State: Madhya Pradesh

Agriculture Contingency Plan for District: Vidisha

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 (10.1)		
	Agro-Climatic Zone (Planning Commission)	Central Plateau And Hills Region (VIII)		
	Agro Climatic Zone (NARP)	Vindhya Plateau Zone (MP-5)		
	List all the districts or part thereof falling under the NARP Zone	Bhopal, Sagar, Damoh, Vidisha, Raisen and Sehore		
	Geographic coordinates of district headquarters	Latitude	Longitude	Altitude
		23° 21' to 24° 22' N	**77° 15' to 78° 18' E**	466 msl
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	ZARS, Powarkheda		
	Mention the KVK located in the district	Naktara, Raisen		
1.2	**Rainfall**	**Normal RF(mm)**	**Normal Onset (specify week and month)**	**Normal Cessation (specify week and month)**
	SW monsoon (June-Sep):	916.6	2nd week of June	4th week of September
	NE Monsoon(Oct-Dec):	38.2	-	-
	Winter (Jan- Feb)	13.5	-	-
	Summer (March-May)	28.1	-	-
	Annual	996.3	-	-

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)	730.2	537.0	109.6	38.1	19.1	17.1	0.1	9.2	2.2	3.4

*** Net sown area + current fallow + old fallow**

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

1. 4	**Major Soils (common names like red sandy loam deep soils (etc.,)***	**Area ('000 ha)**	**Percent (%) of total**
	Deep Soils	608.0	82.5
	Medium Deep soils	4.4	0.6
	Shallow Soils	123.8	16.8

Source: NBSS & LUP, Nagpur

1.5	**Agricultural land use**	Area ('000 ha)	Cropping intensity %
	Net sown area	531.4	129
	Area sown more than once	152.7	
	Gross cropped area	684.1	

1.6	**Irrigation**	Area ('000 ha)		
	Net irrigated area	255.5		
	Gross irrigated area	255.5		
	Rainfed area	275.9		
	Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
	Canals	11	39.9	15.5
	Tanks	23	4.8	1.8
	Open wells	11816	42.7	16.6
	Bore wells	16057	106.3	41.4
	Lift irrigation schemes	NA	-	-

	Micro-irrigation	NA	-	-
	Other sources (reservoir)	03	61.90	24.14
	Total Irrigated Area	-	255.50	-
	Pump sets	23345		
	No. of Tractors	18319		
	Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	No. of blocks/ Tehsils 07	(%) area	Quality of water (specify the problem such as high levels of arsenic, fluoride, saline etc)
	Over exploited	-		
	Critical	-		
	Semi- critical	-		
	Safe	07	47	
	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 etc. (2008-09)

1.7	**Major Field Crops cultivated**	**Area ('000 ha)**							
		Kharif			***Rabi***			**Summer**	**Total**
		Irrigated	***Rainfed***	**Total**	***Irrigated***	***Rainfed***	**Total**	**-**	**-**
	Soybean	-		163.3				**NA**	163.3
	Blackgram	-		31.6				**-**	31.6
	Maize	-		5.4				**-**	5.4
	Sorghum	-		3.1	-	-		**-**	3.1
	Pigeon pea	-		1.2	-	-	-	**-**	1.2
	Chickpea						214.1		214.1
	Wheat						186.2		186.2
	Lentil						76.1		76.1
	Pea						2.8		2.8
		Total area (ha)			**Irrigated**			**Rainfed**	
	Mango	124							
	Guava	63							
	Lime	03							
	Others (ber, Jamun, Papaya)	-							
Horticultural crops - Vegetables		**Total area (ha)**			**Irrigated**			**Rainfed**	

	Onion	135		
	Tomato	325		
	Chillies	73		
	Potato	154		
	Brijal	297		
	Others (specify)			
Medicinal and Aromatic crops		**Total area (ha)**	**Irrigated**	**Rainfed**
	Safed moosli			
	Sanay			
	Tulsi			
	Shatavar			
	Ashwagandha	4.0		

