State: Madhya Pradesh

Agriculture Contingency Plan for District: Jabalpur

1.0 District Agriculture profile					
1.1	**Agro-Climatic/Ecological Zone**	Central High Lands			
	Agro Ecological Sub Region (ICAR)	10.1			
	Agro-Climatic Zone (Planning 1`Commission)				
	Agro Climatic Zone (NARP)	Kymore Plateau & Satpura Hills			
	List all the districts or part thereof falling under the NARP Zone	Rewa, Satna, Panna, Jabalpur, Seoni, Katni, Sidhi and Singrouli			
	Geographic coordinates of district headquarters	Latitude	Longitude	Altitude	
		23° 10' N	79° 59' E	394 msl	
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	ADR, ZARS O/o Director Research Services, JNKVV, Jabalpur 482 004			
	Mention the KVK located in the district	**Krishi Vigyan Kendra JNKVV Distt. Jabalpur – 482004**			
1.2	**Rainfall**	Normal RF(mm)	Normal Rainy days (number)	Normal Onset (specify week and month)	Normal Cessation (specify week and month)
	SW monsoon (June-Sep):	1168.40	52	II Week of June	I Week of October
	NE Monsoon(Oct-Dec):	67.60	04		
	Winter (Jan- Feb)	50.10	4	-	-
	Summer (March-May)	26.00	2	-	-
	Annual	1312.10	62	-	-

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)	519.80	306.10	77.70	36.70	39.70	22.60	0.10	37.00	16.20	16.10

* Net sown area + Current fallows + old fallow

1. 4	**Major Soils (common names like red sandy loam deep soils (etc.,)***	**Area ('000 ha)**	**Percent (%) of total**
	1. Deep soils, black soil	261.00	50.15
	2. Medium deep soils, light loamy	89.60	17.27
	3. Shallow soils, red yellow gravel	169.20	32.58

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

1.5	**Agricultural land use**	Area ('000 ha)	Cropping intensity %
	Net sown area	273.80	136
	Area sown more than once	98.0 0	
	Gross cropped area	371.80	

1.6	**Irrigation**	Area (‘000 ha)		
	Net irrigated area	117.40		
	Gross irrigated area	133.20		
	Rainfed area	156.40		
	Sources of Irrigation	Number	Area (‘000 ha)	Percentage of total irrigated area
	Canals	56	9.40	7.05
	Tanks	36	0.10	0.08
	Open wells	8010	26.10	19.58
	Bore wells	8832	81.50	61.13
	Lift irrigation schemes	Nil	Nil	Nil
	Micro-irrigation	Nil	Nil	Nil
	Other sources (Reservoir)	853	16.10	12.08
	Total Irrigated Area		133.20	
	Pump sets	21437		
	No. of Tractors	4401		
	Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	No. of blocks/ Tehsils	(%) area	Quality of water (specify the problem such as high levels of arsenic, fluoride, saline etc)
	Over exploited	Nil	Nil	Nil
	Critical	Nil	Nil	Nil
	Semi- critical	Nil	Nil	Nil
	Safe	07	100	Nil
	Wastewater availability and use	05	Nil	Nil
	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.

1.7		Major Field Crops cultivated	Area ('000 ha)							
			Kharif			*Rabi*			*Summer*	*Total*
			Irrigated	*Rainfed*	Total	*Irrigated*	*Rainfed*	Total		
	1	Paddy	12.8	47.4	60.2					60.20
	2	Urd		21.7	21.7				25.4	47.1
	3	Kodo-Kutki		11.50	11.50					11.50
	4	Arhar		8.10	8.10					8.10
	5	Ramtil (Niger)		6.0	6.0					6.0
	6	Maize		5.0	5.0					5.0
	7	Jowar		4.30	4.30					4.30
	8	Wheat				60.2	28.4	88.60		88.60
	9	Gram				26.0	40.2	66.20		66.20
	10	Lentil				12.4	27.7	40.10		40.10
	11	Pea				36.40		36.40		36.40
	12	Mustard				3.90		3.90		3.90
	13	Linseed					2.50	2.50		2.50
		Horticulture crops - Fruits	**Total area (ha)**			**Irrigated**			**Rainfed**	
	1	Mango	665			Nil			665	
	2	Guava	198			Nil			198	
	3	Citrus	2			Nil			2	
		Horticultural crops - Vegetables	**Total area**			**Irrigated**			**Rainfed**	
	1	Potato	601			601			Nil	
	2	Onion	519			519			Nil	
	3	Chilli	288			288			Nil	
	4	Ginger	172			172			Nil	
	5	Garlic	11			11			Nil	

