State: RAJASTHAN

Agriculture Contingency Plan for District: JALORE

1.0 District Agriculture profile					
1.1	**Agro-Climatic/Ecological Zone**				
	Agro Ecological Sub Region (ICAR)	Western Plain, Kachchh And Part Of Kathiawar Peninsula, Hot Arid Eco-Region (2.3)			
	Agro-Climatic Zone (Planning Commission)	Western Dry Region (XIV)			
	Agro Climatic Zone (NARP)	Transitional Plain of Luni Basin Zone (RJ-4)			
	List all the districts or part thereof falling under the NARP	Jalore, Pali, Rajsmand, and Sirohi			
	Geographic coordinates of district headquarters	Latitude		Longitude	Altitude
		25° 20' 36.42" N		72° 36' 56.86"E	222 m
	Name and address of the concerned ZRS	Zonal Director Research, Agricultural Research Station, Keshwana, Jalore; 02973-265915, 265844; E-mail-nksharmaars@yahoo.co.in			
	Mention the KVK located in the district	Krishi Vigyan Kendra, Keshwana, Distt. Jalore-343 001			
1.2	**Rainfall**	Normal RF(mm)	Normal Rainy days (number)	Normal Onset	Normal Cessation
	SW monsoon (June-Sep):	339.8	-	4th week of June	3rd week of September.
	NE Monsoon(Oct-Dec):	11.6	-		
	Winter (Jan- Feb)	10.1	-	-	-
	Summer (Mar-May)	8.5	-	-	-
	Annual	370.0	-	-	-

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)	1056.60	739.9	20.8	-	47.4	27.5	-	-	87.6	-

1. 4	**Major Soils**	**Area ('000 ha)**	**Percent (%) of total**
	Deep Yellowish brown Sandy soils	501.8	47.5
	Deep light yellowish brown loamy soils	256.7	24.3
	Deep pale brown sandy soils	212.3	20.1
	Red gravelly loam hilly soils	36.9	3.5
	Other soils	45.4	4.3
	Total	1056.6	

1.5	**Agricultural land use (2006-07)**	Area (‘000 ha)	Cropping intensity %
	Net sown area	652.3	132%
	Area sown more than once	211.5	
	Gross cropped area	863.9	

1.6	**Irrigation**	Area (‘000 ha)		
	Net irrigated area	238.6		
	Gross irrigated area	290.8		
	Rainfed area	413.7		
	Sources of Irrigation	Number	Area (‘000 ha)	Percentage of total irrigated area
	Canals		-	-
	Tanks	-	-	-
	Open wells	-	155.1	-
	Bore wells	-	83.4	-
	Lift irrigation schemes	-	-	-
	Micro-irrigation schemes		-	-
	Other sources (please specify)	-	-	-
	Total Irrigated Area		238.5	
	Pump sets			
	No. of Tractors			
	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		-	-
	Critical	-	-	-
	Semi- critical	-	-	-
	Safe	-	-	-
	Wastewater availability and use	-	-	-
	Ground water quality	-		
*over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%				

1.7 Area under major field crops & horticulture (as per latest figures) (2007-2008)

1.7	Major field crops cultivated	Area ('000 ha)							
		Kharif			*Rabi*				
		Irrigated	**Rainfed**	**Total**	**Irrigated**	**Rainfed**	**Total**	**Summer**	**Grand total**
	Kharif				-	-	-		
	Pearlmillet	-	357.8	357.8	-	-	-	15.0	357.8
	Mungbean	-	84.6	84.6	-	-	-	-	99.6
	Clusterbean	-	63.5	63.5	-	-	-	-	63.5
	Castor	36.2	-		-	-	-	-	36.2
	Mothbean	-	27.4		-	-	-	-	27.2
	Rabi								
	Mustard	-	-		77.6	-	77.6	-	77.6
	Cumin	-	-		40.8	-	40.8	-	40.8
	Isabgol	-	-		39.0	-	39.0	-	39.0
	Wheat	-	-		29.3	-	29.3	-	29.3
	Taramira	-	-		1.2	-	1.2	-	1.2

	Horticulture crops - Fruits	**Area ('000 ha)**		
		Total	**Irrigated**	**Rainfed**
	Ber	0.20	-	-
	Citrus	0.08	-	-
	Aonla	0.05	-	-
	Horticulture crops - Vegetables	**Total**	**Irrigated**	**Rainfed**
	Tomato	0.70	0.70	-
	Brinjal	0.10	0.10	-
	Carrot	0.08	0.08	-
	Radish	0.14	0.14	-
	Onion	0.45	0.45	-
	Medicinal and Aromatic crops	**Total**	**Irrigated**	**Rainfed**
	Isabgol	39.0	39.0	-
	Sona Mukhi	0.2	-	-
	Fodder crops	**Total**	**Irrigated**	**Rainfed**
	Pearl millet	5.0	5.0	-
	Sorghum	3.4	3.4	-
	Lucerne	2.2	2.2	-
	Maize	0.4	0.4	-
	Total fodder crop area	-	-	-
	Grazing land	-	-	-
	Sericulture etc	-	-	-

1.8	Livestock	Male (‘000)	Female (‘000)	Total (‘000)
	Non descriptive Cattle (local low yielding)	-	-	246.9
	Crossbred cattle	-	-	-
	Non descriptive Buffaloes (local low yielding)	-	-	356.4
	Graded Buffaloes	-	-	-
	Goat	-	-	451.2
	Sheep	-	-	563.1
	Others (Camel, Pig, Horse etc.)	-	-	25.1
	Commercial dairy farms (Number)			
1.9	**Poultry**	**No. of farms**	**Total No. of birds (‘000)**	
	Commercial	-	-	
	Backyard	-	21.9	

1.10 FISHERIES (Data Source: Fisheries Department)

A. Capture						
1) 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 & (Area in ha)**		**No of Village tanks**	
	NIL		**Kota**	**3 (606)**	**Kota**	**254 (797)**
			-	-	-	-
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)	1403		Village pond 1500 to 2000 kg./ha Lakes 50-150 kg./ha		-	