	Plantation crops	**Total area**	**Irrigated**	**Rainfed**
	-	Not applicable	-	-
	Others such as industrial pulpwood crops etc (specify)			
	Fodder crops	**Total area**	**Irrigated**	**Rainfed**
	-	Not applicable	-	-
	Others (specify)			
	Total fodder crop area			
	Grazing land			
	Sericulture etc			
	Others (Specify)			

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

1.8	**Livestock**	**Male ('000)**	**Female ('000)**	**Total ('000)**
	Non descriptive Cattle (local low yielding)	242.1	143.5	364.7
	Crossbred cattle	0.9	0.8	1.7
	Non descriptive Buffaloes (local low yielding)	98.9	69.0	168.0
	Graded Buffaloes	0.5	0.7	1.2
	Goat	42.7	37.2	79.9
	Sheep	-	-	0.4
	Others (Pig + Horses)	-	-	8.7
	Commercial dairy farms (Number)	-	-	NA
1.9	**Poultry**	-	23.5	
	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.)**
			NA	NA	**NA**	**NA**
	ii) Inland (Data Source: Fisheries Department)	**No. Farmer owned ponds**		**No. of Reservoirs**	**No. of village tanks**	
		202		**16**	**186**	
	B. Culture					

		Water Spread Area (ha)	**Yield (t/ha)**	**Production (‘metric tons)**
	i) **Brackish water** (Data Source: MPEDA/ Fisheries Department)	-	-	-
	ii) **Fresh water** (Data Source: Fisheries Department)	202	1497	714.26
	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)										
	Soybean	156.8	1053			NA	--	156.8	1053	--
	Black gram	9.9	395				--	9.9	395	--
	Maize	7.8	1415			--	--	7.8	1415	--
	Sorghum	5.0	1393			--	--	5.0	1393	--
	Tur	0.6	615	--		--	--	0.6	615	--
	Wheat			283.8	1518	--	--	283.8	1518	--
	Chickpea			209.7	1034			209.7	1034	

	Lentil			45.2	601			45.2	601	
	Pea			1.90	603			1.9	603	
Major Horticultural crops (Crops to be identified based on total acreage)								(t)	(t/ha)	
	Mango	--	--	--	--	--	--	5885	63.8	--
	Guava	--	--	--	--	--	--	6610	69.3	--
	Papaya	--	--	--	--	--	--	7403	76.6	--