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

		Medicinal and Aromatic crops	Total area	Irrigated	Rainfed
	1	Nil	Nil	Nil	Nil

		Plantation crops	Total area	Irrigated	Rainfed
	1				
		Others such as industrial pulpwood crops etc (specify)	0.425		0.425
		Fodder crops	**Total area (ha)**	**Irrigated**	**Rainfed**
	1	Sorghum	0.5	Nil	0.5
	2	Berseem	0.5	0.5	Nil
		Total fodder crop area	1	0.5	0.5
		Grazing land	614	Nil	614
		Sericulture etc	Nil	Nil	Nil
		Others (Specify)	Nil	Nil	Nil

1.8	**Livestock**	**Male ('000)**	**Female ('000)**	**Total (No.) ('000)**
	Non descriptive Cattle (local low yielding)			366.60
	Crossbred cattle			127.6
	Non descriptive Buffaloes (local low yielding)			96.30
	Graded Buffaloes			51.60
	Goat			116.0
	Sheep			3.90
	Others (Pig and horse			15.90
	Commercial dairy farms (Number)			156
1.9	**Poultry**	**No. of farms**	**Total No. of birds (No)**	
	Commercial	74	2709.9	
	Backyard	-	580.0	

1.10	**Fisheries** (Data source: Chief Planning Officer)				
	A. Capture				
	i) Marine (Data Source: Fisheries	**No. of fishermen**	**Boats**	**Nets**	**Storage**

	Department)		Mechanized	Non-mechanized	Mechanized (Trawl nets, Gill nets)	Non-mechanized (Shore Seines, Stake & trap nets)	**facilities (Ice plants etc.)**
		Nil	Nil	Nil	Nil	Nil	Nil
	ii) Inland (Data Source: Fisheries Department)	**No. Farmer owned ponds**		**No. of Reservoirs**		**No. of village tanks**	
		21		3		678	
	B. Culture						
		Water Spread Area (ha) -NA		**Yield (t/ha)**		**Production ('000 tons)**	
	i) **Brackish water** (Data Source: MPEDA/ Fisheries Department)	Nil		Nil		Nil	
	ii) **Fresh water** (Data Source: Fisheries Department)	19135		1.8		1820.8	
	Others						

1.11 Production and Productivity of major crops (Average of last 5 years)

1.11	Name of crop	**Kharif**		Name of crop	**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)	
Crop 1	**Paddy**	55.50	912	**Wheat**	165.13	1966	Nil	Nil			
Crop 2	**Urd**	7.0	320	**Gram**	71.13	1066	8.12	380			
Crop 3	**Kodo-Kutki**	4.12	335	**Lentil**	19.48	485					
Crop 4	**Arhar (Tur)**	9.80	1248	**Pea**	13.12	501					
Crop 5	**Maize**	6.52	1412	**Mustard**	3.74	890					
Major Horticultural crops (Crops to be identified based on total acreage) -NA											
Crop 1	Okra	30.46	2240	Brinjal	93.18	1280	Okra	8.36	1072		
Crop 2	Cowpea	17.73	1430	Tomato	122.85	1530	Cowpea	21.45	2082		

Crop 3	Bottle gourd	31.21	3060	Cauliflowe r	17.93	1458					
Crop 4	Sponge gourd	20.06	2280								

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)	Crop 1:	2:	3:	4:	5:
	Kharif- Rainfed	Paddy (25July -10 Aug)	Soybean (25 June – 7 July)	Pigeon Pea (25 June – 15 July)	Sesame (15 -30 July)	Urd (1-15July)
	Kharif-Irrigated	Paddy (10-25 July)	Maize (25 May – 5 June)	--	-	-
	Rabi- Rainfed	Wheat (25 Oct-10 Nov)	Gram (15-30ct)	Lentil (15-20 Oct)	Linseed (10-20 Oct)	Mustard (Oct-15-30)
	Rabi-Irrigated	Wheat (15 Nov-30Dec)	Gram ((15 Oct – 15 Nov)	Lentil (15 Oct – 15 Nov)	Linseed (15 Oct-15 Nov))	30 Oct-10 Nov)

