State: Rajasthan

Agriculture Contingency Plan for District: KARAULI

1.0 District Agriculture profile					
1.1	**Agro-Climatic/Ecological Zone**				
	Agro Ecological Sub Region (ICAR)	Northern Plain (And Central Highlands) Including Aravallis, Hot Semi-Arid Eco-Region (4.1)			
	Agro-Climatic Zone (Planning Commission)	CENTRAL PLATEAU AND HILLS REGION (VIII)			
	Agro Climatic Zone (NARP)	FLOOD PRONE EASTERN PLAIN ZONE (RJ-6)			
	List all the districts or part thereof falling under the NARP Zone	Karauli(Sapotara, Hindaun, Nadauti, Karauli, Todabhim)			
	Geographic coordinates of district headquarters	Latitude		Longitude	Altitude
		26 30' & 26^0 4' N		76^0 35' & 77^0 26' E	275msl
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Zonal Director Research, A.R.S., Navgaon (S.K.R.A.U., Bikaner), Distt.: Alwar.			
	Mention the KVK located in the district	K.V.K., Karauli.			
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):	646	26	3rd week of June	3rd week of September
	NE Monsoon(Oct-Dec):	26	2	- -	
	Winter (Jan- March)	24	2	-	-
	Summer (Apr-May)	13	1	-	-
	Annual	709	31	-	-

1.3	**Land use pattern of the district** (latest statistics)	Geographical area	Cultivable area	Forest area	Land under non-agricultural use	Permanent pastures	Cultivable wasteland	Land under Misc. tree crops and groves	Barren and uncultivable land	Current fallows	Other fallows
	Area ('000 ha)	504.302	295.106	172.490	23.519	30.867	13.191	0.344	48.432	11.663	10.880

1. 4	**Major Soils (common names like red sandy loam deep soils (etc.,)***	**Area ('000 ha)**	**Percent (%) of total**
	Deep black clayey		5.41
	Shallow brown loamy		1.63
	Medium brown loamy		14.65
	Deep brown loamy		39.55
	Deep brown clayey		19.74
	Deep dark brown sandy		3.69
	< 25 Red LSK		4.99
	Red gravelly loam hilly		10.34

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

1.5	**Agricultural land use**	Area ('000 ha)	Cropping intensity %
	Net sown area	192.916	153
	Area sown more than once	102.190	
	Gross cropped area	295.106	

1.6	**Irrigation**	Area ('000 ha)		
	Net irrigated area	111.478		
	Gross irrigated area	113.160		
	Rainfed area	181.946		
	Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
	Canals	0	0	

	Tanks	0	0	
	Open wells	22255	43.595	38.61
	Bore wells	8418	66.553	58.9
	Lift irrigation schemes	-	-	
	Micro-irrigation			
	Other sources (please specify)			
	Total Irrigated Area			
	Pump sets	22996		
	No. of Tractors			
	Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	No. of blocks/ Tehsils (5)	(%) area	Quality of water (specify the problem such as high levels of arsenic, fluoride, saline etc)
	Over exploited	4	80	Sodic, fluoride
	Critical	1	20	
	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 (2008-09)

1.7	**Major field crops cultivated**	**Area ('000 ha)**							
		Kharif			***Rabi***				
		Irrigated	**Rainfed**	**Total**	**Crop**	**Irrigated**	**Rainfed**	**Summer**	**Grand total**
	Bajra	0	117.3		Wheat	62.7	-		
	Guar	0	0.5		Barley	0.5	-		
	Til	2	11.09		Gram	1.5	12.6		

	Cotton	0.05	-		Mustard	61.7	88.4		
	Arhar	0	0.5						
	Groundnut	1.551	-						

	Horticulture crops - Fruits	**Area ('000 ha)**		
		Total	**Irrigated**	**Rainfed**
	Horticulture crops - Vegetables	**Total**	**Irrigated**	**Rainfed**
	Onion	0.03	0.03	-
	Potato	0.03	0.03	-
	Chilly	0.20	0.20	-
	Pea	0.007	0.007	-
	Coriander	0.03	0.03	-
	Medicinal and Aromatic crops	**Total**	**Irrigated**	**Rainfed**
	Methi	0.003	0.003	-
	Plantation crops	**Total**	**Irrigated**	**Rainfed**
	Eg., industrial pulpwood crops etc.			