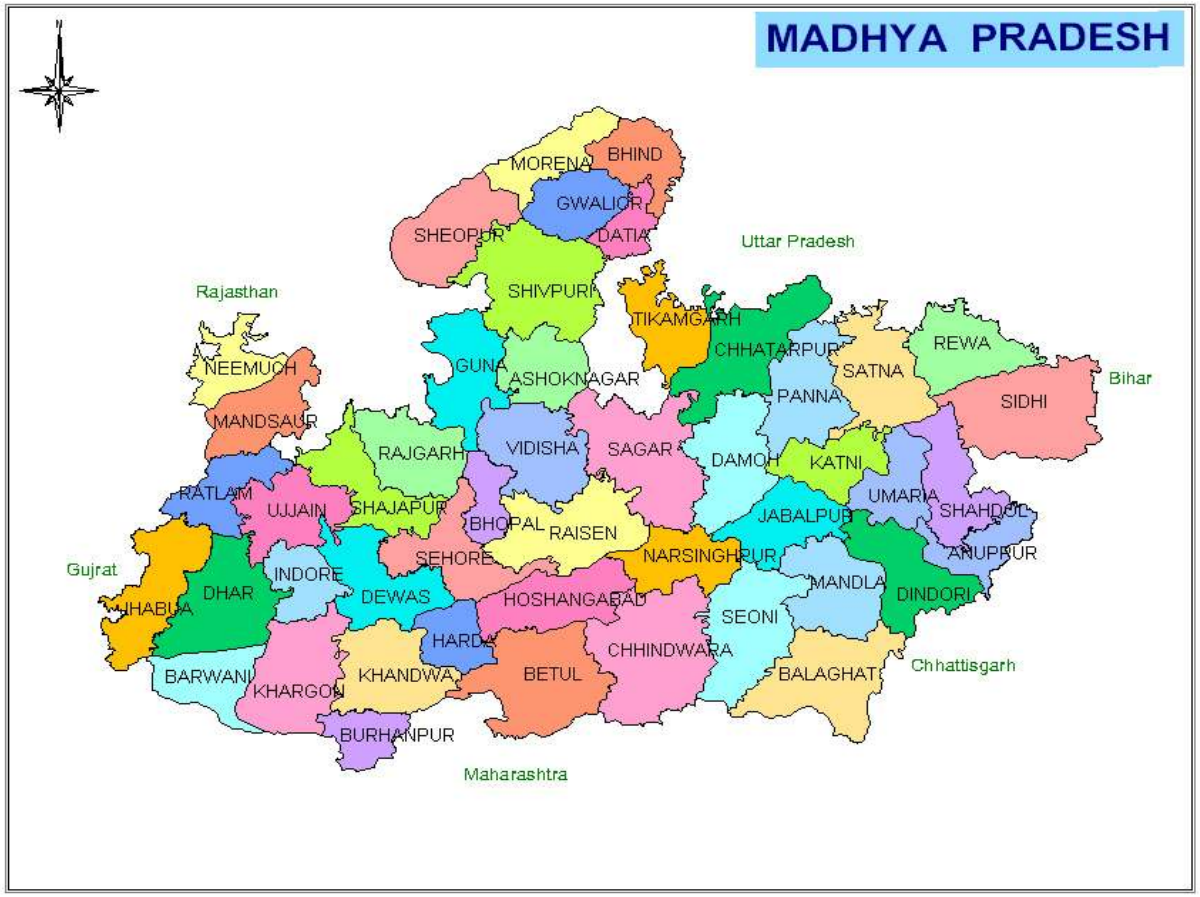
1.12	**Sowing window for 5 major field crops (start and end of normal sowing period)**	**Soybean**	**Rice**	**Blackgram**	**Maize**	**Sorghum**
	Kharif- Rainfed	2nd week of June- 2nd week of July	4th week of June – 3rd week of July	2nd week of June- 4th week of August	2nd week of June- 2nd week of July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

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) Soybean	Semi-looper, Girdle beetle, Myrothecium leaf spot, YMV, Collar rot	Tobacco caterpillar Cercospora leaf spot, Bacterial pustule	
	Pigeon Pea	Plume moth, Pod bug, Pod fly Wilt, Phytopthora blight	Leaf folder, Chickpea pod borer, Sterility mosaic	
	Rice	Hoppers, Borers, Gandhi Bug	Leaf Folder	
	Maize	Stem fly, Stem borer	Cob borer	

	Chickpea	Pod borer, Wilt, Root rot, collar rot	Cut worm Phytopthora blight	
	Wheat	Termite, Root aphid Loose smut	Stem borer	
	Lentil	Aphid Wilt, Powdery mildew	Pod borer Rust	
	Tomato	Fruit borer, leaf curl virus	-	
	Brinjal	Shoot & Fruit borer, Phytopthora blight	-	
	Others (specify)	-	Non fruiting in soybean	