1.13	**What is the major contingency the district is prone to?** (Tick mark)	Regular	Occasional	None
	Drought	√		
	Flood		√	
	Cyclone			√
	Hail storm		√	
	Heat wave	√		
	Cold wave	√		

	Frost				√	
	Sea water intrusion			Nil	Nil	Nil
	Pests and disease outbreak (specify)	1. Gram	Wilt	√	Nil	Nil
		2. Gram	Pod borer	√	Nil	Nil
		3. Arhar	Pod fly & borer	√	Nil	Nil
		4. Lentil	Wilt	√	Nil	Nil
		5. Paddy	Shoot borer	√	Nil	Nil
	Others (specify)			Nil	Nil	Nil

1.14	**Include Digital maps of the district for**	Location map of district within State as Annexure I	Enclosed: Yes / No
		Mean annual rainfall as Annexure 2	Enclosed: Yes / No
		Soil map as Annexure 3	Enclosed: Yes / No

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[a]**	**Normal Crop / Cropping system[b]**	**Change in crop / cropping system[c] including variety**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 2 weeks **(30 June)**	Deep and medium black soils	Rice-wheat Soybean-Gram **Rice-**Upland field: IR-36, JR-201, PS-3&5, Lowland field: WGL-32100, MR-219, IR-36,IR-64, Hybrid rice (JRH-5) **Maize-** Jawahar Maize-12, Jawahar Maize-8, Jawahar Maize-216 **Arhar-** Asha, No-148, JKM-7, ICPL-88039, JKM-189 **Moong-** Pusa vishal, K851, JM721, Jawahar 99 - 37, Hum-1, Hum-2, TM 139 **Urd –** JU-86, T-9, LBG 20 **Soybean-** JS-335, JS 97-52, JS 95-60, JS 9305 **Kodo-** Jawahar Kodo- 439, Jawahar-48, Jawahar, 155, JK-106 **Kutki -** Jawahar Kutki 1, 2, 8, JK 36	No Change is required	1. Use of blade harrow (Bakhar) for moisture conservation and destroy of weed under late onset of monsoon 2. For higher production adaptation of recommended package by sowing of rice, arhar, moong and urd on bunds. 3. Selection of higher production potential varieties. 4. Adaptation of moisture conservation practice. Conservation of excess rain water in high rainfall areas and use as life saving irrigation according to situation. 5. Seed treatment with mixture of Thiram (1.5g)+ Carbendazim (1.5g) /kg seed followed by treated with biofertilizers 6. Use of balanced fertilizer and biofertilizer according to recommendation to crop and application of zinc in deficient soil. 7. Sowing of crops against the slope. 8. Timely weeding is done and use of weeds as mulch between row of crops for moisture conservation 9. Adoption of plant protection as per requirement. 10. Under traditional system of planting of 3-4 seedlings of 18-21 day ages in 20x10 cm at one place for late mature rice under. For early mature varieties plating in 15x15 cm geometry but seedlings are not more than 18-21 day old.	SAU's and Beej Nigam