1.11 Production and Productivity of major crops (Average of last 5 years: 2003, 04, 05, 06, 07)

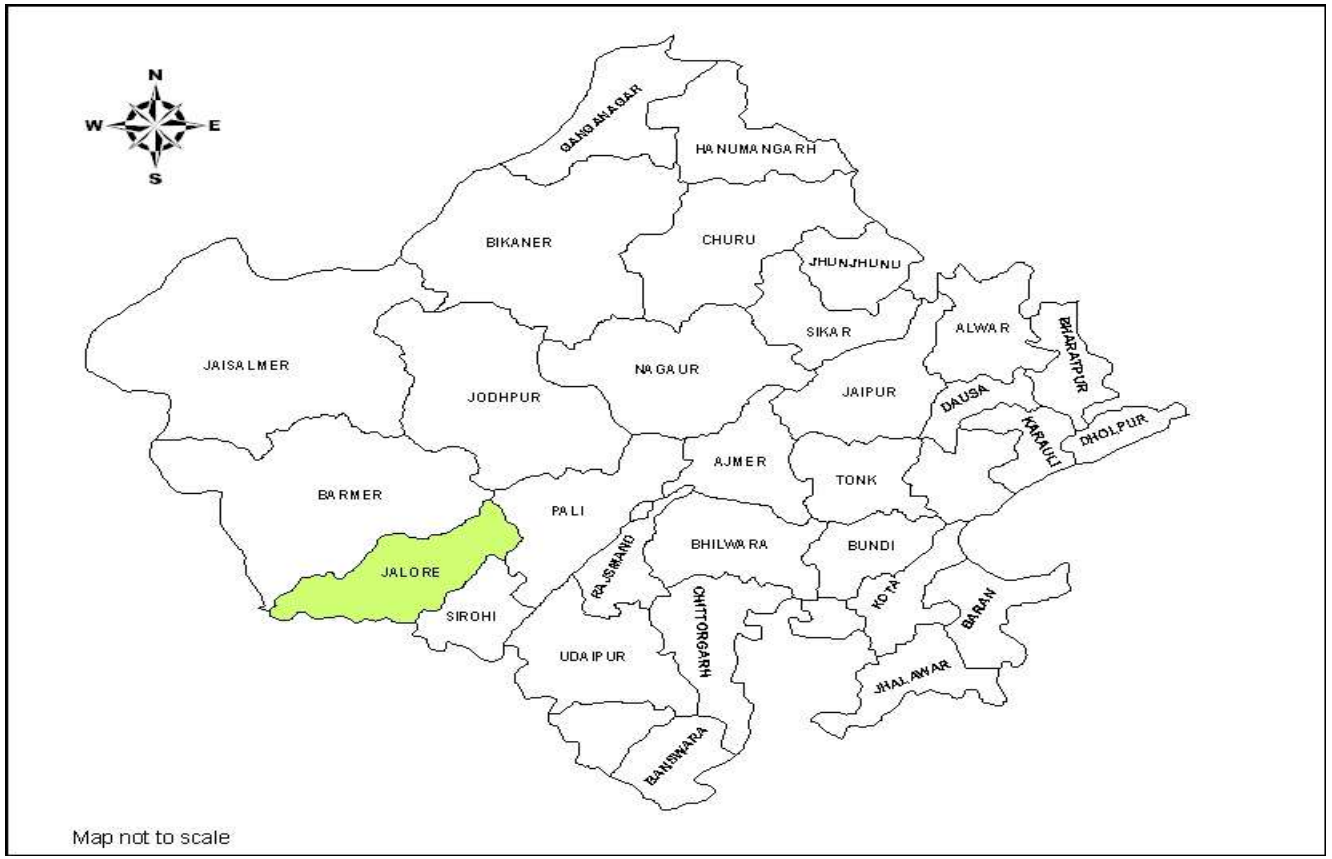
	Name of crop	Kharif		Rabi		Summer		Total		Crop residue as fodder (‘000 tons)
		Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	
Major Field crops (Crops to be identified based on total acreage)										
	Bajra	266.3	731.8	-	-	33.0	2200	299.3	1031.1	-
	Cluster bean	30.7	506.6	-	-	-	-	30.7	506.6	-
	Moong	30.4	372.2	-	-	-	-	30.4	372.2	-
	Castor	40.0	1157.0	-	-	-	-	40.0	1157.0	-
	Moth	15.3	505.4	-	-	-	-	15.3	505.4	-
	Mustard	-	-	93.2	1157.6	-	-	93.2	1157.6	-
	Wheat	-	-	49.4	1661.0	-	-	49.4	1661.0	-
	Cumin	-	-	12.9	346.6	-	-	12.9	346.6	-
	Isabgol	-	-	12.9	559.0	-	-	12.9	559.0	-
	Taramira			0.7	590.8	-	-	0.7	590.8	-
Major Horticultural crops (Crops to be identified based on total acreage)(2007-2008): Data not available										
Fruits				-		-	-	-	-	-
Vegetables : Data not available				-		-	-	-	-	-
Seed Spices: Data not available				-		-	-	-	-	-

1.12	**Sowing window for 5 major field crops**	Bajra	Mungbean	Guar	Mothbean	sesame
	Kharif- Rainfed	15th June to 15th July	15th June to 30thJuly	15thJuly to 10thAugust	15thJune to End of July	15th June to 20thJuly
	Kharif-Irrigated	15th June to 15th July	15th June to End of July	15th July to End of July	15th June to End of July	15th June to 20th July
	Rabi- Rainfed (Sewaj & Petakast)	Mustard 15th Sept to 15th October	Wheat 15th Oct to 15th Dec	-	-	Taramira 15th Sep to 15th Oct
	Rabi-Irrigated	Mustard 15th Sept to 15th October	Wheat 15th Oct to 15th Dec	Cumin 1st Nov to End of Nov	Isabgol 1st Nov to End of Nov	-

