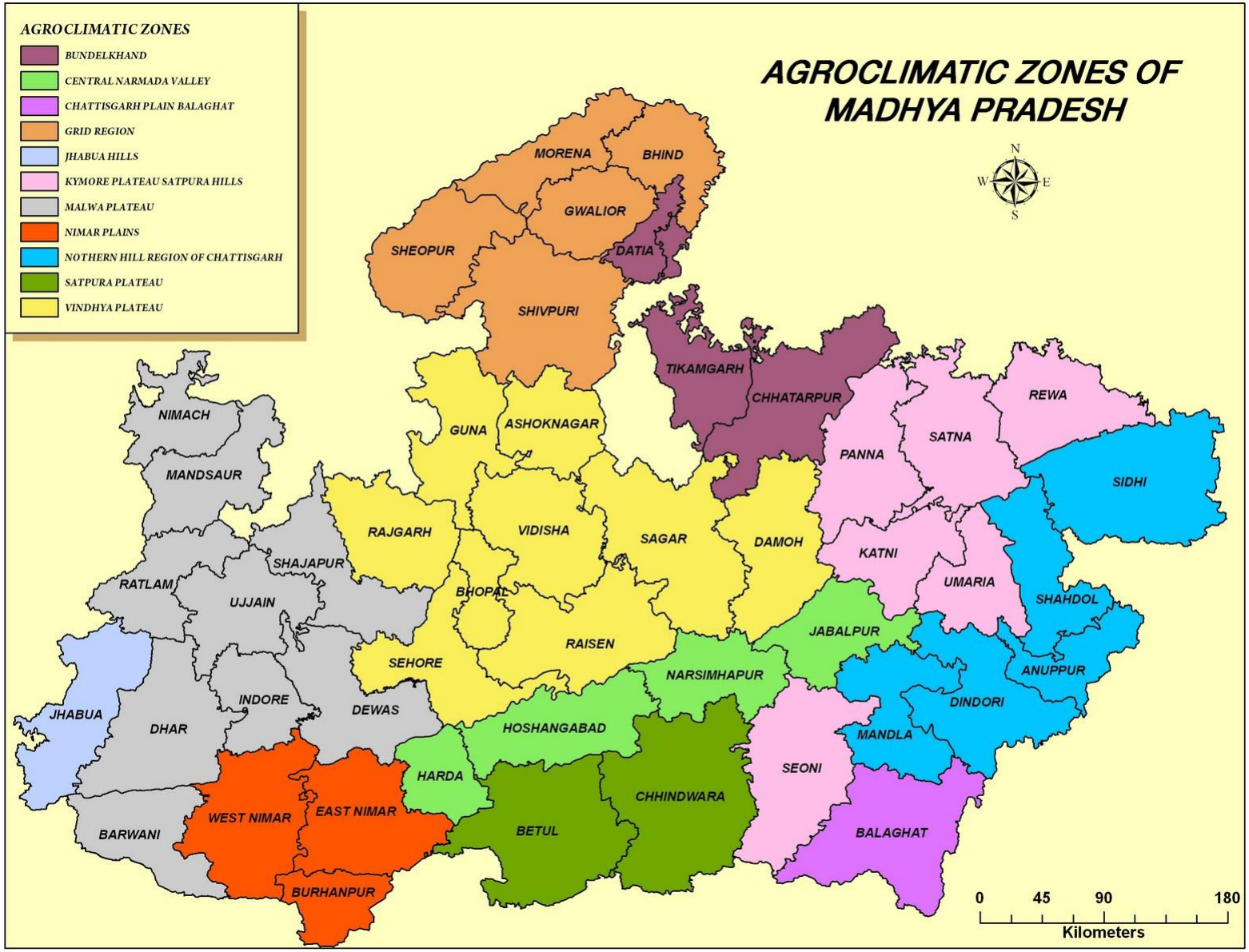
KHANDWA
BETUL
BALAGHAT
Chhattisgarh
KHARGON
BURHANPUR
Maharashtra