2.1.1 Rainfed situation

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop / Cropping system[b]**	**Change in crop / cropping system[c] including variety**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 2 weeks (30 June)	Shallow soil	Rice-wheat Rice -Gram **Rice-**Upland field: IR-36, JR-201 **Arhar-** ICPL 88039, No-148, Laxmi, JKM-189 **Moong-** Pusa vishal, K851, Hum-1, Hum-2, Tarme-1, TN 139 **Urd –**JU-86, T-9, LBG 20, TAU-1, Berkha **Kodo**- Jawahar Kodo-439, Jawahar-48, Jawahar, 155, JK-106 **Kutki -** Jawahar Kutki 1, 2, 8, JK 36	No Change is required	1. Use of blade harrow (Bakhar) for moisture conservation and destroy of weed under late onset of monsoon 2. For higher production adaptation of recommended package by sowing of Soybean, arhar, moong and urd on bunds 3. Selection of higher production potential varieties. 4. Adaptation of moisture conservation practice. Conservation of excess rain water in high rainfall areas and use as life saving irrigation according to situation. 5. Seed treatment with mixture of Thiram (1.5g)+ Carbendazim (1.5g) /kg seed followed by treated with biofertilizers 6. Use of balanced fertilizer and biofertilizer according to recommendation to crop and application of zinc in deficient soil. 7. Sowing of crops against the slope. 8. Timely weeding is done and use of weeds as mulch between row of crops for moisture conservation 9. Adoption of plant protection as per requirement 10. Under traditional system of planting of 3-4 seedlings of 18-21 day ages in 20x10 cm at one place for late mature rice under. For early mature varieties plating in 15x15 cm geometry but seedlings are not more than 18-21 day old.	SAU's and Beej Nigam

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Change in crop/cropping system[c] Selection for Early Crop Varieties**	**Agronomic measures[d]**	SAU's and Beej Nigam
Delay by 4 weeks (15 July)	Deep and medium black soil	Rice-wheat Soybean-Gram **Rice** – IR-36 JR-201, Poornima **Arhar-** Pragati, Jagriti, Asha ,Nmuber-148, ICPL-85063 (Laxmi), JKM-189 **Moong-** Pusa vishal, K851, TM 99 -37, Hum-1, Hum-2, Tarme-1 L.G.450, T.M.98-50 and TW39 **Urd** – JU-2,JU-3,JU-86,T-9, LBG20, TAU-1, Berkha, PU-30,35,19 **Til-** TKG -306, TKG-35, JGS-8, JT-21, JT-22, JT-55 **Kodo**- Jawahar Kodo- 41, 439, Jawahar-48, Jawahar, 155, JK-106 **Kutki -** Jawahar Kutki 1, 2, 8, JK 36	No.Change Dont take soybean	1. Use of blade harrow (Bakhar) for moisture conservation and destroy of weed under late onset of monsoon 2. For higher production adaptation of recommended package of practices. 3. Selection of higher production potential varieties. 4. 4 Seed treatment with mixture of Thiram (1.5g)+ Carbendazim (1.5g) /kg seed followed by treated with biofertilizers 5. Use of balanced fertilizer and biofertilizer according to recommendation to crop and application of zinc in deficient soil. 6. 6.Sowing of crops against the slope depend on crops . 7. Timely weeding is done and use of weeds as mulch between row of crops for moisture conservation 8. 8.Adoption of plant protection as per requirement as rainfall condition 9. Under traditional system of planting of 3-4 seedlings of 18-21 ages in 20x10 cm at one place for late mature rice under. For early mature varieties plating in 15x15 cm geometry but seedlings are not more than 18-21 day old.	

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Change in crop/cropping system[c] Selection for Early Crop Varieties**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 4 weeks (15 July)	Red yellow soil	Rice-wheat Rice -Gram **Rice –** IR-36 JR-201, Poornima **Arhar-** Pragati, Jagriti, Asha, Nmuber-148, Type-21-Pusa-855, ICPL-8803, JKM-189 **Moong-** Pusa vishal, K851, Hum-1, Hum-2, Tarme-1 L.G.450, T.M.98-50, JM-98-90, PDM 11, 54 and 139 **Urd –** JU-2, JU-3, JU-86, T-9, JBG-623, LBG684, TAU-1, Berkha, PU-30, 35, 19 **Til-** TKG -306, TKG-35, JGS-8, JT-21, JT-22, JT-55	No. Change Dont tke soybean	1. Use of blade harrow (Bakhar) for moisture conservation and destroy of weed under late onset of monsoon 2. For higher production adaptation of recommended package of practices. 3. Selection of higher production potential varieties. 1. 4Seed treatment with mixture of Thiram (1.5g)+ Carbendazim (1.5g) /kg seed followed by treated with biofertilizers 2. Use of balanced fertilizer and biofertilizer according to recommendation to crop and application of zinc in deficient soil. 3. Sowing of crops against the slope depend on crops . 4. Timely weeding is done and use of weeds as mulch between row of crops for moisture conservation 5. Adoption of plant protection as per requirement as rainfall condition 6. Under traditional system of planting of 3-4 seedlings of 18-21 ages in 20x10 cm at one place for late mature rice under. For early mature varieties plating in 15x15 cm geometry but seedlings are not more than 18-21 day old.	SAU's and Beej Nigam