1.13	**What is the major contingency the district is prone to?** (Tick mark)	**Regular**	**Occasional**	**None**
	Drought	✓	-	-
	Floods	-	-	✓
	Cyclone	-	-	✓
	Hail storm	-	-	✓
	Heat wave	✓	-	-
	Cold wave	-	✓	-
	Frost	-	✓	-
	Sea water intrusion	-	-	✓

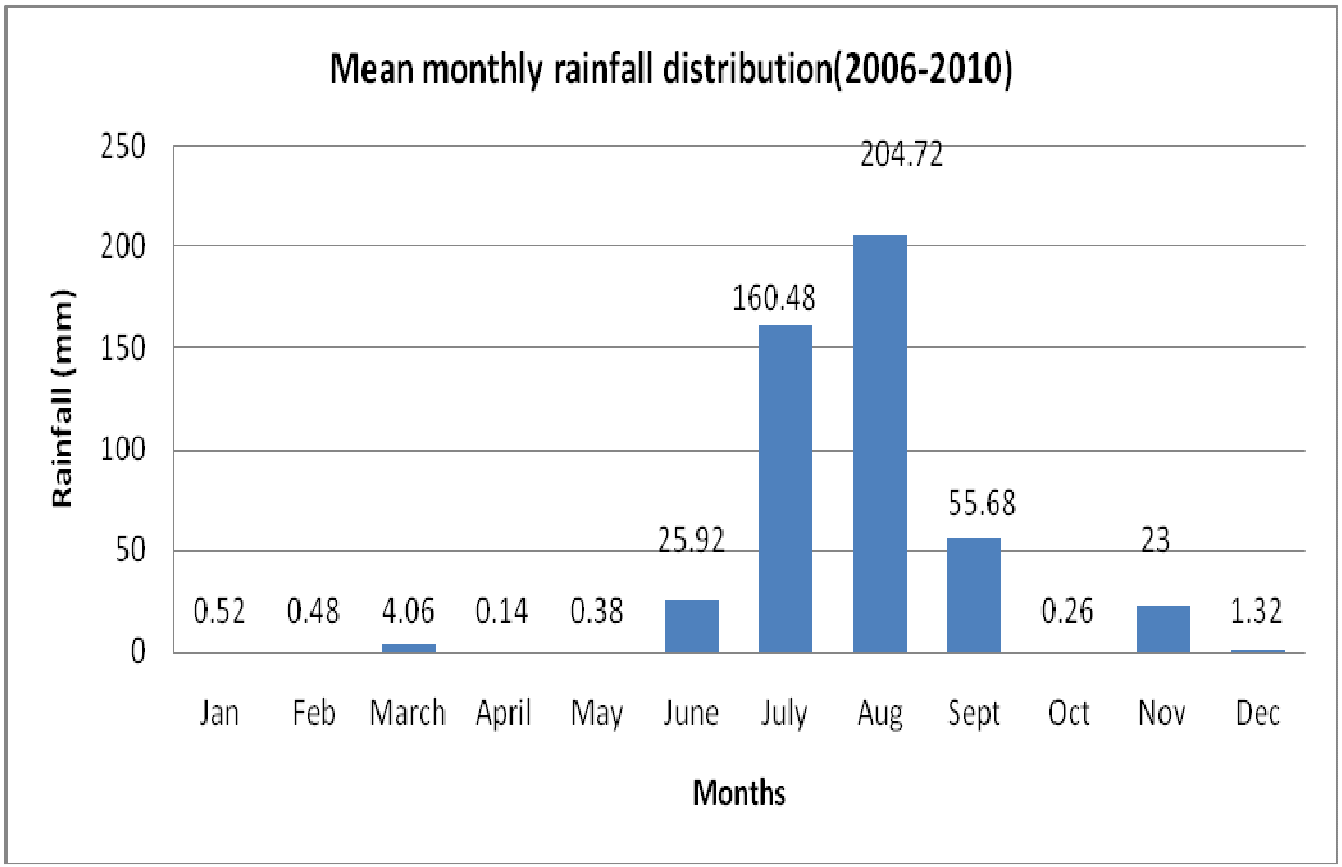
1.14	**Include Digital maps of the district for**	Location map of district within State as Annex.- I	Enclosed: Yes
		Mean annual rainfall as Annexure 2	Enclosed: Yes
		Soil map as Annexure 3	Enclosed: Yes