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
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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
ANUPPUR
SEHORE
NARSINGHPUR
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
AGROCLIMATIC ZONES OF MADHYA PRADESH
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SIDHI
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VIDISHA
SAGAR
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KATNI
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BARWANI
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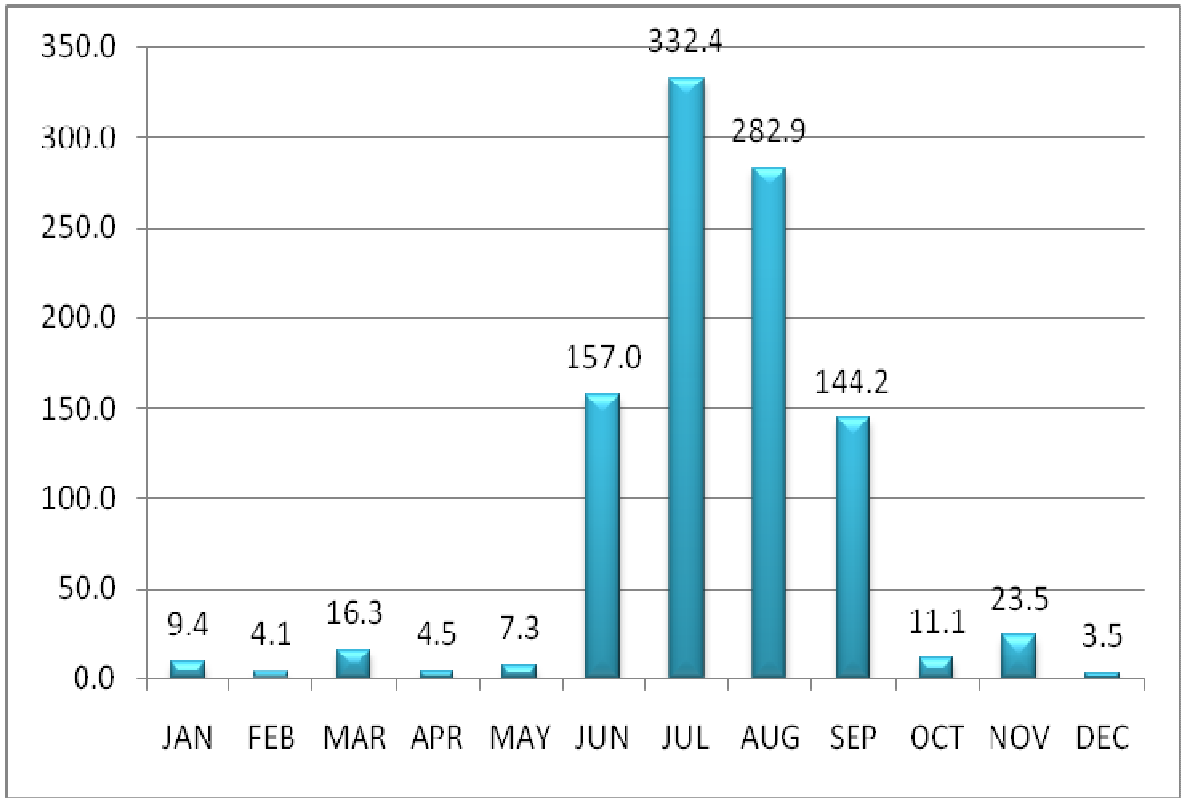
Annexure-II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282.9
144.2
11.1
23.5
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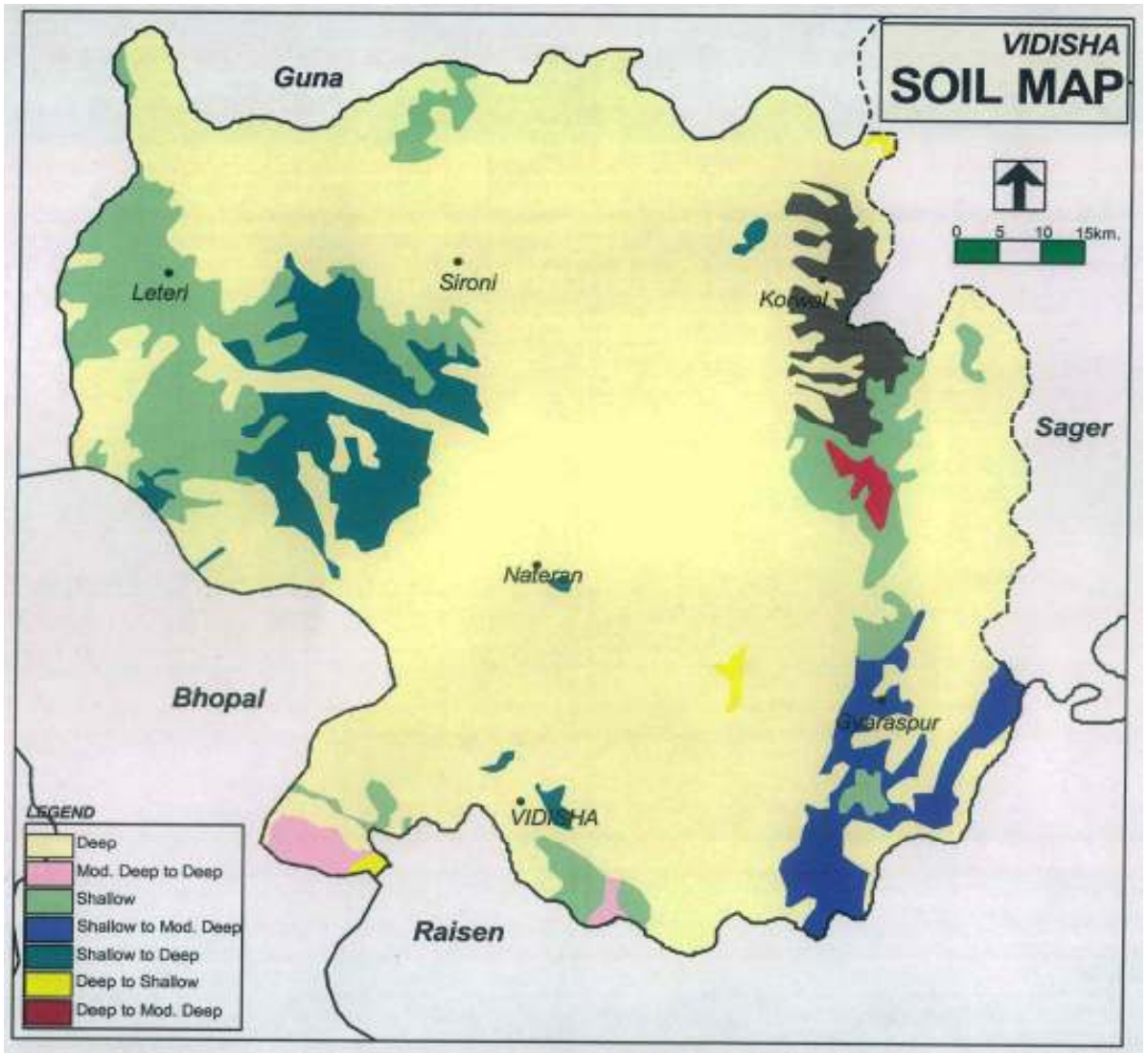
Annexure-III