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Change in crop/cropping system[c]**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 6 weeks (30,July)	Deep and medium black soils	Rice-wheat Soybean-Gram	**Rice – Upland field : Don't sown the rice crop and sowing of alternate crops, Arhar, Urd ,Moong, Til,** Ramtil, Castor, Kodo, Kutki Lowland field : Transplanting of JR-201, JR-503, Poornima, Vandna, Narendra-97, Govinda by Lehi system **Arhar**- Pragati ,Jagriti,,Asha ,Nmuber-148,JKM-7,JA-4,Type-21-Pusa-855, ICPL-85063 (Laxmi), JKM-189 **Moong**- 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 **Urd** – JU-2,JU-3,JU-86,T-9, JBG-623, LBG20, TAU-1, Berkha, PU-30, 35,19	1. Use of blade harrow (Bakhar) for moisture conservation and destroy of weed in late onset of monsoon 2. For higher production adaptation of recommended package of practice 3. 100 kg seed /ha required for lehi system in rice. 4. Don't sown soybean and maize 5. Intercropping of moong , urd, til and niger with Arhar	SAU's and Beej Nigam

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Change in crop/cropping system[c]**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 6 weeks (30,July)	Red yellow soils	Rice-wheat Rice-Gram	**Rice** –Lowland field : Sowing of JR-201, JR-503, Poornima, Vandna, Narendra-97, Govinda by Lehi system **Arhar**- Pragati ,Jagriti,,Asha ,Nmuber-148,JKM-7,JA-4,Type-21-Pusa-855, ICPL-85063 (Laxmi), JKM-189 **Moong-** 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 **Urd** – JU-2,JU-3,JU-86,T-9, JBG-623, LBG684, TAU-1, Berkha, PU-30, 35,19	1. Don't sown soybean and maize 2. Use of blade harrow (Bakhar) for moisture conservation and destroy of weed in late onset of monsoon 3. For higher production adaptation of recommended package of practice 4. 100 kg seed /ha required for lehi system in rice. 5. Intercropping of moong , urd, till and niger with Arhar	SAU's and Beej Nigam

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Change in crop/cropping system[c]**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 8 weeks (15 August)	Deep medium and black soil	Rice-wheat Rice-Gram	**Rice** –Lowland field : Sowing of JR-201, JR-503, Poornima, Vandna, Narendra-97, Govinda by Lehi system/Transplanting **Niger-–**JNC-6, JNC-1, JNC-9, JVN-1	1. Use of blade harrow (Bakhar) for moisture conservation and destroy of weed in late onset of monsoon 2. For higher production adaptation of recommended package of practice 3. 100 kg seed /ha required for lehi system in rice. 4. Don't sown soybean and maize 5. Intercropping of moong , urd, till and niger with Arhar	SAU's and Beej Nigam

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Change in crop/cropping system[c]**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 8 weeks (15August)	shallow soil	Rice-wheat Rice-Gram	**Niger-–**JNC-6, JNC-1, JNC-9, JVN-1	1. Use of blade harrow (Bakhar) for moisture conservation and destroy of weed in late onset of monsoon 2. For higher production adaptation of recommended package of practice 3. 100 kg seed /ha required for lehi system in rice. 4. Don't sown soybean and maize 5. Intercropping of moong , urd, till and niger with Arhar	SAU's and Beej Nigam

Condition			**Suggested Contingency measures**		
Early season drought **(Normal onset)**	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measues[d]**	**Remark on Implementation[e]**
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	Deep and medium black soils	Rice-wheat Soybean-Gram Rice –Gram/other pulses	Maintenance of proper plant population by thinning of plants. Resowing of crop with medium to early verities 1. Practice of Dora/Kulpha/Hand hoe in between rows and use of removed weeds use as mulch for moisture conservation	1. Storage of water in lower side of the field and make use for life saving irrigation in *Rabi* crops 2. Use of FYM or 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 4. Use of plant protection measures	