Annexure – I
Location map of Jalore district

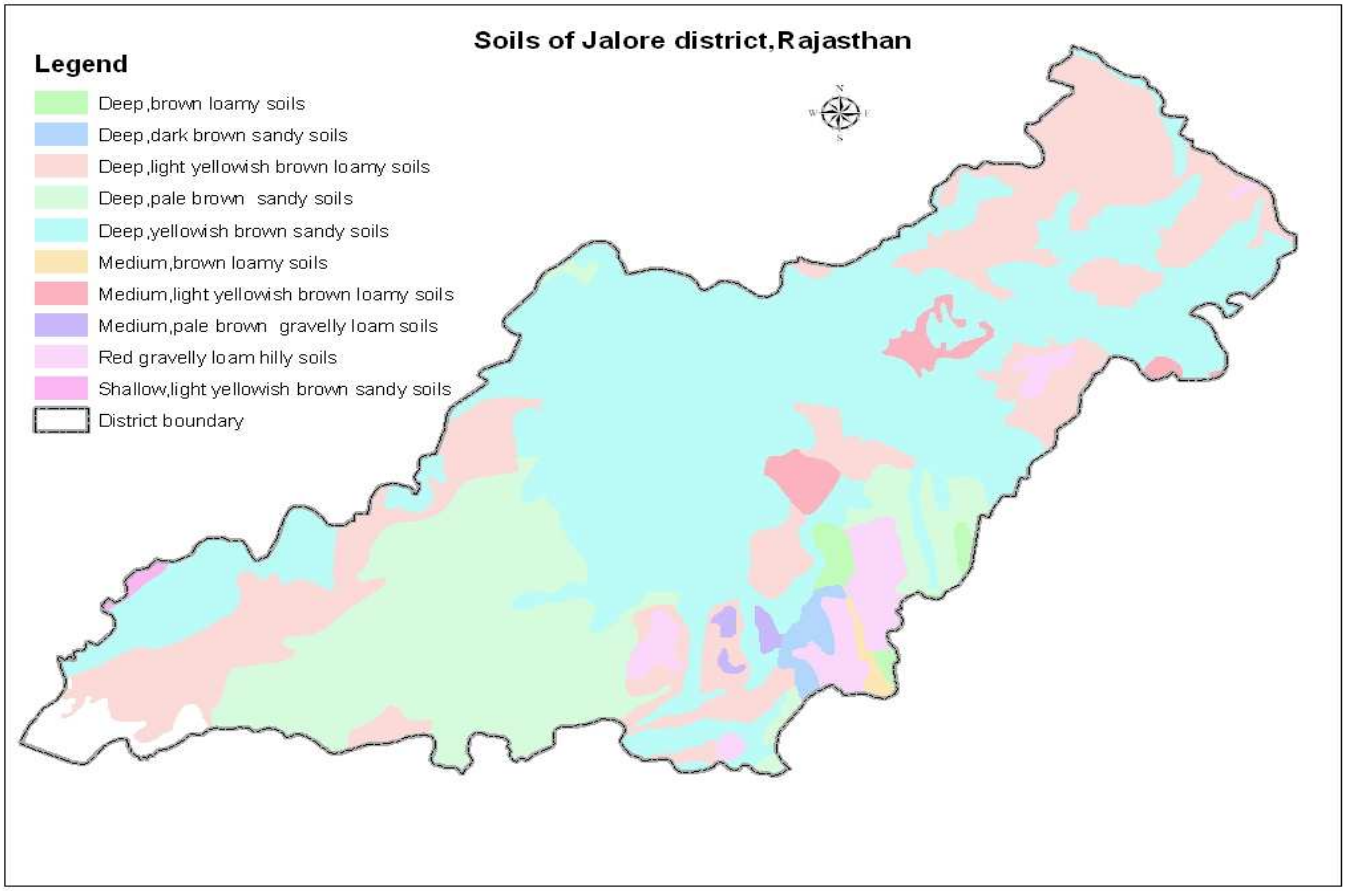


Annexure –II

Mean monthly rainfall graph of Jalore district



Annexure –III
Soil map



Source: NBSS&LUP, Regional Centre, Udaipur

2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset) **Delay by 2 weeks (2nd week of July)**	**Major Farming situation**	**Normal Crop / Cropping system**	**Change in crop / cropping system including variety**	**Agronomic measures**	**Remarks on Implementation**
	Rainfed normal soil	Bajra	No change, Prefer var. of Hybrids: RHB-121, GHB-538, GHB-719, HHB-67, HHB-67 Imp., ICMH-356, MH-169 Composites: Raj-171, JBV-2, CZP-9802	Seed soaking in thiourea 500 ppm for 6-8 hrs followed by drying for 3-4 hrs at room temp. in shade before sowing No change in other standard agronomic practices	Link SAU ,RSSC and NSC for good quality seed Link also NFSM, RKVY for thio urea
		Sesame	No change ,Prefer var. RT- 46, RT- 125, RT-127, RT-346	No change in standard agronomic practices	
		Mungbean	No change, Prefer var. of SML-668, G-4, RMG-62, RMG-268, RMG-344, RMG-492	No change in standard agronomic practices	
		Guar	No change , Prefer var. of RGC-936 , RGC-1002, RGC- 1017, RGC- 1038, RGC- 1055, RGC-1066 , RGM-112	Seed soaking in thiourea 500 ppm for 3-4 hrs before sowing No change in other standard agronomic practices	
		Mothbean	No change, Prefer var. of RMO-40, RMO-257, RMO-435	No change in standard agronomic practices	
	Rainfed problematic soil	Bajra	No change, Prefer var. Of Hybrids: RHB-121, GHB-538, GHB-719, HHB-67 Imp., ICMH-356 Composites: Raj-171, JBV-2	Seed soaking in thiourea 500 ppm for 6-8 hrs followed by drying for 3-4 hrs at room temp. in shade before sowing Increase seed rate by 25%; No change in other standard agronomic practices	
		Sesame	No change, Prefer var. of RT- 46, RT- 125, RT-127,	Increase seed rate by 25% No change in other standard	

			RT-346	agronomic practices	
		Guar	No change, Prefer var. of RGC-936 , RGC-1002, RGC- 1017, RGC-1038, RGC-1055, RGC-1066 , RGM-112	Increase seed rate by 25%; Seed soaking in thiourea 500 ppm for 3-4 hrs before sowing No change in other standard agronomic practices	
		Sorghum for fodder	No change, Prefer var. Of Raj chari-1, Raj Chari-2, MP Chari	Increase seed rate by 25%; No change in other standard agronomic practices	

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset) **Delay by 4 weeks (4th week of July)**	**Major Farming situation**	**Normal Crop / Cropping system**	**Change in crop / cropping system including variety**	**Agronomic measures**	**Remarks on Implementation**
	Rainfed normal	Bajra	No change, Prefer var. of Hybrids: RHB-121, GHB-538, GHB-719, HHB-67, HHB-67 Imp., ICMH-356 Composite: CZP 9802	Seed soaking in thiourea 500 ppm for 6-8 hrs followed by drying for 3-4 hrs at room temp. in shade before sowing; No change in other standard agronomic practices	Link SAU ,RSSC ,and NSC for good quality seed Link also NFSM, RKVY for thio urea
		Sesame	No change, Prefer var. of T-46, RT-125, RT-127, RT-346	No change in standard agronomic practices	
		Mungbean	No change, Prefer var. of SML-668, G-4, RMG-62, RMG-268, RMG-344, RMG-492	No change in standard agronomic practices	
		Guar	No change, Prefer var. of RGC-936 , RGC-1002, RGC- 1017, RGC-1038, RGC-1055, RGC-1066, RGM-112	Seed soaking in thiourea 500 ppm for 3-4 hrs before sowing; No change in other standard agronomic practices	
		Mothbean	No change, Prefer var. of RMO-40, RMO-257, RMO-435	No change in standard agronomic practices	