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**	Deep black Soils	Soybean/ Blackgram/ Maize/ Sorghum/ Pigeonpea **Soybean-** JS-335 , JS 80-21, JS 97-52, JS 94-60, JS 93-05, PK-472, JS- 80-21, NRC-12,NRC-37, JS97-42 **Pigeonpea-** Pragti ,Jagrati, Asha , Number-148, JKM-7, JA-4, ICPL-85063 (Laxmi) ,JKM-189 **Maize** –Hybrid varieties : Ganga -12, Ganga Safed-2, JKM-175 **Composite (Maize) varieties:** HPQM-1, Jawahar Maize-12,Jawahar Maize-8 , Jawahar Maize-216, Jawahar Maize-13,JVM-421	No Change	1. Blade harrowing (Bakhar) for moisture conservation and destroy of weed in late onset of monsoon 2. For higher production adaptation of recommended packages by sowing of soybean, pigeonpea, greengram and blackgram on bunds. 3. Seed treatment with mixture of Thiram (1.5g)+ Carbendazim (1.5g) /kg seed followed by treated with biofertilizers	SAU's Beej Nigam, NSC

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

Delay by 4 weeks **2nd week of July**	Deep black soils	Soybean/ Blackgram/ Maize/ Sorghum/ Pigeonpea	Don't prefer soybean, sorghum and continue Maize, Blackgram, Pigeonpea Prefer **Pigeonpea**- Pragati , Jagriti, Asha ,Nmuber-148,JKM-7, JA-4, Type-21-Pusa- 855, ICPL-85063 (Laxmi), JKM-189 **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 **Blackgram** – JU-2,JU-3,JU-86,T-9,JBG-623,LBG684, TAU-1,Berkha, **Sesame-** TKG -306, TKG-35 , JGS-8, JT-21, JT-22, JT-55, PKTS-11, PKTS-12,JT-1	1. Blade harrowing (Bakhar) for moisture conservation and destroy of weed in late onset of monsoon 2. Increase seed rate 25 % under late sowing condition. 3. Sowing of crops against the slope in ridge and furrow methods 4. Seed treatment with mixture of Thiram (1.5g)+ Carbendazim (1.5g) /kg seed followed by treated with biofertilizers 4. Application of balanced fertilizer and biofertilizer according recommendation of the crop and application of zinc where deficiency is occurred. 5. Sowing of crops against the slope depends on crops. 6. Timely weeding is done and use of weeds as mulch between row of crops for moisture conservation 7. Adoption of plant protection as per requirement. 8. Application of biofertilizer and potash fertilizer under late sown condition	SAU's Beej Nigam, NSC

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**	Deep black soils	Soybean/ Blackgram/ Maize/ Sorghum/ Pigeonpea	Don't prefer soybean, sorghum, maize and continue, blackgram, pigeonpea **Greengram**- Pusa vishal, K851, JM721, Jawahar 99 - 37,Hum-1, Hum-2, Tarme-1L. G.450, T.M.98-50, JM-98-90, PDM 11, 54 and 139 **Blackgram**–JU-2,JU-3,JU-86,T-9, JBG-623,LBG684,TAU-1, Berkha, PU-30,35,19 **Sesame-** TKG -306, TKG-35 , JGS-8, JT-21, JT-22, JT-55, PKTS-11, PKTS-12,JT-1 **Pigeonpea**- Pragati , Jagriti, Asha ,Nmuber-148,JKM-7, JA-4, Type-21-Pusa- 855, ICPL-85063 (Laxmi), JKM-18	1. Blade harrowing (Bakhar) for moisture conservation and destroy of weeds in late onset of monsoon 2. For higher production adaptation of recommended package of practice. 3. Sowing of crops against the slope depends on crops. 4. Timely weeding is done and use of weeds as mulch between row of crops for moisture conservation 5. Application of biofertilizer and potash fertilizer under late sown condition	SAU's Beej Nigam, NSC

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 8 weeks **2nd week of August**	Deep black soils	Soybean/ Blackgram/ Maize/ Sorghum/ Pigeonpea	Prefer to sow niger, sesame, blackgram	Plan to sow early *rabi* crops like Niger	SAU's Beej Nigam, NSC

Condition			**Suggested Contingency measures**		
Early season drought **(Normal onset)**	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measues**	**Remarks on Implementation**
Normal onset followed by 15-20 days dry spell after sowing	Deep black soils	Soybean/ Blackgram/ Maize/ Sorghum/ Pigeonpea	Re-sowing of crop with short duration varieties in case of poor	1. Hand hoeing with dora/ kulpha/ Hand hoe for interculture operation in between rows and use of removed weeds use as mulch for moisture	SAU's Beej Nigam, NSC

leading to poor germination/crop stand etc.			plant stand	conservation 2. Apply FYM and vermicompost at the time of sowing for increase of water holding capacity 3. Ridges are made after 15-20 lines of crops for the moisture conservation	

