STATE: RAJASTHAN

AGRICULTURE CONTINGENCY PLAN FOR DISTRICT: KOTA

1.0 District Agriculture profile					
1.1	**Agro-Climatic/Ecological Zone**				
	Agro Ecological Sub Region (ICAR)	Madhya Bharat plateau Western Malwa plateau, Eastern Gujarat plain, Vindhyan and Satpura range and Narmada Valley hot, moist semi-arid eco-subregion (5.2)			
	Agro-Climatic Zone (Planning Commission)	Central Plateau And Hills Region (VIII)			
	Agro Climatic Zone (NARP)	Humid South East Plain Zone (RJ-9) Sub Humid Southern Plain Zone (RJ-7)			
	List all the districts or part thereof falling under the NARP Zone	Kota, Bundi, Baran and Jhalawar			
	Geographic coordinates of district headquarters	**Latitude**	**Longitude**	**Altitude**	
		25° 11' 0" N	75° 50' 0" E	271 MSL	
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Agricultural Research Station Ummedganj, Post Box No. 7, GPO Nayapura, Kota 324 001			
	Mention the KVK located in the district	KVK, Borkhera, Baran Road, Kota – 324 001			
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):	698.9	35.4	Last week of June	Second week of September
	NE Monsoon(Oct-Dec):	12.5	2.0	-	-
	Winter (Jan- March)	10.8	2.0	-	-
	Summer (Apr-May)	10.2	1.2	-	-
	Annual	732.4	40.6	-	-

Source: Rajasthan statistics at a glance, 2008-09

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)	521.3	269.1	125.3	29.8	14.2	22.7	0.5	39.5	9.6	10.5

Source: Rajasthan statistics at a glance, 2008-09

1. 4	Major Soils (common names like red sandy loam deep soils (etc.,)*	Area ('000 ha)	Percent (%) of total
	Deep black clayey soils	216.5	42
	Deep brown clayey soils	78.4	15
	Deep brown loamy soils	57.6	11

Source: NBSS & LUP, Udaipur

1.5	Agricultural land use	Area ('000 ha)	Cropping intensity %
	Net sown area	269.1	156.4
	Area sown more than once	151.8	
	Gross cropped area	420.9	

Source: Rajasthan statistics at a glance, 2008-09

1.6	Irrigation	Area ('000 ha)		
	Net irrigated area	233.9		
	Gross irrigated area	253.8		
	Rainfed area	167.1		
	Sources of Irrigation	**Number**	**Area ('000 ha)**	**Percentage of total irrigated area**
	Canals		137.9	54.4
	Tanks	280	0.3	0.1
	Open wells	23764	24.3	9.5

	Bore wells	84133	89.5	35.3
	Lift irrigation schemes	--	--	--
	Micro-irrigation	--	--	--
	Other sources (check dam & anicut)	1606	1.6	0.7
	Total Irrigated Area		253.7	
	Pump sets	20927		
	No. of Tractors	8511		
	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	2	35	Suitable for irrigation
	Critical	-	-	
	Semi- critical	3	65	Suitable for irrigation
	Safe	-	-	
	Wastewater availability and use	-	-	
	Ground water quality	-		
*over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%				

Source: Rajasthan statistics at a glance, 2008-09 & NBSS & LUP, Udaipur

1.7 Area under major field crops & horticulture (year 2008-09)

1.7	S.No.	Major field crops cultivated	Area ('000 ha)							
			Kharif			*Rabi*				
			Irrigated	**Rainfed**	**Total**	**Irrigated**	**Rainfed**	**Total**	**Summer**	**Grand total**
	1	Soybean	0.7	131.4	132.2					132.2
	2	Paddy	12.0	-	12.0					12.0
	3	Rapeseed & Mustard				87.8	3.0	90.8		90.8
	4	Wheat				86.6	0.01	86.6		86.6
	5	Coriander				48.2	1.0	49.1		49.1
	Others	Maize	0.01	7.3	7.3					7.3
		Gram				2.2	3.0	5.1		5.1
	Horticulture crops - Fruits		**Area ('000 ha)**							
			Total							
	1	Guava	0.2							
	2	Mango	0.2							
	3	Orange	0.1							
	4	Lime	0.1							
	5	Aonla	0.02							
	Horticulture crops Vegetables		**Total**							