	Rainfed problmatic soil	Bajra	No change, Prefer var. of RHB-121, GHB-538, GHB-719, HHB-67 Imp., ICMH-356	Seed soaking in thiourea 500 ppm for 6-8 hrs followed by drying for 3-4 hrs at room temp. in shade before sowing, Increase seed rate by 25%; No change in other standard agronomic practices	
		Sesame	No change, Prefer var. of RT -46, RT- 125, RT-127, RT-346	Increase seed rate by 25%; No change in other standard agronomic practices	
		Guar	No change, Prefer var. of RGC-936 , RGC-1002, RGC- 1017, RGC-1066 , RGM-112	Seed soaking in thiourea 500 ppm for 3-4 hrs before sowing; Increase seed rate by 25%; No change in other standard agronomic practices	
		Fodder Sorghum	No change, Prefer var. of Raj chari-1, Raj Chari-2, M P Chari	Increase seed rate by 25%; No change in other standard agronomic practices	

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset) **Delay by 6 weeks (2nd week of August**	**Major Farming situation**	**Normal Crop / Cropping system**	**Change in crop / cropping system including variety**	**Agronomic measures**	**Remarks on Implementation**
	Rainfed normal soil	Bajra	No change ,prefer var. of HHB-67, HHB-67 Imp., GHB-538 **Grow bajra varieties for fodder:** RBC-2, Giant Bajra, Raj-171, JBV-2	Seed soaking in thiourea 500 ppm for 6-8 hrs followed by drying for 3-4 hrs at room temp. in shade before sowing; No change in other standard agronomic practices	Link SAU ,RSSC ,and NSC for good quality seed Link also NFSM, RKVY for thio urea
		Sesame	guar or moth	-	
		Moong	No change, prefer var. of SML-668, G-4, RMG-62	No change in standard agronomic practices	

		Guar	No change, prefer var. of RGC-936 , RGC-1002, RGC-1017, RGM-112	Seed soaking in thiourea 500 ppm for 3-4 hrs before sowing; No change in standard agronomic practices	
		Mothbean	No change, prefer var. of RMO-40, RMO-257, RMO-435	No change in standard agronomic practices	
	Rainfed problematic soil	Bajra	No change, prefer var. of HHB-67, HHB-67 Imp., GHB-538 Grow bajra varieties for fodder: RBC-2, Giant Bajra, Raj-171, JBV-2	Seed soaking in thiourea 500 ppm for 6-8 hrs followed by drying for 3-4 hrs at room temp. in shade before sowing; Increase seed rate by 25%; No change in other standard agronomic practices	
		Sesame	No change, prefer var. of Short duration varieties of guar or fodder sorghum and bajra	-	
		Guar	No change, prefer var. of RGC-936	Seed soaking in thiourea 500 ppm for 3-4 hrs before sowing; Increase seed rate by 25%; No change in other standard agronomic practices	
		Fodder Sorghum	No change, prefer var. Of Raj chari-1, Raj Chari-2, M P Chari	In case of resowing Increase seed rate by 25%; No change in other standard agronomic practices	

Condition			Suggested Contingency measures		
Early season drought (delayed onset) **Delay by 8 weeks (4th Week of August)**	**Major Farming situation**	**Normal Crop / Cropping system**	**Change in crop / cropping system including variety**	**Agronomic measures**	**Remarks on Implementation**
	Rainfed normal soil	Bajra	HHB-67, HHB-67 Imp. **Grow bajra varieties for fodder** RBC-2, Giant Bajra, Raj-171, JBV-2	Seed soaking in thiourea 500 ppm for 6-8 hrs followed by drying for 3-4 hrs at room temp. in shade before sowing; No change in other standard agronomic practices	Link SAU ,RSSC ,and NSC for good quality seed Link also NFSM, RKVY for thio urea
		Sesame	May be replaced by guar or fodder Sorghum	-	
		Mungbean	-	Conserve moisture for rabi crops like taramira, raya, gram	
		Guar	RGC-936	Number of re sowing is essential Seed soaking in thiourea 500 ppm for 3-4 hrs before sowing; No change in other standard agronomic practices	
		Mothbean	RMO-40	No change in standard agronomic practices	
	Rainfed problematic soil	Bajra	HHB-67 Imp.	In case of re sowing increase seed rate by 25%; Seed soaking in thiourea 500 ppm for 6-8 hrs followed by drying for 3-4 hrs at room temp. in shade before sowing; No change in other standard agronomic practices	
		Sesame	fallow	Conserve moisture for rabi crops like taramira	
		Guar	RGC-936	In case of re sowing seed soaking in thiourea 500 ppm for 3-4 hrs before sowing and no change in standard agronomic practices	
		Fodder Sorghum	Raj chari-1, Raj Chari-2, M P Chari	In case of re sowing Increase	

				seed rate by 25% and no change in other standard agronomic practices	

Condition			**Suggested Contingency measures**		
Early season drought (Normal onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	Rainfed normal soil	Bajra	Gap filling with transplanted seedlings raised from community nursery or from crowded hills Timely weeding with hoe	Dust mulch through interculture	Link SAU ,RSSC ,and NSC for good quality seed Link also NFSM, RKVY for thio urea
		Sesame	Gap fill with the improved variety in the rows when plant population is around70%	Dust mulch through interculture	
		Moong	-do-	-do-	
		Moong	-do-	Dust mulch through interculture Spray 2% urea or MOP	
		Guar	-do-	-do-	
		Moth bean	-do-	-do-	
	Rainfed problematic soil	Bajra,	Gap filling with transplanted seedlings raised from community nursery otr from crowded hills Timely weeding with hoe	Dust mulch through interculture	
		Sesame	Gap fill with the improved variety in the rows when plant population is around70%	Dust mulch through interculture	
		Guar	-do-	-	
		Sorghum	-do-	-	