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 measues**	**Remarks on Implementation**
At vegetative stage	Deep black soils	Soybean/ Blackgram/ Maize/ Sorghum/ Pigeonpea	Mainting optimum plant population Gap filling in case of poor plant stand Foliar spray of nutrients in pulses DAP 2.5%, Non pulses – Urea 2%	Frequent interculture	-

Condition			**Suggested Contingency measures**		
Mid season drought (long dry spell)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measues**	**Remarks on Implementation**
At flowering/ fruiting stage	Deep black soils	Soybean/ Blackgram/ Maize/ Sorghum/ Pigeonpea	Foliar spray of nutrients in pulses DAP 2.5%, Non pulses – Urea 2% Frequent interculture	Life saving irrigation by sprinkler method Mulching	-

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**
	Deep black soils	Soybean/ Blackgram/ Maize/ Sorghum/	Life saving irrigation, harvesting of crop at physiological maturity	Early sowing of wheat/Chickpea (Rainfed wheat, barley, oilseed & pulses)	-

		Pigeonpea		1) Moisture conservation practice adopt and destroy the weed under early withdrawal of monsoon for *Rabi s*eason **2) Preference will be given on sowing of Lentil, Linseed, Chickpea, irrigated and unirrigated wheat** 3) Increase seed rate up to 25% in late sown condition 4) Line sowing of Lentil, Linseed, Chickpea in moisture zone 5) Seed treatment with mixture of Thiram (1.5g)+ Carbendazim (1.5g) /kg seed thenafter treated with biofertilizers 6) Sowing of small seeded grains mix with FYM and vermicompost 7) Apply light irrigation to *Kharif* crops for proper grain filling if required, this will helpful in field preparation for *Rabi* crops	

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/ limited release of water in canals due to low rainfall	Deep black soils	Soybean/ Blackgram/ Maize/ Sorghum/ Pigeonpea-Wheat /Chickpea/lentil/linseed	In case of severe shortage of water in canals, plan for sowing of soybean with short duration varieties (JS-335, JS-9560)	Dry sowing followed by irrigation. Balanced application of fertilizers.	
			Mustard – Pusa, Jaikisan, Pusa bold, Varuna		
			Pulses – Lentil JL-3, Noorie		
			Chickpea – JG-11,12,14		
			Pea – Rachna, JP-885		

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Non release of water in canals under delayed onset of monsoon in catchment	Medium to shallow soils	Soybean-wheat /Chickpea/lentil/linseed	Fallow-Chickpea/ Linseed/ Lentil Use of short duration varieties of Soybean (JS-335, JS-95-60) or Blackgram,greengram, sesame etc. Prefer dual purpose sorghum at large scale	Application of vermicompost. Raised bed sowing Interculture operation. Provide life saving irrigation at critical stages. Pre sowing irrigation is given for good germination **Blackgram/ Greengram:** Adopt *in-situ* moisture conservation practices at 30DAS	SAU's Beej Nigam, NSC
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	Medium to shallow soils	Soybean-wheat /Chickpea/lentil/linseed	Fallow-Chickpea/ Linseed/ Lentil In case of soybean, adopt sowing on ridges and give one pre sowing irrigation and if necessary one irrigation at critical stage i.e., pod development to be given	Supplement irrigation by using sprinkler method Mulching Life saving irrigation at critical stages	SAU's Beej Nigam, NSC
Condition			**Suggested Contingency measures**		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**

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	Medium to shallow soils	Soybean-wheat /Chickpea/lentil/linseed	Fallow-Chickpea/ Linseed / Lentil Chickpea should be sown with residual moisture after harvest of soybean or give pre sowing irrigation to chickpea	Supplement irrigation using sprinkler. Use of mulches. Interculture Irrigate the crop at critical stages and if possible with sprinklers Mulching. Adopt furrow irrigation and use of micro-irrigation system	SAU's Beej Nigam, NSC