	1	Tomato	0.4
	2	Brinjal	0.3
	3	Gobhi	0.3
	4	Potato	0.3
	5	Cucurbits	0.2
	Others	Bhindi	0.1
		Medicinal and Aromatic crops	**Total**
	1	Ashwagandha	5.1
	2	Rose	0.05
		Plantation crops	-
	Others	e.g., industrial pulpwood crops etc.	-
		Fodder crops	**Total**
	1	Chari Jowar	4.3
	2	Lucerne	0.7
	3	Berseem	0.1
		Total fodder crop area	5.1
	Others	**Grazing land**	14.2
		Sericulture etc	-

Source: Rajasthan statistics at a glance, 2008-09

1.8	**Livestock**	**Male ('000)**	**Female ('000)**	**Total ('000)**
	Non descriptive Cattle (local low yielding)	NA	NA	230.4
	Crossbred cattle	NA	NA	
	Non descriptive Buffaloes (local low yielding)	NA	NA	190.3
	Graded Buffaloes	NA	NA	
	Goat	NA	NA	189.0
	Sheep	NA	NA	24.6
	Others (Camel, Pig, Yak etc.)	NA	NA	20.1
	Commercial dairy farms (Number)	NA	NA	-
1.9	**Poultry**	**No. of farms**	**Total No. of birds ('000)**	
	Commercial	Information not available	51.6	
	Backyard	Information not available	-	

Source: Raj Agri Data 2008-09

1.10	**Fisheries**							
	A. Capture							
	i) Marine (Data Source: Fisheries Department)	**No. of fishermen**	**Boats**		**Nets**		**Storage facilites (Ice plants etc.)**	
			Mechanized	**Non-mechanized**	**Mechanized (Trawl nets, Gill nets)**	**Non-mechanized (Shore Seines, Stake & trap nets)**		
		NA	NA	NA	NA	NA	NA	
	ii) Inland (Data Source: Fisheries Department)	**No. Farmer owned ponds**		**No. of Reservoirs**		**No. of village tanks**		
		NA		**NA**		**NA**		
	B. Culture							
		Water Spread Area (ha)		**Yield (t/ha)**		**Production ('000 tons)**		
	i) **Brackish water** (Data Source: MPEDA/ Fisheries Department)			**NA**				
	ii) **Fresh water** (Data Source: Fisheries Department)	1403				688		
	Others	-		-		-		

1.11 Production and Productivity of major crops (Average of 5 years: 2004-08)

1.11	**Name of crop**	**Kharif**		**Rabi**		**Summer**		**Total**		**Crop residue as fodder ('000 tons)**
		Production ('000 t)	**Productivity (kg/ha)**	**Production ('000 t)**	**Productivity (kg/ha)**	**Production ('000 t)**	**Productivity (kg/ha)**	**Production ('000 t)**	**Productivity (kg/ha)**	
Major Field crops (Crops to be identified based on total acreage)										
	Soybean	164.5	1493	-	-	-	-	164.5	1493	NA
	Paddy	22.4	3452	-	-	-	-	22.4	3452	NA
	Maize	12.4	1278	-	-	-	-	12.4	1278	NA
	Mustard	-	-	175.2	1551	-	-	175.2	1551	NA
	Wheat	-	-	263.2	3392	-	-	263.2	3392	NA
	Coriander	-	-	40.2	1085	-	-	40.2	1085	NA
	Gram	-	-	4.5	1190	-	-	4.6	1190	NA
Major Horticultural crops (Crops to be identified based on total acreage)										
	Tomato	2.6	32437	3.6	15938	0.4	25806	6.6	24727	NA

	Brinjal	2.6	19251	3.0	20678	0.3	22857	5.9	20928	NA
	Mango	-	-	-	-	6.8	37545	6.9	37545	NA
	Guava	-	-	5.2	24278	-	-	5.2	24278	NA
	Ashwagandha	1.7	713	-	-	-	-	1.7	713	NA