Condition			**Suggested Contingency measures**		
Mid season drought	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**
At vegetative stage	Rainfed normal soil	Bajra	Thinning of plants by 25%	• Spray of 1000 ppm of thiourea in pearl millet and 500 ppm in guar • Life saving irrigation by harvested rain water • In-situ mulching of weeds • Spraying of 2% urea after the dry spell at optimum moisture or • Top dressing 0f 10-15kg N/ha to gain lost vigor	Link MNAREGA, for the support of Water harvesting structures and RKVY or NFSM for Improved implement of hoeing & weeding
		Sesame	Hoeing for weed control	-do-	
		Mungbean	-do-	-do-	
		Guar	-do-	• Spray of 1000 ppm of thiourea 500 ppm in guar • Life saving irrigation • Spray 2% urea after relief of dry spell	
		Moth bean	-do-	-do-	
			-do-	-do-	
	Rainfed problematic soil	Bajra	Thinning of plants by 25% Hoeing for weed control	• Spray of 1000 ppm of thiourea in pearlmillet and 500 ppm in guar • Life saving irrigation by harvested rain water • In-situ mulching of weeds • Spraying of 2% urea after the dry spell at optimum moisture or • Top dressing 0f 10-15kg N/ha to gain lost vigor	
		Sesame	Hoeing for weed control		
		Guar	-d0-	• Spray of 1000 ppm of thiourea 500 ppm in guar • Life saving irrigation • Spray 2% urea after relief of dry spell	
		Sorghum	-do-	-do-	

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	Rainfed normal soil	Bajra	Thinning of plants by 50% by removal of alternate row/plant in bajra Hoeing for weed and moisture management	Spray of 1000 ppm of thiourea in Pearlmillet and 500 ppm in guar Life saving irrigation by harvested rain water Green/organic mulch in crop rows Spray 2% urea after relief of dry spell	Water harvesting structures under MNAREGA, RKVY, etc Improved implement for hoeing & weeding under RKVY or NFSM, etc
		Sesame	-do-	-do-	
		Mungbean,	-do-	-do-	
		Guar	-do-	-do-	
		Mothbean	-do-	-do-	
	Rainfed problematic soil	Bajra	If the damage will be severe, harvest for fodder and plan for rabi crop like Taramira	Spray of 1000 ppm of thiourea Life saving irrigation by harvested rain water	
		Sesame		-do-	
		Sesame		-do-	
		Guar		Spray of 500 ppm of thio urea in guar Life saving irrigation	
		Sorghum		-do-	

Condition			**Suggested Contingency measures**		
Terminal drought (Early withdrawal of monsoon)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measues**	**Remarks on Implementation**
	Rainfed normal soil	Bajra, ,	If the damage will be severe, harvest for fodder and residual moisture be utilized for rabi crop like Taramira	Spray of 1000 ppm of thiourea guar Life saving irrigation from farm pond water	Water harvesting structures under MNAREGA, RKVY, etc Seed supply by RSSC/NSC
		Sesame	-do-	Life saving irrigation from farm pond water	
		Mungbean	-do-	Life saving irrigation from farm pond water	
		Mothbean	-do-	Life saving irrigation from farm pond water	
	Rainfed problematic soil	Bajra,	If the damage will be severe, harvest for fodder and residual moisture be utilized for rabi crop like Taramira	Spray of 1000 ppm of thiourea Life saving irrigation by harvested rain water	
		Sesame		Life saving irrigation by harvested rain water	
		Guar		Spray of 500 ppm of thiourea Life saving irrigation by harvested rain water	
		Sorghum		Life saving irrigation by harvested rain water	

2.1.2 Drought - Irrigated situation

Condition		Kharif season crop	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	Irrigated normal soil and water	Castor	Suitable hybrids/varieties Hybrids RHC-1, GCH-4, GCH-5, GCH-7 Varieties DCS-9, 48-1 (Jwala)	Hoeing for weed and moisture management; In-situ mulching of weeds. No change in other standard agronomic practices	Improved implement for hoeing & weeding under RKVY or NFSM, etc

Condition		Rabi season crops	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	Irrigated normal soil and water	**Wheat**	**Short Duration Varieties** **Wheat-** Raj-4083, Raj 3777, Lok-1	Seed soaking in thiourea 500 ppm for6-8hours Irrigation at critical crop growth stages Collection and use of rainwater in water harvesting structures Mulching in crop rows No change in other standard agronomic practices	Improved implement for hoeing & weeding and bioregulator thiourea under RKVY or NFSM, etc
		Mustard	**Mustard:** Urvashi, RRN-505, Bio-902, GM-2	Seed soaking in thiourea 500 ppm for 3-4hours Irrigation at critical crop growth stages Mulching in crop rows Collection, storage and use of rain water for irrigation	

Condition		**Rabi season crops**	**Suggested Contingency measures**		
Delayed release of water in canals due	**Major Farming situation**	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
		Cumin	**Cumin**-RZ-19, RZ-223, GC-4	Irrigation at critical crop growth stages Mulching in crop rows	
		Gram	**Gram**- RSG-973, RSG-888	Seed soaking in thiourea 500 ppm for6-8hours Irrigation at critical crop growth stages Mulching in crop rows	
		Isabgol	**Isabgol**- RI-89, RI-1	Irrigation at critical crop growth stages Mulching in crop rows	

Condition		**Kharif season crop**	**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	Irrigated normal soil and water	Castor	Hybrids RHC-1, GCH-4, GCH-5, GCH-7 Varieties DCS-9, 48-1 (Jwala)	Hoeing for weed and moisture management In-situ mulching of weeds. No change in other standard agronomic practices	Improved implement for hoeing & weeding and bio-regulator thiourea under RKVY or NFSM, etc
	Irrigated normal soil and water	Gram	**Gram**- RSG-973, RSG-888	Hoeing for weed and moisture management; In-situ mulching of weeds Sprinkler irrigation for efficient use of water; Irrigation at critical crop growth stages; Spray of thiourea 500 ppm in gram at reproductive stage	

Condition		Kharif season crop	Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
		Mustard	**Mustard:** Urvashi, RRN-505, Bio-902	Hoeing for weed and moisture management; In-situ mulching of weeds. Sprinkler irrigation for efficient use of water; Irrigation at critical stages; Spray of thiourea 1000 in mustard at reproductive stage	
		Taramira	**Taramira:** RTM-314, T-27	Sprinkler irrigation for efficient use of water; Irrigation at critical crop growth stages stages	