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**
Soybean, Blackgram, Maize, Pigeon pea	Proper drainage Sowing with ridge & furrow method, Top dressing of urea to recover of crop.	Drainage of excess water, Foliar spray of suitable hormone. Interculture	Drainage of excess water. Harvesting of crop at physiological maturity.	Safe storage of grains
Chickpea, Wheat, Lentil	Sowing with ridge & furrow method, Drainage of excess water	Drainage of excess water, Foliar spray of suitable hormone.	Drainage of excess water. Harvesting of crop at physiological maturity.	Safe storage of grains
Horticulture				
Tomato, Potao, Chilli, Brinjal	Sowing with raised bed method	Drainage of excess water	Drainage of excess water	Safe storage of produce
Mango, guava, papaya	-	Foliar spray of hormones to	Hormonal spray for avoiding	As above

		avoid flower drop	fruit drop	
Heavy rainfall with high speed winds in a short span[2]				
Soybean, Blackgram, Maize, Pigeon pea	Planting of wind breaks, Drainage of excess water	Planting of wind breaks, Drainage of excess water	Planting of wind breaks, Drainage of excess water	
Chickpea, Wheat, Lentil	Planting of wind breaks, Drainage of excess water	Planting of wind breaks, Drainage of excess water	Planting of wind breaks, Drainage of excess water	
Horticulture				
Tomato, Potao, Chilly, Brinjal	As above	As above	As above	As above
Mango, guava, papaya	Fencing with hedges	Fencing with wind breaks in NW direction	Early harvesting, Fencing with wind breaks in NW direction	As above
Outbreak of pests and diseases due to unseasonal rains				
Soybean	Carry out critical survey of fields for insect and disease attack in crops	-	-	--
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 t triazophos 40 % EC @ 1-1.5 l/ha in chickpea against pest incidence. · "T" shaped pegs placed in late sown chickpea field for biological control of pod borer and for chemical control spraying of Quinalphos 25 EC or Chlorpyriphos 20 EC C or Methyl Parathion 50 EC @ 600 ml dissolve in 500 L of water should be used. Dusting of Fenvalerate 0.4% or Quinalphos 1.5 WP 20-25 per hectare with duster.	Spray triazophos 40 % EC @ 1-1.5 l/ha in chickpea against pest incidence. · "T" shaped pegs placed in late sown chickpea field for biological control of pod borer and for chemical control spraying of Quinalphos 25 EC or Chlorpyriphos 20 EC C or Methyl Parathion 50 EC @ 600 ml dissolve in 500 L of water should be used. Dusting of Fenvalerate or Quinalphos 1.5 WP 20-25 per hectare with duster.	Spray triazophos 40 % EC @ 1-1.5 l/ha in chickpea against pest incidence. Carry out critical survey of fields for insect and disease attack in crops	-

Horticulture				
Tomato, Potao, Chilly, Brinjal	Grow resistant varieties Clean cultivation, Removal of host weed plants Spray of insecticides & fungicides at the ETL level	Spray of insecticides & fungicides at the ETL level	Clean cultivation, Removal of host weed plants Spray of insecticides & fungicides at the ETL level	Cold storage of vegetables
Mango, guava, papaya	Drenching with Copper fungicide for Damping off	White fly, thrips, Shoot &fruit borer	Shoot & fruit borer, Fruit borer	Bottom heat treatment & Safe packing

2.3 Floods : -Not Applicable

Condition	**Suggested contingency measure**			
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				
Soybean	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	Protect the crop with the help of light irrigation
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,	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. 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 during	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 banks

		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	
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	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

		Organize with community, daily lifting of dung 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	Supplementation only for productive birds with house hold grain	Supplementation to all survived birds

	severe drought	Supplementation of shell grit (calcium) for laying 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 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