Source: Raj Agri Data 2008-09

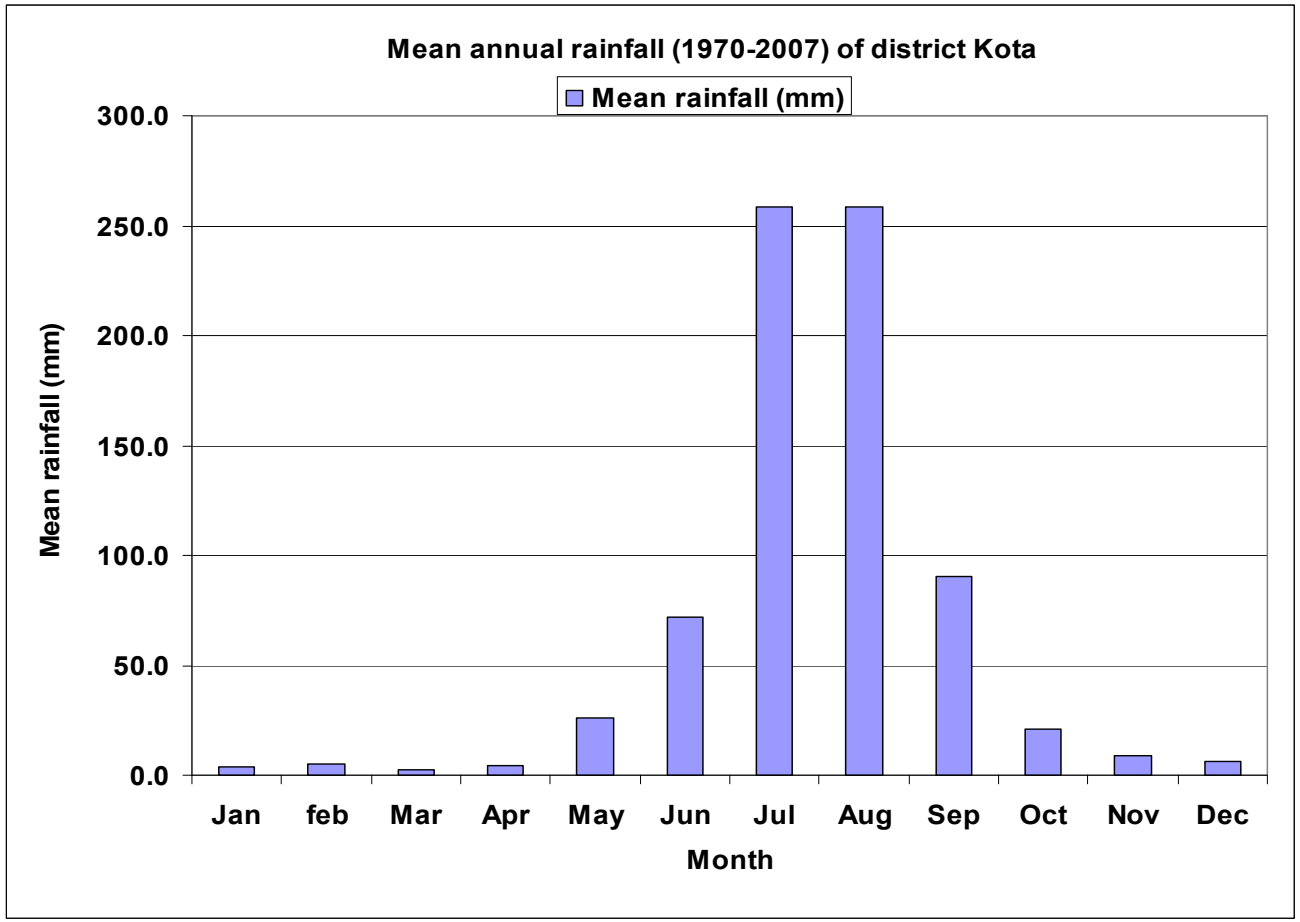
1.12	**Sowing window for 5 major field crops** (start and end of normal sowing period)	**Soybean**	**Maize**	**Wheat**	**Mustard**	**Coriander**
	Kharif- Rainfed	1-3 week of July	1-3 week of July	-	-	-
	Kharif-Irrigated	1-3 week of July	3rd week of June to 3rd week of July	-	-	-
	Rabi- Rainfed	-	-	4th week of Oct. to 2nd week of Nov.	4th week of Sept. to 2nd week of Oct.	2nd week of Oct. to 2nd week of Nov.
	Rabi-Irrigated	-	-	1-3rd week of Nov.	1st -4th wk. of Oct.	2nd week of Oct. to 2nd week of 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 (Tobacco Caterpillar in soybean, Yellow Mosaic Virus in soybean and kharif pulses)		√	
	Others (specify)			