Condition		Kharif season crops	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	Rainfed normal soil	Castor	Castor hybrids RHC-1, GCH-4, GCH-5, GCH-7 Castor varieties DCS-9, 48-1 (Jwala)	Hoeing for weed and moisture management; In-situ mulching of weeds. No change in other standard agronomic practices	Link RSSC/SAU, etc for supply of seed Link RKVY or NFSM, et for Improved implements (hoeing & weeding under)
	Rainfed problematic soil	Castor	-do-	-do-	

Condition		Rabi season crops	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	Rainfed normal soil	If soil moisture is sufficient due to late rains then prefer mustard	**Mustard:** Urvashi, RRN-505, Bio-902	Timely weed management Thiourea spray1000 at reproductive stage Critical irrigation from rainwater collected in water harvesting structures	If pond is available irrigation at critical stages may be done by harvested water; bio-regulator thiourea under RKVY or NFSM, etc Link watersheds NREGS for support of waterharvesting structures
			Gram- RSG-973, RSG-888	Thiourea spray1000 500 ppm at reproductive stage Critical irrigation from rainwater collected in water harvesting structures	
		taramira, gram	**Taramira:** RTM-314, T-27	Timely weed management Critical irrigation from rainwater collected in water harvesting structure	
	Rainfed problematic soil	Taramira	RTM-314, T-27	Timely weed management Critical irrigation from rainwater collected in water harvesting structures	

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	**N A**				

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	Irrigated normal soil and water	Wheat,	Less water requiring crop be cultivated	• Timely hoeing and weeding • Irrigation at critical stages by sprinklers • Crop diversification through horticultural crops	Percolation tanks may be dugout through NREGA
		Cumin,	**Cumin:** RZ-19, GC-4, RZ-223	Spray of thiourea 500 ppm • Timely hoeing and weeding • Irrigation at critical stages by sprinklers • Crop diversification through horticultural crops	
		Isabgol,	**Isabgol:** RI-89	• Timely hoeing and weeding • Irrigation at critical stages by sprinklers Crop diversification through horticultural crops	
		Mustard	**Mustard:** Urvashi, RRN-505, Bio-902, JM-1, GM-2	• Spray of thiourea 1000 ppm	
		Gram	**Gram:** RSG-888, RSG-973	• Life saving irrigarion at crtical crop growth stages • Irrigation through sprinklers • Spray thio urea 5ooppm	
	Irrigated problematic soil and water	Cumin	**Cumin:** RZ-19, GC-4, RZ-223	• Timely hoeing and weeding • In-situ mulching by weeds • Irrigation at critical stages by sprinklers • Spray of thiourea 1000 ppm in mustard	
		Isabgol	**Isabgol:** RI-89	-do-	

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
		Mustard	**Mustard:** Urvashi, RRN-505, Bio-902, JM-1, GM-2	-do-	

2.2 Unusual rains (untimely, unseasonal etc) (for both rainfed and irrigated situations) - **Not applicable**

Condition	**Suggested contingency measure**			
Continuous high rainfall in a short span leading to water logging	**Vegetative stage**	**Flowering stage**	**Crop maturity stage**	**Post harvest**
Horticulture	**NA**			
Vegetables	**NA**			
Heavy rainfall with high speed winds in a short span	**NA**			
Horticulture	**NA**			

Outbreak of pests and diseases due to unseasonal rains	**Disease**	**Control**	**Insect/Pest**	**Control**
NA				

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

Extreme event type	**Suggested contingency measure**			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Heat Wave				
Wheat	Light irrigation Provision of wind breaks	Light irrigation	Foliar spray of thiourea at 500 ppm at grain filling stage	Harvest the crop at physiological maturity
Chickpea	Light irrigation Provision of wind breaks	Light irrigation	-do-	-do-
Mustard	Light irrigation Provision of wind breaks	Light irrigation	Foliar spray of thiourea v1000 ppm at grain filling stage	-do-
Horticulture	-	-	-	-
Vegetables	-	-	-	-

Cold wave				
Wheat	Light irrigation	Light irrigation	• Spray of H2SO4 @ 0.1%, • Foliar spray of thiourea 500 ppm	Harvest the crop as early as possible and marketed or keep in

	Smoking during night	Smoking during night	• Burning of crop residues around the field • Light irrigation	cold store Store the produce in shed or safe place
Mustard	Light irrigation Smoking during night	Light irrigation Smoking during night	-do-	-do-
Chickpea	Light irrigation Smoking during night	Light irrigation Smoking during night	-do-	-do-
Horticulture				
Frost			-	
	Light irrigation Smoking during night -	-	• Foliar spray of thiourea @500 ppm • Burning of crop residues around the field • Light irrigation	Harvest the crop at physiological maturity
Wheat	-do-	-	-	-do-
Mustard	-do-	-	-	-do-
Gram	-do-	-	-	-do
Horticulture				
Hailstorm	**-NA-**			
Cyclone	**-NA-**			