Condition			Suggested Contingency measures		
Terminal drought (Early withdrawal of monsoon)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Rabi Crop planning[d]**	**Remarks on Implementation[e]**
	Deep and medium black soils	Rice-wheat Soybean-Gram	Harvest crop at physiological maturity. Apply light irrigation	1. Moisture conservation practice adopt and destroy the weed under early withdrawal of monsoon for rabi season 2. Preference will be given on sowing of Lentil, Linseed, Chickpea, irrigated and unirrigated wheat 3. Sowing of small seeded grains mix with FYM and vermicompost	

2.1.2 Irrigated situation

Condition			Suggested Contingency measures		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
Delayed release of water in canals due to low rainfall	Deep medium black	Rice –wheat	Soyabean –Gram	Adopt furrow irrigation and use of micro-irrigation system such as drip and sprinkler system	
	Red yellow soil	Rice –wheat	Arhar/Moong- Gram	Adaptation of soil and water conservation practices. Control the soil erosion	

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 catchments	Deep medium black	Rice –wheat	Soyabean –Gram	Adopt furrow irrigation and use of micro-irrigation system such as drip and sprinkler system	
	Red yellow soil	Rice –wheat	Rice- Gram	Adaptation of soil and water conservation practices. Control the soil erosion	
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	Deep medium black	Rice –wheat	Soyabean –Gram	Adopt furrow irrigation and use of micro-irrigation system such as drip and sprinkler system	
	Red yellow soil	Rice –wheat	Rice- Gram	Adaptation of soil and water conservation practices. Control the soil erosion	

Condition			Suggested Contingency measures		
	Major Farming situation	**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	Deep medium black	Rice –wheat	Soyabean –Gram	Adopt furrow irrigation and use of micro-irrigation system such as drip and sprinkler system	
	Red yellow soil	Rice –wheat	Rice- Gram- Lentil	Adaptation of soil and water conservation practices. Control the soil erosion	
Any other condition (specify)					

2.2 Unusual rains (untimely, unseasonal etc]) (for both rain fed 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 Use Ridge & Furrow system	Provide drainage care should be taken that rain water does not stagnate in the field.	Change care should be taken that rain water does not stagnate in the field.	Care should be taken that rain water does not stagnate in the field.	Produce should be placed under shade. or protect the produce by tarpaulin kept in T flown
Wheat	Care should be taken that rain water does not stagnate in the field and not allow to top drashing of nitrogenous fertilizers.	Care should be taken that rain water does not stagnate in the field and not allow to top drashing of nitrogenous fertilizers.	Proper drainage should be provided and adopt all plant protection measures	-
Gram	Care should be taken that rain water does not stagnate in the field and not allow to top drashing of nitrogenous fertilizers.	Care should be taken that rain water does not stagnate in the field and not allow to top drashing of nitrogenous fertilizers.	Proper drainage should be provided and adopt all plant protection measures	
Horticulture	NA			
Crop1(specify)				
Crop2				
Heavy rainfall with high speed wind in a short span				
Soybean				
Cotton				
Wheat				
Gram				

Horticulture	NA			
Out break of pests and diseases due to unseasonal rains				
Soybean	Carry out critical survey of fields for insect and disease attack in crops	Carry out critical survey of fields for insect and disease attack in crops	Carry out critical survey of fields for insect and disease attack in crops	-
Wheat	Spray 0.2 % mencozeb 76% WP against wheat rust.	Spray 0.2 % mencozeb 76% WP against wheat rust.	Carry out critical survey of fields for disease attack in crops	
Horticulture				
Crop1(specify)				
Crop2				

2.3 Floods -NA

Condition	Suggested contingency measure[o]			
Transient water logging/ partial inundation[1]	**Seedling / nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Crop1 (specify)				
Crop2				
Crop3				
Horticulture				
Crop1 (specify)				
Crop2				
Crop3				
Continuous submergence for more than 2 days[2]				
Crop1				
Crop2				
Crop3				
Horticulture				
Crop1 (specify)				
Crop2				
Crop3				
Sea water intrusion[3]	Nil	Nil	Nil	Nil
Crop1				
Crop2				
Crop3				