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
AGROCLIMATIC ZONES OF MADHYA PRADESH
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SAGAR
DAMOH
KATNI
UMARIA
SHAJAPUR
RATLAM
UJJAIN
BHOPAL
SHAHDOL
JABALPUR
RAISEN
SEHORE
NARSIMHAPUR
ANUPPUR
INDORE
DEWAS
DINDORI
JHABUA
DHAR
HOSHANGABAD
MANDLA
HARDA
SEONI
CHHINDWARA
WEST NIMAR
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BETUL
BALAGHAT
BARWANI
BURHANPUR
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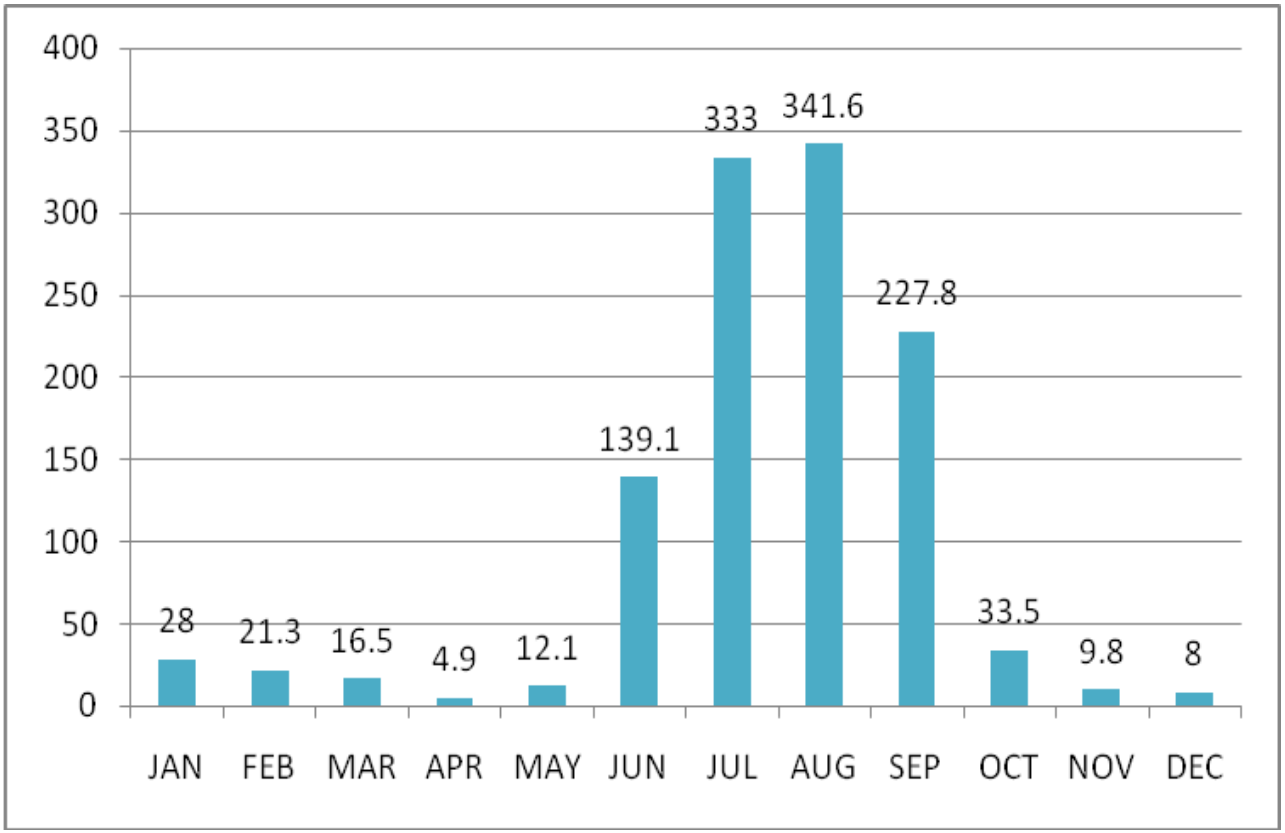
90
180
Kilometers