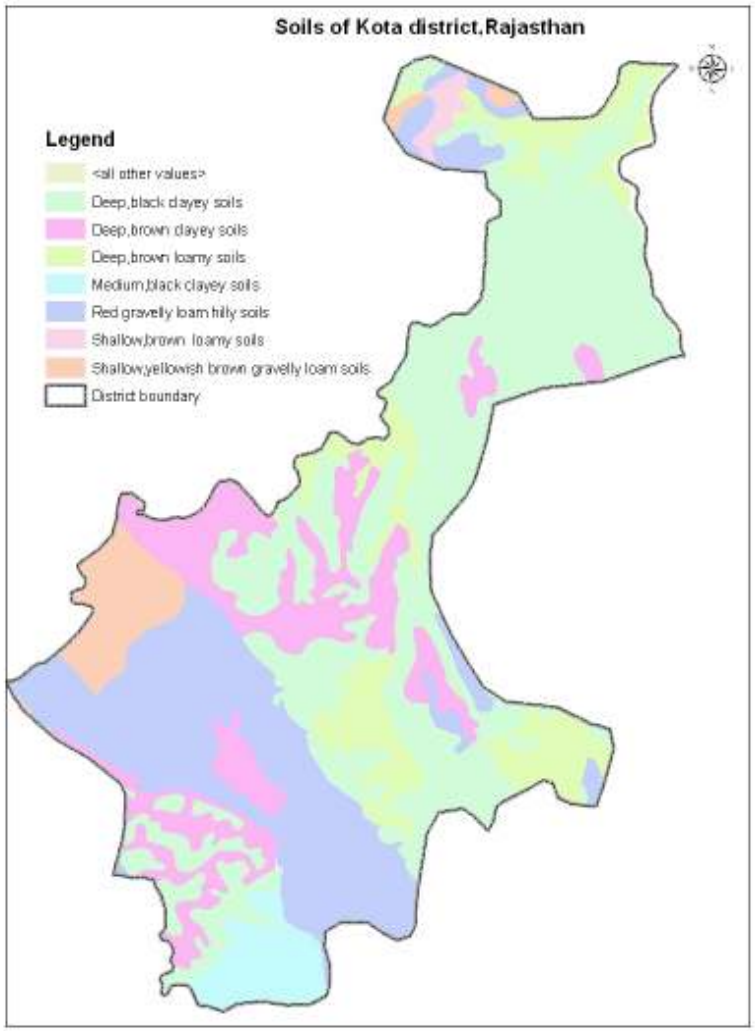
1.14	**Include Digital maps of the district for**	Location map of district within State as Annexure	Enclosed: Yes
		Mean annual rainfall as Annexure 2	Enclosed: Yes
		Soil map as Annexure 3	Enclosed: Yes

Annexure 1: Location map of Kota

Annexure 2: Rainfall Data



Annexure 3: Soil map



2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation (kharif)

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop / Cropping system**	**Change in crop / cropping system including variety**	**Agronomic measures**	**Remarks on Implementation**
Delay by 2 weeks (July 2nd Wk)	Deep black clayey soils	Soybean	No change	Normal	--
		Maize	No change	Normal	--
		Urdbean	No change	Normal	--
	Deep brown clayey soils	Soybean	No change	Normal	--
		Maize	No change	Normal	--
		Urdbean	No change	Normal	--
	Deep brown loamy soils	Soybean	No change	Normal	--
		Maize	No change	Normal	--
		Urdbean	No change	Normal	--