	Fodder crops	Total	Irrigated	Rainfed
	Jowar	0.5	0	0.5
	Total fodder crop area			
	Grazing land			
	Sericulture etc			
	Others (specify)			

1.8	**Livestock**	**Male ('000)**	**Female ('000)**	**Total ('000)**
	Non descriptive Cattle (local low yielding)			117081
	Crossbred cattle			2149
	Non descriptive Buffaloes (local low yielding)			399311
	Graded Buffaloes			NA
	Goat			387736
	Sheep			54528
	Others (Camel, Pig, Yak etc.)			17830
	Commercial dairy farms (Number)			
1.9	**Poultry**	**No. of farms**	**Total No. of birds ('000)**	
	Commercial			
	Backyard			
1.10	**Fisheries** (Data source: Chief Planning Officer)			
	A. Capture			
	i) Marine (Data Source:	**No. of fishermen**	**Boats**	**Nets**	**Storage facilities**

	Fisheries Department)		Mechanized	Non-mechanized	Mechanized (Trawl nets, Gill nets)	Non-mechanized (Shore Seines, Stake & trap nets)	**(Ice plants etc.)**
	ii) Inland (Data Source: Fisheries Department)	**No. Farmer owned ponds**		**No. of Reservoirs**		**No. of village tanks**	

	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)			
	Others			

1.11 Production and Productivity of major crops (Average of last 5 years: 2004, 05, 06, 07, 08; specify years)

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)										
	Bajra	209.6	1721	184.8 Wheat	3339					
	Guar	2.4	1005	1.58 Barley	2305					
	Til	5.5	652	14.4 Gram	1036					

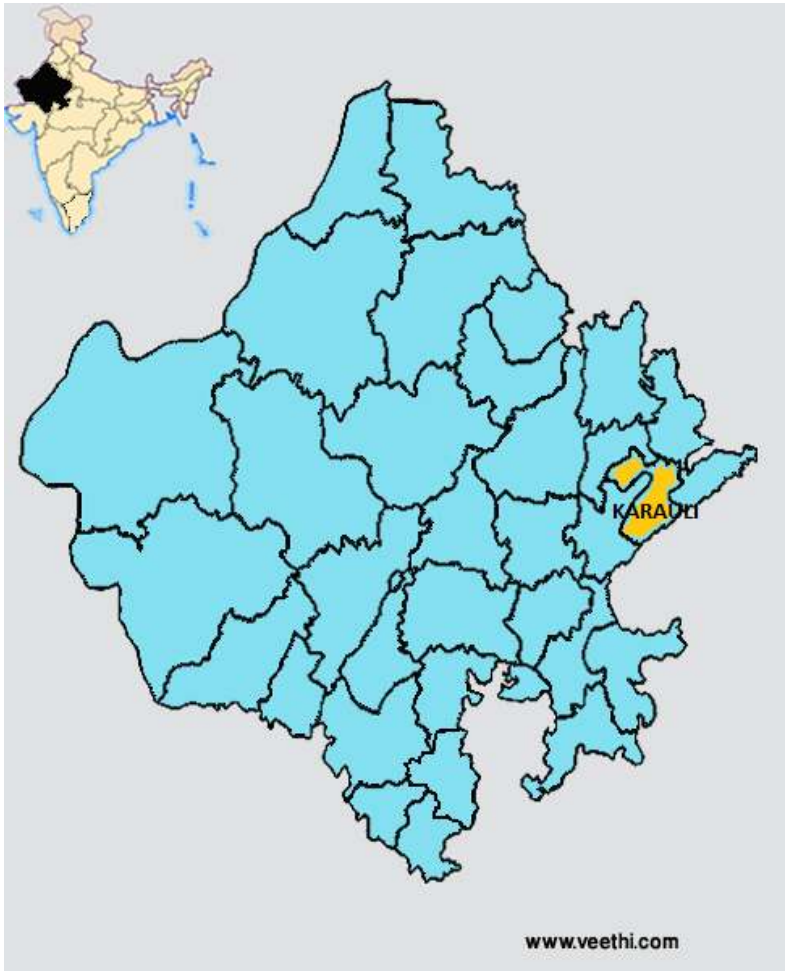
	Cotton	135 Bales	326	113.39 Mustard	1338					
	Arhar	0.370	1131							
	Groundnut	1.58	1035							
Major Horticultural crops (Crops to be identified based on total acreage)										
	Methi	-	-	0.003	1000					