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

Extreme event type	Suggested contingency measure[r]			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Heat Wave[p]				
Crop1				
Horticulture				
Crop1 (specify)				
Cold wave[q]				
Crop1				
Horticulture				
Frost				
Crop1				
Horticulture				
Crop1 (specify)				
Hailstorm				
Crop1				
Horticulture				
Crop1 (specify)				
Cyclone				
Crop1				
Horticulture				
Crop1 (specify)				

2.5 Contingent strategies for Livestock, Poultry & Fisheries

2.5.1 Livestock

	Suggested contingency measure		
	Before the event[s]	**During the event**	**After the event**
Drought			
Feed and fodder availability	Ensured availability of fodder by preservation	Non conventional feed save	Treatment of roughage with urea-molasses to increase its feed value
Drinking water	Arrange potable water supply for all the cattle with admitted of cattles	Ensure water supply for all the cattles	Ensure water supply for all the cattles
Health and disease management	Deworm for better feed conservation efficiency. The clearness for hygiene condition be given top priority	Take help to constitute team of veterinary doctor to ensure proper sanitation and cleanliness measures in cattle sheds	Ensure proper sanitation and supply timely water in cattle sheds.
Floods			
Feed and fodder availability	Practice of feeding chopped straw along with oil seed cake concentration	Protected fodder / feed from fungal contamination	Urea-molasses treatment of roughage to increase its feed value, alongwith concentrate
Drinking water	Ensure clean and potable water supply camps in cattle	Ensure clean and potable water supply for all the cattle	Ensure clean and potable water supply for all the cattle camps in accordance with the total number of cattle admitted in these camps
Health and disease management	Vaccination should be done well in advance.	Keep animals under shade	Keep animals under shade to the extent possible. The hygiene should be given top priority
Cyclone	Nil	Nil	Nil
Feed and fodder availability	-	-	-
Drinking water	-	-	-
Health and disease management	-	-	-

Heat wave and cold wave	-	-	-
Shelter/environment management	Protective measures should be done for preventing extreme heat and cold wave	Protective measures should be done for preventing extreme heat and cold wave by providing room heaters. Curtains of gunny begs in the cattle shed.	Protective measures should be done for preventing extreme heat and cold wave
Health and disease management	-	-	-

2.5.2 Poultry

	Suggested contingency measure		
	Before the event[s]	**During the event**	**After the event**
Drought			
Shortage of feed ingredients	Ensure proper feed with mixture of straw concentration	Ensure proper feed with mixture of straw concentration	Ensure proper feed with mixture of straw concentration
Drinking water	Provide potable water supply for birds.	Provide potable water supply for birds.	Provide potable water supply for birds.
Health and disease management	Periodic check up of birds may be done for infectious disease	Periodic check up of birds may be done for infectious disease.	Periodic check up of birds may be done for infectious disease
Heat wave and cold wave			
Shelter/environment management	Cover the sheds with gunny beg curtains cpaddy straw and arrange sprinklers/fans and foggers in sheds, as per needs. Protective measures should be done for preventing extreme heat and cold wave	Protective measures should be done for preventing extreme heat and cold wave. Cover the sheds with paddy straw and arrange sprinklers/fans and foggers in sheds, as per needs.	-
Health and disease management	Periodic check up of birds may be done for infectious disease like bird flue and Adopt suitable control measures like culling of birds flue infected poultry and burn them	Periodic check up of birds may be done for infectious disease like bird flue and Adopt suitable control measures like culling of birds flue infected poultry and burn them	-