Annexure II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150
100
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21.3
16.5
4.9
12.1
139.1
333
341.6
227.8
33.5
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JAN
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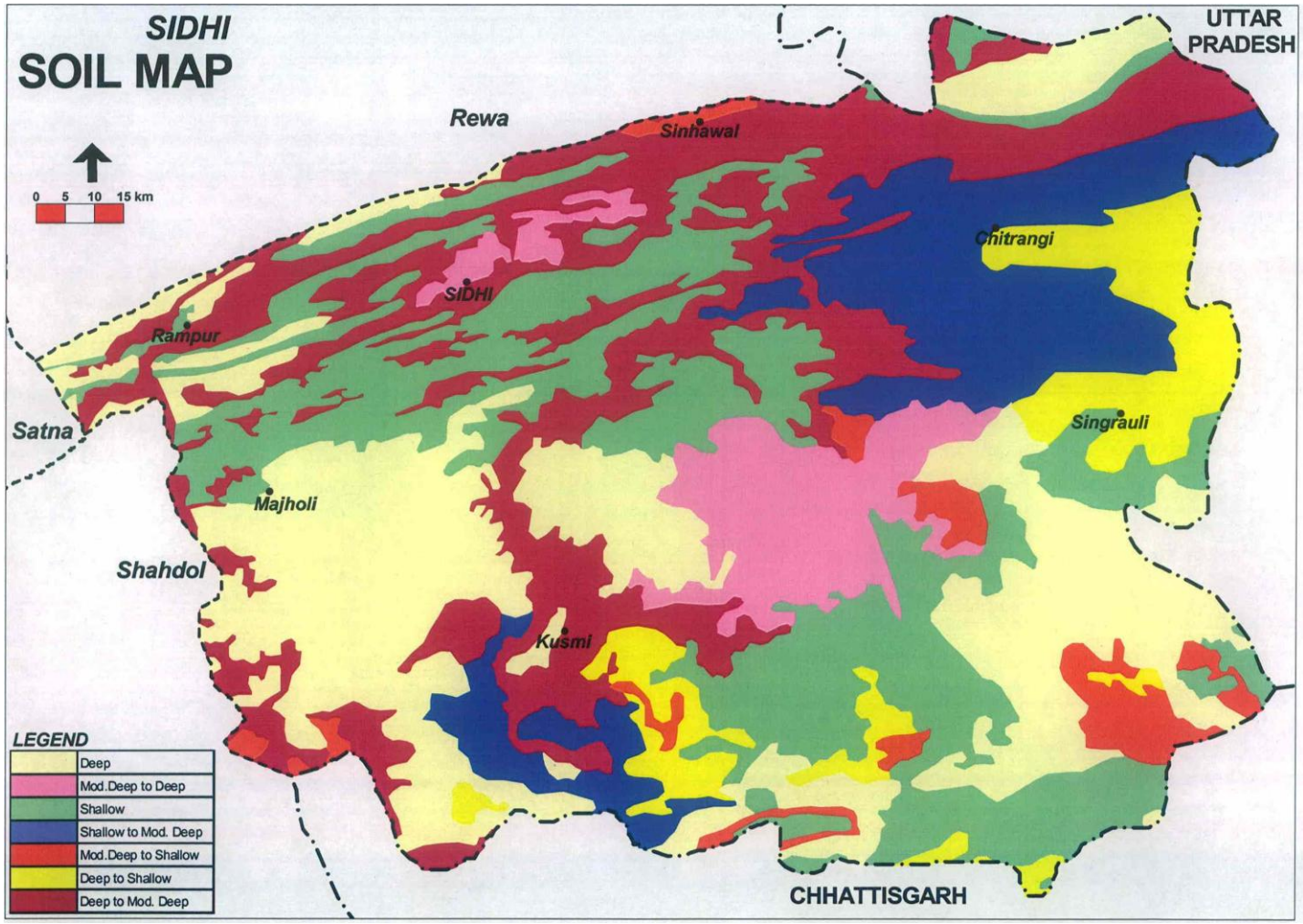
Annexure III