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Change in crop/ cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delay by 4 weeks	Deep black	Soybean	Soybean (JS 93-05, Pratap Soya-1,	Use of 25 % higher	• Timely supply of

(July 4th Wk)	clayey soils	Urdbean	Pratap Soya-2, JS 95-60) Or Urdbean (T-9, PU-19, KU-96-3) Or Sesamum (TC-25, RT- 46, RT-123, RT-125) Mungbean (RMG-62, SML-266)	seed rate in soybean	seed through RSSC/NSC
		Maize			
	Deep brown clayey soils	Soybean	- do -	- do -	-do -
		Maize			
		Urdbean			
	Deep brown loamy soils	Soybean	-do -	- do -	-do-
		Maize			
		Urdbean			

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Change in crop/ cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delay by 6 weeks (Aug 2nd WK)	Deep black clayey soils	Soybean	Sorghum Fodder (Raj Chari-1, Raj Chari-2, Pratap Chari-1080, SSG-59-3)-fallow Or Mungbean (RMG-62, SML-266) - fallow Or Fallow – Toria/Taramira/ Mustard/ Gram/ Coriander/ Linseed on conserved moisture	• Use of 25 % higher seed rate • Use of bakkhar for field moisture conservation • Field bunding • Preperation of rabi crops	Timely supply of seed through RSSC/NSC
		Urdbean			
		Maize			
	Deep brown clayey soils	Soybean	-do-	-do-	
		Maize			
		Urdbean			
	Deep brown loamy soils	Soybean	-do-	• Use of bakkhar for field moisture conservation • Field bunding	
		Maize			
		Urdbean			

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Change in crop/ cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delay by 8 weeks (Aug 4th WK)	Deep black clayey soils	Soybean Urdbean Maize	Fallow – Toria/Taramira/ Mustard/Gram/Coriander/ Fenugreek/Lentil/Linseed on conserved moisture	• Preperation of rabi crops	Timely supply of seed through RSSC/NSC
	Deep brown clayey soils	Soybean Maize Urdbean	-do-	-do-	
	Deep brown loamy soils	Soybean Maize Urdbean	-do-	-do-	

Condition			Suggested Contingency measures		
Early season drought (Normal onset)	**Major Farming situation**	**Normal Crop/cropping syste**	**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.	Deep black clayey soils	Soybean	• If germination is less than 50% than farmers should go for re-sowing with early maturing varieties using 25% higher seed rate • If plant population is more that 75% go for gap filling.	• Conservation of soil moisture by hoeing and weedingHoeing by hand hoe to develop soil mulch • *In situ* mulching of weeds	Implements for hoeing and weeding be procured under RKVY
		Maize	• If germination is less than 50% than go for gap filling with urdbean/mungbean • If plant population is more that 75% go for transplanting of thinned plants	-- do --	-- do --
		Urdbean/ Mungbean	• If germination is less than 50% than go for re-sowing with early maturing varieties	-- do --	-- do --
	Deep brown clayey soils	Soybean Maize Urdbean/ Mungbean	-do-	-do-	-do-
	Deep brown	Soybean	-do-	-do-	-do-

	loamy soils	Maize Urdbean/ Mungbean			

Condition			Suggested Contingency measures		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period) At vegetative stage	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measure**	**Remarks on I mplementation**
	Deep black clayey soils	Soybean	• Life saving Irrigation • Thinning of plants by 30 to 50% • Weeding & hoeing	• Use of weeds as mulch. • Spray of 2% urea • Use of anti-transpirants like kaolin @ 5%	Implements for hoeing and weeding be procured under RKVY
		Maize	-do-	-- do --	-- do --
		Urdbean/ Mungbean	Weeding & hoeing	Use of anti-transparent like kaolin.	-- do --
	Deep brown clayey soils	Soybean	• Life saving Irrigation • Thinning of plants by 30 to 50% • Weeding & hoeing	• Use of weeds as mulch. • Spray of 2% urea • Use of anti-transpirants like kaolin	-- do --
		Maize	-do-	-- do --	-- do --
		Urdbean/ Mungbean	Weeding & hoeing	• Use of anti-transparent like kaolin.	-- do --
	Deep brown loamy soils	Soybean	-do-	• Use of weeds as mulch. • Spray of 2% urea • Use of anti-transpirants like kaolin	-- do --
		Maize	-do-	• Use of weeds as mulch. • Spray of 2% urea • Use of anti-transpirants like kaolin	-- do --
		Urdbean/ Mungbean	Weeding & hoeing	• Use of anti-transparent like kaolin.	-- do --