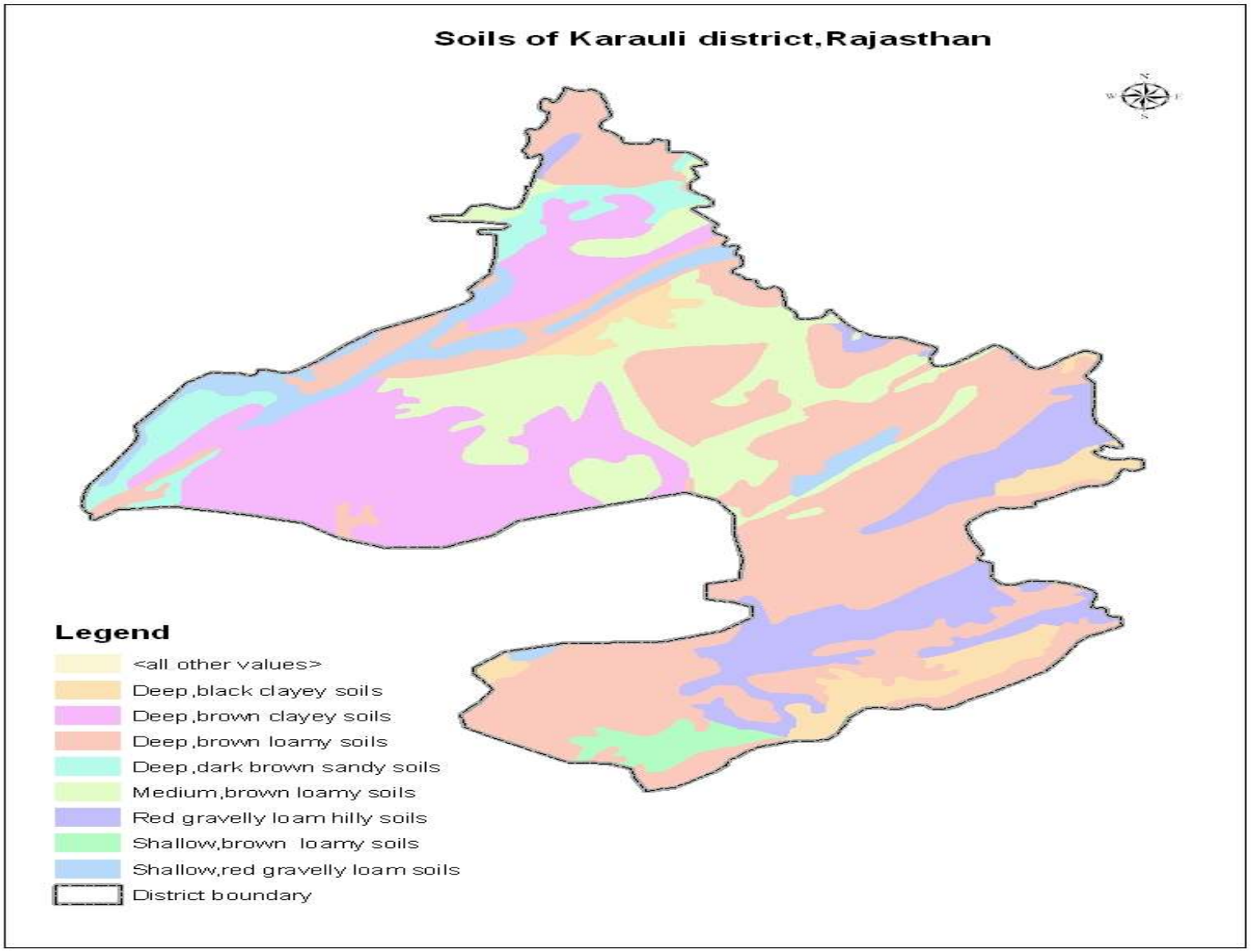
1.12	**Sowing window for 5 major field crops** (start and end of normal sowing period)	**Bajra**	**Guar**	**Wheat**	**Barley**	**Mustard**
	Kharif- Rainfed	15th June – 15th July	15th June – 15th July	-	-	-
	Kharif-Irrigated	15th June – 15th July	15th June – 15th July	-	-	-
	Rabi- Rainfed	-	-	-	1st Nov.–30th Nov	15th Sep.-15th Oct.
	Rabi-Irrigated	-	-	15th Nov.–25th Dec.	1st Nov.–30th Nov	15th Oct.-15th 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			√
	Pests and disease outbreak (specify)			
	Others (specify)			