Source: NBSS & LUP, Nagpur

2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop / Cropping system**	**Change in crop / cropping system including variety**	**Agronomic measures**	**Remarks on Implementation**
Delay by 2 weeks **4th week of June**	Bunded low lands deep to medium deep black soils	Rice-Wheat	No Change **Rice**-Upland field: IR-36, JR-201, JR-503, vandna, porrnima, Ananda, Narendra 97, Govinda and hybrid rice JRH 4, 5 and 8 Lowland field WGL-32100, MR-219, Mhamaya, IR-36,IR-64, HMT, Swarna, Madhuri, Pusa basmati, Karnal basmati, Pusa sugandha3,4,and5 and Hybrid rice (PRH-10,PA6201,PHB71, Pro Agro 6444)	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	Source of seed SAU, NSC & SSC For Agronomic Measures the Ongoing scheme like RKVY NREGS etc
	Unbunded upland shallow soils	Rice-Wheat Rice - Chickpea	No Change **Rice**-Upland field: IR-36, JR-201, JR-503, Vandna, Poornima, Ananda, Narendra 97, Govinda and Hybrid rice JRH 4, 5 and 8		
		Pigeonpea	**Pigeonpea**- Asha, No-148, JKM-7, JA-4, ICPL-85063(Laxmi), JKM-189		

		Blackgram	**Blackgram –** JU-2, JU-3, JU-86, T-9, JBG-623, LBG 684, TAU-1, Berkha, PU-30,35,19		
		Sesame	No change		
		Minor millets	No change		

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delay by 4 weeks **2nd week of July**	Bunded low lands deep to medium deep black soils	Rice-Wheat	**Rice –** IR-36 JR-201, Poornima , JR-503, Vandna	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	Source of Seed:- JNKVV, Jabalpur NSC
	Unbunded upland shallow soils	Rice-Wheat Rice - Chickpea	No Change **Rice-**Upland field: IR-36, JR-201, JR-503, Vandna, Poornima, Ananda, Narendra 97, Govinda and Hybrid rice JRH 4, 5 and 8		
		Pigeonpea	**Pigeonpea-** Pragati ,Jagriti,,Asha ,Nmuber-148,JKM-7,JA-4,Type-21-Pusa-855, ICPL-85063 (Laxmi), JKM-189		
		Blackgram	**Blackgram –** JU-2, JU-3, JU-86, T-9, JBG-623, LBG 684, TAU-1, Berkha, PU-30,35,19 **Greengram:** Pusa vishal, K851, JM721, Jawahar 99 -37, Hum-1, Hum-2,Tarme-1 L.G.450, T.M.98-50, JM-98-90, PDM 11, 54 and 139		

		Sesame	No change		
		Minor millets	**Kodo**- Jawahar Kodo-1, 2, 41, 62, 101, 147, 439, Jawahar-48, Jawahar, 155, JK-106 **Kutki -** Jawahar Kutki 1, 2, 8, JK 36		

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delay by 6 weeks **4th week of July**	Bunded low lands deep to medium deep black soils	Rice-Wheat	**Prefer alternate crops**, Pigeonpea, Sesame, Niger, Castor, Kodo, Kutki in place of rice	1. Blade harrowing (Bakhar) for moisture conservation 2. 100 kg seed /ha required for lehi system in rice. 3. Don't sow maize 4. Intercropping of Sesame and niger with Pigeonpea	Source of Seed:- JNKVV, Jabalpur NSC
	Unbunded / bunded upland shallow soils	Rice-Wheat Rice - Chickpea	**Prefer alternate crops**, Pigeonpea, Sesame, Niger, Castor, Kodo, Kutki in place of rice		
		Pigeonpea	Sesame/ Niger/ castor/ Minor millets		
		Blackgram			
		Sesame	No change		
		Minor millets	Sesame/ Niger/ castor/ Minor millets		