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measure**	**Remarks on Implementation**
At flowering/ fruiting stage	**Deep black clayey soils**	Soybean	Life saving Irrigation	Spray of 0.1% thio urea	Farm Pond construction
		Maize	• Removal of lower leaves for fodder • Harvest cobs for table purpose (if market is available) and for green fodder	- do -	- do -
		Urdbean/ Mungbean	Life saving Irrigation by the harvested rainwater	Spray of 2% urea	-- do --
	Deep brown clayey soils	Soybean	Life saving Irrigation	Spray of 0.1% thio urea	-- do --
		Maize	• Removal of lower leaves for fodder • Harvest cobs for table purpose (if market is available) and for green fodder	-- do --	-- do --
		Urdbean/ Mungbean	Life saving Irrigation by the harvested rainwater	Spray of 2% urea	-- do --
	Deep brown loamy soils	Soybean	Life saving Irrigation	Spray of 0.1% thio urea	-- do --
		Maize	• Removal of lower leaves for fodder • Harvest cobs for table purpose (if market is available) and for green fodder	-- do --	-- do --
		Urdbean/ Mungbean	Life saving Irrigation by the harvested rainwater	Spray of 2% urea	-- do --

Condition			Suggested Contingency measures		
Terminal drought (Early withdrawal of monsoon)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Rabi Crop planning**	**Remarks on Implementation**
	Deep black clayey soils	Soybean	• Life saving Irrigation	--	Farm Pond construction
		Maize	• Life saving Irrigation • Removal of lower leaves for fodder • Harvesting of green cobs and green fodder	--	

		Urdbean/ Mungbean	Picking of mature pods	--	
	Deep brown clayey soils	Soybean	• Life saving Irrigation	--	
		Maize	• Life saving Irrigation by the harvested rainwater • Removal of lower leaves for fodder • Harvesting of green cobs and green fodder	--	
		Urdbean/ Mungbean	Picking of mature pods	--	
	Deep brown loamy soils	Soybean	• Life saving Irrigation	--	
		Maize	• Life saving Irrigation by the harvested rainwater • Removal of lower leaves for fodder • Harvesting of green cobs and green fodder	--	
		Urdbean/ Mungbean	Picking of mature pods	--	

2.1.2 Drought - Irrigated situation

Condition			**Suggested Contingency measures**		
	Major Farming situation	**Normal Crop/ cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delayed release of water in canals due to low rainfall	**Deep Black clayey soils**	Soybean /Maize-Wheat	Soybean/Maize –Wheat/ Barley/Gram/ Coriander / Linseed Wheat : Raj 3077, HI 8498, Raj 3765, Raj 4037, Raj 3777, HI 1531, LoK-1 Coriander : RCr-20, 436, 480, 684, CS-6 Gram : C-235, Dahod yellow, Pratap chana – 1, GNG 469, GNG 683, KAK 2 Barley: RD-2552, RD-2052 Linseed : Pratap Alsi-1, RL-914, Meera, Kiran	Irrigation by pressurized irrigation system	If pond is available sowing can be done by harvested rain water
		Paddy-Wheat	Paddy-Wheat Wheat: Raj-3777, Lok-1, Raj-3765	• Irrigation by pressurized irrigation system • Use of Roto till drill for sowing	
	Deep brown clayey soils	Soybean/ Maize-Wheat	Soybean/Maize –Wheat/ Barley/Gram/ Coriander / Linseed Wheat : Raj 3077, HI 8498, Raj 3765, Raj 4037, Raj 3777, HI 1531, LoK-1 Coriander : RCr-20, 436, 480, 684, CS-6	Irrigation by pressurized irrigation system	-- do --