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

Location map




Soils of Karauli district,Rajasthan
Legend
<all other values>
Deep,black clayey soils
Deep,brown clayey soils
Deep,brown loamy soils
Deep,dark brown sandy soils
Medium,brown loamy soils
Red gravelly loam hilly soils
Shallow,brown loamy soils
Shallow,red gravelly loam soils
District boundary

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 (Specify month)* July 1st week	Rainfed Deep brown loamy soil (high rain) Rainfed Deep brown clayey soil (medium rain) Rainfed Medium brown loamy soil (high rain)	Bajra/ Guar/ Til/ Mustard/ Wheat/ barley/ gram	**Bajra:** HHB-67, HHB-94, ICMH-356, MH-169, HHB 60, RHB 30, ICTP 8203 **Guar:**RGC-486, 1003, 1017, 1002, 1091, 936, RGM 112 **Til-** RT-46, RT-125, RT-127, GT-1	Wider spacing in Bajra 45x45/30 cm, thinning, inter culture operation weed control 25 DAS. Inter cropping in Bajra: Paired 2 rows of Bajra at 30 cm & only One row of moong / guar.	Seed drill under RKVY, supply of seed through RSSC, NSC, Bio-fertilizers, plain water harvesting structures, for regular fodder supply planting of Ardu, subabul, etc. at farmer & village level. Desilting of ponds to increase their capacity.

Condition			Suggested Contingency measures

Early season drought (delayed onset)	Major Farming situation[a]	Normal Crop/cropping system[b]	Change in crop/cropping system[c] (short duration)	Agronomic measures[d]	Remarks on Implementation[e]
Delay by 4 weeks (Specify month) **July 3rd week**	Rainfed Deep brown loamy soil (high rain) Rainfed Deep brown clayey soil (medium rain) Rainfed Medium brown loamy soil (high rain)	Bajra/ Guar/ Til/ Mustard/ Wheat/ barley/ gram	Guar-RGC-936, 1003, 1002, 1017, RGM 112. Bajra-HHB-67, ICTP-8203, HHB 60, RHB 30 356.	Prepare seed nursery of bajra & transplant in July end. Inter cropping in Bajra. Paired 2 rows Of Bajra at 30 cm & one row of moong / guar.	Seed drill under RKVY, supply of seed through RSSC, NSC, Bio-fertilizers, plain water harvesting structures, for regular fodder supply planting of Ardu, subabul, etc. at farmer & village level. Desilting of ponds to increase their capacity.

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 (Specify month) August I week	Rainfed Deep brown loamy soil (high rain) Rainfed Deep brown clayey soil (medium rain) Rainfed Medium brown loamy soil (high rain)	Bajra/ Guar/ Til/ Mustard/ Wheat/ barley/ gram	Bajra, Jowar for fodder purpose. Use short duration variety Guar-green manuring	Increase seed rate, adequate nutrient management	Supply of seed / through RSSC, NSC.

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 (Specify month) **N.A. Situation did not arise in last 20 years**	Rainfed Deep brown loamy soil (high rain) Rainfed Deep brown clayey soil (medium rain) Rainfed Medium brown loamy soil (high rain)	Bajra/ Guar/ Til/ Mustard/ Wheat/ barley/ gram	Prepare land for rainfed rabi crops		

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]**	**Remarks on Implementation[e]**
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	Rainfed Deep brown loamy soil (high rain) Rainfed Deep brown clayey soil (medium rain) Rainfed Medium brown loamy soil (high rain)	Bajra/ Guar/ Til/ Mustard/ Wheat/ barley/ gram	Thinning, weeding, gap filling of thinned plants (Transplanting for pearlmillet only). Resowing, if necessary. Only short duration varieties.	Mulching.	Supply of Weedicides under RKVY. Supply of intercultural implements.

Condition			Suggested Contingency measures		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measues[d]**	**Remarks on Implementation[e]**
At vegetative stage	Rainfed Deep brown loamy soil (high rain) Rainfed Deep brown clayey soil (medium rain) Rainfed Medium brown loamy soil (high rain)	Bajra/ Guar/ Til/ Mustard/ Wheat/ barley/ gram	Life saving irrigation, thinning, weeding. Spraying of 1% thiourea in bajra, guar, etc.	Mulching	Supply of interculture implements through RKVY.

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measues[d]**	**Remarks on Implementation[e]**
At flowering/ fruiting stage	Rainfed Deep brown loamy soil (high rain) Rainfed Deep brown clayey soil (medium rain) Rainfed medium brown loamy soil (high rain)	Bajra/ Guar/ Til/ Mustard/ Wheat/ barley/ gram	Life sowing irrigation, spray of 0.1% thiourea + 0.2%, $FeSO_4$ 0.5%, K_2SO_4 / KCI + 1% urea.	Mulching.	Supply of interculture implements through RKVY.