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**

Delay by 8 weeks **2nd week of August**	Bunded low lands deep to medium deep black soils	Rice-Wheat	**Prefer alternate crops**, Niger, Castor, Kodo, Kutki in place of rice	1. Blade harrowing (Bakhar) for moisture conservation 2. 100 kg seed /ha required for lehi system in rice. 3. Don't sow maize 4. Intercropping of Sesame and niger with Pigeonpea	Source of Seed:- JNKVV, Jabalpur NSC
	Unbunded / bunded upland shallow soils	Rice-Wheat Rice - Chickpea	**Prefer alternate crops**, Niger, Castor, Kodo, Kutki in place of rice.		
		Pigeonpea	Niger/ castor/ Minor millets		
		Blackgram	**Niger**–JNC-6, JNC-1, JNC-9, JVN-1		
		Sesame	**Niger**–JNC-6, JNC-1, JNC-9, JVN-1		
		Minor millets	Niger/ castor/ Minor millets		

Condition			**Suggested Contingency measures**		
Early season drought **(Normal onset)**	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measure**	**Remarks on Implementation**
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	Bunded low lands deep to medium deep black soils	Rice-Wheat	1. Resowing of direct seeded rice 2. Prefer alternate crops like Soybean, Pigeonpea, Greengram and Blackgram on bunds 3. Intercultivation	1. Blade harrowing (Bakhar) for moisture conservation 2. Adopt moisture conservation practices. 3. Conservation of excess rain water in high rainfall areas .	Source of Seed:- JNKVV, Jabalpur NSC
	Unbunded / bunded upland shallow soils	Rice-Wheat Rice - Chickpea			
		Pigeonpea			
		Blackgram			
		Sesame			
		Minor millets			

Condition			**Suggested Contingency measures**		
Early season drought **(Normal onset)**	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measure**	**Remarks on Implementation**
At Vegetative stage	Bunded low lands deep to medium deep black soils	Rice-Wheat	Life saving irrigation if available Maintain optimum plant population	1. Interculture with Dora/Kulpha/Hand hoe in between rows 2.Use uprooted weeds as mulch for moisture conservation. 2. Ridges are made after 15-20 lines of crops for the moisture conservation 4. Adopt plant protection measures	-
	Unbunded / bunded upland shallow soils	Rice-Wheat Rice - Chickpea			
		Pigeonpea			
		Blackgram			
		Soybean - Chickpea			
		Sesame			
		Minor millets			

Condition			**Suggested Contingency measures**		
Early season drought **(Normal onset)**	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measure**	**Remarks on Implementation**
At Flowering stage	Bunded low lands deep to medium deep black soils	Rice-Wheat	Life saving irrigation if available	1. Interculture with Dora/Kulpha/Hand hoe in between rows . 2. Use of uprooted weeds use as mulch for moisture conservation. 3. Ridges are made after 15-20 lines of crops for the moisture conservation 4. Adopt plant protection	-
	Unbunded / bunded upland shallow soils	Rice-Wheat Rice - Chickpea			
		Pigeonpea			
		Blackgram			

		Soybean - Chickpea		measures	
		Sesame			
		Minor millets			

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**
	Bunded low lands deep to medium deep black soils	Rice-Wheat	1. Line sowing of Lentil, Linseed, Chickpea in moist zone 2. Seed treatment with mixture of Thiram (1.5g)+ Carbendazim (1.5g) /kg seed followed by treated with biofertilizers 3. Sowing of small seeded grains mix with FYM and vermicompost	Prefer the alternate crops like Lentil, Linseed, Chickpea, irrigated and unirrigated wheat -Line sowing of Lentil, Linseed, Chickpea in moist zone	Source of Seed:- JNKVV, Jabalpur NSC
	Unbunded / bunded upland shallow soils	Rice-Wheat Rice - Chickpea			
		Pigeonpea			
		Blackgram			
		Sesame			
		Minor millets			

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	Rain fed Upland shallow soils	Rice-Wheat/ Maize- Linseed / Rice- Chickpea/	Rice-Linseed/ Maize- Linseed	Adopt water saving methods like direct seeded rice, SRI Cultivation, Aerobic rice	RKVY, NFSM, ISOPOM, NREGS
	Irrigated (Mid land & low lands)				

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
	Medium black & red soils	Rice- Lentil/ Pigeon pea / Sorghum-potato-Late wheat (Local & improved var.)		Prefer early maturing Cultivars. Irrigate at critical stages	