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 regularly drought prone one, it should have some feed and fodder reserves at any point of the year for mobilization to the drought affected villages, Hence the under mentioned feed reserves should be created at district head quarter Urea molasses mineral bricks (UMMB):50-100 t Hay:100-250 t Concentrates: 20-50 t Minerals and vitamin supplements mixture:5-10 t Available crop residues especially Bajra Karabi, Wheat/barley straw/ Chopped sewan/Dhaman/Bharut/ Dry leaves of Jharberi/ Groundnut bhusa should be stored properly in the farm of hay at individual farmer level. Harvest the top fodder (Khejari, Neem, Subabul, Acasia, Pipol etc) and create fodder banks at village level Establishment of fodder bank by planting of trees and shrubs like khejri, neem, mopane, deshi babool, adusa, hardwickia, nutans, etc. along the road, railway track, canal, farm boundary and community lands. Cultivation of green fodder like oat, barley, lucern in rabi, jowar, bajra, maize, cowpea in summer season. Develop community lands like Orans and Gauchars through pasture grasses like Anjan,	Harvest and use all the failed crop (Sorghum, Mothbean, Clusterbean, Greengram Wheat, Groundnut etc.,) material as fodder and feed the Livestock. Use judiciously the karabi, Preserved sewan /Dhaman /Bharut, Wheat straw, Lopped Khejari High productive animals should be Supplemented with tree fodder Available feed and fodder should be cut from CPRs and stall fed in order to reduce the energy requirements of the animals In case of Severe drought: UMMB, hay, concentrates and vitamin & mineral mixture should be transported to the drought affected villages All the hay should be enriched with 2% Urea molasses solution or 1% common salt solution and fed to LS Herd should be split and supplementation should be given only to the highly productive and breeding animals Provision of emergency grazing/feeding (Cow-calf camps or other special arrangements to protect high productive & breeding stock) Available kitchen waste should be mixed with dry fodder while feeding Arrangements should be made for mobilization of small ruminants across the districts where no drought exits Unproductive livestock should to be culled during severe drought Create transportation and marketing facilities for the culled and unproductive animals (10000-20000 animals) Subsidized loans should be provided to the livestock keepers for procurement of feed	Flushing the stock to recoup Replenish the feed and fodder banks

	moda dhaman, karad, etc. and top feed species like khejri, neem, mopane, deshi babool, adusa, hardwickia, nutans, etc. Establishment of silvi-pastoral system in CPRs with Stylosanthus hamata and Cenchrus ciliaris as grass with Leucaena leucocephala as tree component Top dressing of N in 2-3 split doses @ 20-25 kg N/ha in CPRs with the monsoon pattern for higher biomass production Increase area under short duration fodder crops of sorghum/bajra/maize(UP chari, MP chari, HC-136, HD-2, GAINT BAJRA, L-74, K-677, Ananad/African Tall, Kisan composite, Moti, Manjari, B1-7 etc.,) on farmers fields with some input subsidy Avoid burning of wheat straw Harvesting and collection of perennial vegetation particularly grasses which grow during monsoon Proper drying, bailing and densification of harvested grass Capacity building and preparedness of the stakeholders and official staff for the extreme events		
Floods	Harvest all the possible wetted grain (Sorghum, Wheat, Groundnut etc) and use as animal feed. Don't allow the animals for grazing in case of early fore warning (EFW) Incase of EFW, shift the animals to safer places.	Treatment of the sick, injured and affected animals through arrangement of mobile emergency veterinary hospitals / rescue animal health workers. Diarrhea out break may happen arrangement should be made to mitigate the problem Protect the animals from heavy rains and thunder storms In severe cases un-tether or let loose the animals Arrange transportation of highly productive animals to safer place Spraying of fly repellants in animal sheds	Repair of animal shed Deworm the animals through mass camps Vaccinate against possible out breaks Proper disposable of the dead animals / carcasses by burning / burying with line powder in pit Bleach / chlorinate (0.1%) drinking water or water resources Collect drowned crop material, dry it and store for future use Sowing of above mention short

			duration fodder crops in unsown and water logged areas Application of urea (20-25kg/ha) in the CPR's to enhance the bio mass production.
Heat & Cold wave	Arrangement for protection from heat wave i) Provision shed with bamboo/thatched material ii) Plantation around the shed iii) H2O sprinklers / foggers in the shed iv) Application of white reflector paint on the roof 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 the animals early in the morning or late in the evening for grazing during heat waves Allow for grazing between 10AM to 3PM during cold waves Feed green fodder/silage / concentrates during day time and roughages / hay during night time in case of heat waves Add 25-50 ml of edible oil in concentrates and fed to the animal during cold waves Put on the foggers / sprinkerlers during heat weaves and heaters during cold waves In severe cases, vitamin 'C' and electrolytes should be added in H2O during severe heat 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)
Health and Disease 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 Rescue of sick and injured animals and their treatment Organize with community, daily lifting of dung from relief camps	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

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
Drinking water	Identification of water resources Desilting 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 shandies /community grazing areas	Restrict wallowing of animals in water bodies/resources Provide clean drinking water	Bleach (0.1%) drinking water / water sources Provide clean drinking water

2.5.2 Poultry

	Suggested contingency measures		
	Before the event[a]	**During the event**	**After the event**
Drought			
Shortage of feed ingredients	Storing of house hold grain like wheat, sorghum, bajra etc, Culling of weak birds	Supplementation only for productive birds with house hold grain Supplementation of shell grit (calcium) for laying birds	Supplementation to all
Drinking water	Rain water harvesting	Sanitation of drinking water	Give sufficient water as per the bird's requirement
Health and disease management	Culling of sick birds. Deworming and vaccination against RD and IBD	Mixing of Vit. A,D,E, K and B-complex including vit C in drinking water	Hygienic and sanitation of poultry house Disposal of dead birds by burning / burying with line powder in pit
Floods			
Shortage of feed ingredients	In case of EFW, shift the birds to safer place Storing of house hold grain like wheat/rice, sorghum, bajra etc,	Use stored feed as supplement Don't allow for scavenging Protect from thunder storms	Supplementation to all the birds

	Culling of weak birds		
Drinking water	Provide clean drinking water	Sanitation of drinking water	Give sufficient water as per the bird's requirement
Health and disease management	In case of EFW, add antibiotic powder in drinking water to prevent any disease outbreak	Sanitation of poultry house Treatment of affected birds Prevent water logging surrounding the sheds Assure supply of electricity Sprinkle lime powder to prevent ammonia accumulation due to dampness	Hygienic and sanitation of poultry house Disposal of dead birds by burning / burying with line powder in pit
Heat wave			
Shelter/environment management	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
Health and disease management	Deworming and vaccination against RD and IBD	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
Cold wave			
Shelter/environment management	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	Arrangement for protection from chilled air	Supplementation of grains Antibiotics in drinking water to protect birds from pneumonia	Routine practices are followed

2.5.3: Fisheries/Aquaculture: Not Applicable