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]**
	Rainfed deep brown loamy soil (high rain)	Bajra/ Guar/ Til/ Mustard/ Wheat/ barley/ gram	Life saving irrigation, harvest the crop for fodder purpose. Weed free field.	Harvested field: prepare the field followed by soil planking to conserve moisture for rabi rainfed crops.	Supply of interculture implements through RKVY.

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[k]**	**Flowering stage[l]**	**Crop maturity stage[m]**	**Post harvest[n]**
Crop1 (specify) - Bajra, guar, til.	Provide drainage.		Provide drainage, harvesting at Physiological maturity stage.	Shift safer places harvested crop plants heaped upright, threshed produced Turned frequently and safe storage
Heavy rainfall with high speed winds in a short span[2] – N.A.				
Crop1				
Outbreak of pests and diseases due to unseasonal rains	Need based plant protection IPDM for all crops	-do-	-do-	-do-
Crop1				

2.3 Floods – not applicable

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

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

Extreme event type	Suggested contingency measure[r]			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Heat Wave[p]	Life saving irrigation	Spraying of thiourea	Spraying of thiourea + $FeSO_4$	
Crop1 – Bajra			or KCl / K_2SO_4 + urea spray.	
Crop2 – Guar				
Cold wave[q]	N.A.			
Frost	N.A.			
Hailstorm	N.A.			
Cyclone	N.A.			

2.5 Contingent strategies for Livestock, Poultry & Fisheries

2.5.1 Livestock

	Suggested contingency measures		
	Before the event[s]	**During the event**	**After the event**
Drought			

Feed and fodder availability	Provide Enough feed & fodder	Provide sufficient feed & fodder along with mineral mixture. Harvest and use all failed crop material as fodder. Use MNB, urea treatment of poor fodder	Provide sufficient feed & fodder along with mineral mixture.
Drinking water	Enough water for drinking	Provide sufficient water along with mineral mixture, Hygiene and sanitation, avoid wallowing of animals in water bodies	Provide sufficient water along with mineral mixture
Health and disease management		Vaccinate against contagious diseases., organization of mass animal health camps	Vaccinate against contagious diseases
Floods			
Feed and fodder availability	Provide Enough feed & fodder	Provide dry fodder and feed in sufficient amount	Provide dry fodder and feed in sufficient amount
Drinking water		Provide safe drinking water, maintain sanitation	Provide safe drinking water
Health and disease management		Organization of mass animal health camp, Spraying of fly repellents	Deworming, proper disposal of dead animals
Cyclone			
Feed and fodder availability			
Drinking water		Cover the shelter from north side/west side and use heaters/coolers, Grazing during morning and evening time	Normal condition
Health and disease management			
Heat wave and cold wave			
Shelter/environment management	Normal condition	Cover the shelter from north side/west side and use heaters/coolers	Normal condition

Health and disease management	Normal condition	Vaccinate against diseases	Normal condition

[s] based on forewarning wherever available

2.5.2 Poultry

	Suggested contingency measures			Convergence/linkages with ongoing programs, if any
	Before the event[a]	**During the event**	**After the event**	
Drought				
Shortage of feed ingredients	Provide Enough feed	Provide sufficient feed along with mineral mixture	Provide sufficient feed along with mineral mixture	Provide Enough feed
Drinking water	Enough water for drinking	Provide sufficient water along with mineral mixture	Provide sufficient water along with mineral mixture	Enough water for drinking
Health and disease management		Vaccinate against contagious diseases	Vaccinate against contagious diseases	
Floods				
Shortage of feed ingredients	Provide Enough feed & fodder	Provide dry fodder and feed in sufficient amount	Provide dry fodder and feed in sufficient amount	Provide Enough feed & fodder
Drinking water		Provide safe drinking water	Provide safe drinking water	
Health and disease management				
Cyclone				

Shortage of feed ingredients				
Drinking water				
Health and disease management				
Heat wave and cold wave				
Shelter/environment management	Normal condition	Cover the shelter from north side/west side and use heaters/coolers	Normal condition	Normal condition
Health and disease management	Normal condition	Vaccinate against diseases	Normal condition	Normal condition

[a] based on forewarning wherever available

2.5.3 Fisheries/ Aquaculture:NA