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Limited release of water in canals due to low rainfall	Rain fed upland shallow soils	Rice- Mustard / Rice-Linseed	Rice-Wheat Green gram-Mustard	Adopt water saving methods like direct seeded rice, SRI Cultivation, Aerobic rice Maintain optimum plant population Conservation tillage	RKVY, NFSM, ISOPOM, NREGS
		Maize-Linseed	Pigeon pea		
	Irrigated (Mid land & low lands)	Rice-Wheat/ Rice -Chickpea	Rice-Chickpea Black gram-Wheat		
		Sorghum- Lentil	Green gram		
	Medium black & red soils	Green gram-Wheat (Early)	Green gram-Wheat(Early)		

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]**
Non release of water in canals under delayed onset of monsoon in catchment	Rain fed upland shallow soils	Sorghum- Linseed	Maize-Wheat (Early)	**Rice**- Adopt water saving methods like direct seeded rice, SRI Cultivation, Aerobic rice **Pigeon pea**-Prefer early maturing varieties and sow on ridges **Sorghum:** Prefer dual purpose varities/ hybrids	RKVY, NFSM, ISOPOM, NREGS
		Maize-Mustard	Black gram-Mustard		
		Green gram-Mustard	No change		
	Irrigated Low and, Mid lands)	Rice-chickpea	Maize-Wheat (Early)		
		Sorghum-field pea	Green gram-Wheat(Early)		
		Pigeon pea	Green gram-Wheat(Early)		
	Medium black & red soils	Green gram-Wheat	No change		

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]**
				Blackgram/ Greengram: Adopt *in-situ* moisture conservation practices at 30DAS	

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	Rain fed upland shallow soils	Rice-Wheat	Black gram-Mustard	**Rice**- Adopt water saving methods like direct seeded rice, SRI Cultivation, Aerobic rice **Pigeon pea**-Prefer early maturing varieties and sow on ridges **Sorghum:** Prefer dual purpose varities/ hybrids **Blackgram/ Greengram:** Adopt *in-situ* moisture conservation practices at 30DAS	RKVY, NFSM, ISOPOM, NREGS
		Pigeon pea	Maize-Lentil		
		Rice -Chickpea	Green gram- Linseed		
	Irrigated Low and, Mid lands)	Black gram-Wheat	Green gram- Linseed		
		Rice-chickpea	Maize-Wheat (Early)		
		Sorghum-field pea	Green gram-Wheat (Early)		
		Pigeon pea	Green gram-Wheat (Early)		
	Medium black & red soils	Green gram-Wheat	Green gram-Wheat (Early)		

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Insufficient groundwater recharge due to low rainfall	Rain fed upland red loamy soils	Rice-Wheat	Fallow-Chickpea Chickpea should be sown with residual moisture after harvest of soybean or give p re sowing irrigation to chickpea	**Rice**- Adopt water saving methods like direct seeded rice, SRI Cultivation, Aerobic rice	RKVY, NFSM, ISOPOM, NREGS

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
		Rice-Chickpea	Fallow-Lentil	**Pigeon pea**-Prefer early maturing varieties and sow on ridges **Sorghum:** Prefer dual purpose varities/ hybrids **Blackgram/ Greengram:** Adopt *in-situ* moisture conservation practices at 30DAS Prefer low water requirement cultivars; Weed management	
		Green gram-Wheat	Maize-Linseed		
	Irrigated Low and, Mid lands)	Black gram-Wheat	Black gram		
		Rice-chickpea	Wheat Prefer short duration low water requirement varieties of wheat. Protective irrigation at CRI stage in wheat.		
		Sorghum-Field pea	Green gram-Wheat (Early)		
		Pigeon pea	Green gram-Wheat (Early)		
	Medium black & red soils	Green gram-Wheat	Green gram-Wheat (Early)		
		Chickpea	Chickpea should be sown with residual moisture after harvest of soybean or give p re sowing irrigation to chickpea		

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**
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	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