2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event[a]	**During the event**	**After the event**
1) Drought			
A. Capture	Suggest farmers to collect fishes and sell in the market.	Minimize the stock and sell in the market.	To stock the fish culture until recovered the water scarcity
Marine			
Inland			
(i) Shallow water depth due to insufficient rains/inflow	Stocking density should be low & short period fish culture can be adopted	Minimize the stock	Harvest and sell out the stock
(ii) Changes in water quality	Minimum ponds manure apply in the ponds and dissolve the oxygen content by putting electrical erraters		No need to maintain the water quality
(iii) Any other	Organic load will enhance during the drought event in to the water bodies so mud and detritus should be maintained properly		
B. Aquaculture			
(i) Shallow water in ponds due to insufficient rains/inflow	4-6 months fish culture may be adopted	Low stocking density with artificial feeding should be adopted	Not possible to go for fish culture
(ii) Impact of salt load build up in ponds / change in water quality	Recycling of the subsurface water and add fresh water from tube well or other sources	Recycling of the subsurface water and add fresh water from tube well or other sources	Scraping /desilting 4-6 inches soil
(iii) Any other	Nil	Nil	Nil
2) Floods			
A. Capture	Fix the slug gates with iron meshed nets and as much as stock should be netted out and sell in the	If possible fix the nets across the flow	Catch the fish in low lying areas of runoff of water and in this condition net out the ponds & remove unwanted spp and also remove mud and detritus

Marine	This condition may not be arise as per past experiences		
Inland			
(i) Average compensation paid due to loss of human life	No need to compensate before flood	Compensation may be given as per fisheries departments norms	Compensation may be given as per fisheries departments norms
(ii) No. of boats / nets/damaged	A Package for fisherman community has been established as per constitution of fisheries legislation by MP fish department	A Package for fisherman community has been established as per constitution of fisheries legislation by MP fish department	A Package for fisherman community has been established as per constitution of fisheries legislation by MP fish department
(iii) No. of houses damaged	A Package for fisherman community has been established as per constitution of fisheries legislation by MP fish department	A Package for fisherman community has been established as per constitution of fisheries legislation by MP fish department	A Package for fisherman community has been established as per constitution of fisheries legislation by MP fish department
(iv) Loss of stock	Rs 6-10 has been suggested by the MP fish department as per the terms and conditions available	Rs 6-10 has been suggested by the MP fish department as per the terms and conditions available	Rs 6-10 has been suggested by the MP fish department as per the terms and conditions available
(v) Changes in water quality	No change	No any precautionary measures suggested	As per the symptoms the profilative measures will be adopted Lime and copper sulphate may be applied as a causative agent to control the pollution in the ponds
(vi) Health and diseases			

B. Aquaculture			
(i) Inundation with flood water	Remove the stock	Fishes will be migrate against the current flow catch them from the areas	Ponds treatments will be needed by addition of purifiers
(ii) Water contamination and changes in water quality	Stop the addition of organic load	Not possible	Prophylactic measures will be adopted as per suggestions of experts
(iii) Health and diseases	Minimum stock with proper water quality care should be taken	As per suggestions of the experts and causative agents	As per suggestions of the experts and causative agents
(iv) Loss of stock and inputs (feed, chemicals etc)	As per rate of loss different chemicals will be added to ponds	Control measures will be adapted to minimize the loss	Will try to recovered the inputs
(v) Infrastructure damage (pumps, aerators, huts etc)	As per the norms decided by the MP fisheries department	As per the norms decided by the MP fisheries department	As per the norms decided by the MP fisheries department
(vi) Any other	NIL	NIL	NIL
3. Cyclone / Tsunami			
A. Capture			
Marine			
(i) Average compensation paid due to loss of fishermen lives			
(ii) Avg. no. of boats / nets/damaged			
(iii) Avg. no. of houses damaged			
Inland			

B. Aquaculture			
(i) Overflow / flooding of ponds			
(ii) Changes in water quality (fresh water / brackish water ratio)			
(iii) Health and diseases			
(iv) Loss of stock and inputs (feed, chemicals etc)			
(v) Infrastructure damage (pumps, aerators, shelters/huts etc)			
(vi) Any other			
4. Heat wave and cold wave			
A. Capture	Maintain water depth	Remove fish stock	Add the water body
Inland	Suggest not to go for fishing	Suggest not to go for fishing	Suggest not to go for fishing

B. Aquaculture			
(i) Changes in pond environment (water quality)	Temperature of water increases so add water.	Keep maintained maximum water depth	
(ii) Health and Disease management	As per infection and causative agent, prophylactic measures will be adopted.		
(iii) Any other