	Measures in anticipation of pest & disease out breaks			Ensure proper grain moisture before storing
Maize, Sorghum Sesame, Blackgram	Provide drainage care should be taken that rain water does not stagnate in the field. Interculture operation.	Change care should be taken that rain water does not stagnate in the field. Interculture operation. N foliar spry foliar spray	Care should be taken that rain water does not stagnate in the field. Harvesting of crop in clear weather. N foliar spry foliar spray	Produce should be placed under shade. or protect the produce by tarpaulin kept in T floor.
Wheat	Care should be taken that rain water does not stagnate in the field and not allow to top dressing of nitrogenous fertilizers.	Care should be taken that rain water does not stagnate in the field and not allow to top dressing of nitrogenous fertilizers. Interculture operation	Proper drainage should be provided and adopt all plant protection measures. Harvesting of crop in clear weather.	- Produce should be placed under shade. or protect the produce by tarpaulin kept in T floor
Chickpea	Care should be taken that rain water does not stagnate in the field and not allow to top dressing of nitrogenous fertilizers.	Care should be taken that rain water does not stagnate in the field. Interculture operation	Proper drainage should be provided and adopt all plant protection measures. Harvesting of crop in clear weather.	Produce should be placed under shade. or protect the produce by tarpaulin kept in T floor
Horticulture				
Tomato	Staking of plant be done	Staking of plant be done	Staking of plant be done	
Heavy rainfall with high speed wind in a short span	Not applicable			

Outbreak of pests and diseases due to unseasonal rains				
Rice	Spraying of Monocrotophos 36 EC 14 ml or Cypermethrin 10 EC 6 ml per 10 liter of water against stem borer	Spraying of Monocrotophos 36 EC 14 ml or Cypermethrin 10 EC 6 ml per 10 liter of water against stem borer	Removal and destruction of infected panicles due to Loose smut	-
Wheat	Spray 0.2 % mancozeb 76% WP against wheat rust.	Spray 0.2 % mancozeb 76% WP against wheat rust.	Carry out critical survey of fields for disease attack in crops	
Chickpea	Spray triazophos 40 % EC @ 1-1.5 l/ha in chickpea against pest incidence. · "T" shaped pegs placed in late sown chickpea field	Spray triazophos 40 % EC @ 1-1.5 l/ha in chickpea against pest incidence. · "T" shaped pegs placed in late sown chickpea field	Spray triazophos 40 % EC @ 1-1.5 l/ha in chickpea against pest incidence. Carry out critical survey of fields for insect and	-

	for biological control of pod borer and for chemical control spraying of Quinalphos 25 EC or Chlorpyriphos 20 EC C or Methyle Parathion 50 EC @ 600 ml dissolve in 500 L of water should be used. Dusting of Fenvalerate 0.4% or Endosulphan 4% 15-20 kg or Quinalphos 1.5 WP 20-25 per hectare with duster.	for biological control of pod borer and for chemical control spraying of Quinalphos 25 EC or Chlorpyriphos 20 EC C or Methyle Parathion 50 EC @ 600 ml dissolve in 500 L of water should be used. Dusting of Fenvalerate 0 0.4% or Endosulphan 4% 15-20 kg or Quinalphos 1.5 WP 20-25 per hectare with duster.	disease attack in crops	

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 intrusion[3]	-	-	-	-

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

Extreme event type	**Suggested contingency measure[r]**			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Heat Wave				
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
Maize, Soybean, Pigeonpea	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	Protect the crop with the help of light irrigation; wind breaks are necessary where cold	Protect the crop with the help of light irrigation

	cold and heat wave in regular	cold and heat wave in regular	and heat wave in regular	
Horticulture				
Mango , Guava	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
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	Give 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.	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,	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

	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	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 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	Encourage growing fodder crops like Berseem in winter and Juar in summer season Flushing the stock to recoup Replenish the feed and fodder 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	Carryout deworming to all animals entering into relief camps Identification and quarantine of sick animals	Keep close surveillance on disease outbreak. Undertake the vaccination depending on need

	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	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 from relief camps	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
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	Feed the animals as per routine schedule Allow the animals for grazing (normal timings)

		accumulation	
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 Culling of weak birds	Supplementation to all survived 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 water harvest structures	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
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