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/ cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
			Gram : C-235, Dahod yellow, Pratap chana – 1, GNG 469, GNG 683, KAK 2 Barley: RD-2552, RD-2052 Linseed : Pratap Alsi-1, RL-914, Meera, Kiran		
		Paddy-Wheat	Paddy-Wheat Wheat: Raj-3777, Lok-1, Raj-3765	• Irrigation by pressurized irrigation system • Use of Roto till drill for sowing	
	Deep brown loamy soils	Soybean/ Maize-Wheat	Soybean/Maize –Wheat/ Barley/Gram/ Coriander / Linseed Wheat : Raj 3077, HI 8498, Raj 3765, Raj 4037, Raj 3777, HI 1531, LoK-1 Coriander : RCr-20, 436, 480, 684, CS-6 Gram : C-235, Dahod yellow, Pratap chana – 1, GNG 469, GNG 683, KAK 2 Barley: RD-2552, RD-2052 Linseed : Pratap Alsi-1, RL-914, Meera, Kiran	Irrigation by pressurized irrigation system	-- do --
		Paddy-Wheat	Paddy-Wheat Wheat: Raj-3777, Lok-1, Raj-3765	• Irrigation by pressurized irrigation system • Use of Roto till drill for sowing	

Condition			Suggested Contingency measures		
	Major Farming situation	**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	**Deep black clayey soils**	Soybean/Maize-Wheat/Gram Or Fallow-Mustard	Soybean/Maize-Gram/ Coriander/ Or Fallow-Mustard/ Gram/ Coriander	• Irrigation by pressurized irrigation system if water is available from other sources • Soil stirring for dust mulch • Weed removal • Use of anti transpirant i.e. Kaolin • Spray of urea at 2-3% as per recommendation • Spray of thio urea 0.1%	Construction of Rain water harvesting structures
	Deep brown clayey soils	-do-	-do-	-do-	-do-

Condition			Suggested Contingency measures		
	Major Farming situation	**Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
	Deep brown loamy soils	-do-	-do-	-do-	-do-

Condition			Suggested Contingency measures		
	Major Farming situation	**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	NA				

Condition			Suggested Contingency measures		
	Major Farming situation	**Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Insufficient groundwater recharge due to low rainfall		soybean/Maize-Wheat	Soybean/Maize-Gram/Coriander/Linseed/ Lentil/Mustard/Durum Wheat	• Irrigation by pressurized irrigation system • If one irrigation is available apply at CRI stage in Wheat, if two, apply at CRI and Flowering • Soil stirring for dust mulch • Timely weed removal • Use of Anti Transpirant i.e. Keoline • Spray of Thiourea 0.1%	• Rain water harvesting (NREGA) • Recharge of dead Well
Any other condition (specify)	-				

2.2 Un-timely (unseasonal) rains

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

2.3 Floods

Condition	Suggested contingency measure[o]			
Transient water logging/ partial inundation	**Seedling / nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Soybean	Proper drainage	• Spray of endosulfan or monocrotophas @ 600 – 1000 ml/ha with 400 – 600 litre water for the control of Girdal Beetle • Spray of Trizophos 40 EC @ 800 ml/ha for the control of sami-looper • Spray of 2 gm streptocycline per hectare with the mix of 20 litre water for the control of bacterial disease	• Spray of endosulfan or monocrotophas @ 600 – 1000 ml/ha with 400 – 600 litre water for the control of Girdal Beetle • Spray of Trizophos 40 EC @ 800 ml/ha for the control of sami-looper • Spray of 2 gm streptocycline per hectare with the mix of 20 litre water for the control of bacterial disease	Proper drainage
Maize	Proper drainage	• Use Methyl Paratthion 2 % dust @ 25 kg/ha for the control of army worm	• Use Methyl Paratthion 2 % dust @ 25 kg/ha for the control of army worm	Picking of cobs
Horticulture				
Okra	Proper drainage	Proper drainage	Proper drainage	Picking of vegetables
Cucurbits (except	-	-	-	Picking of vegetables
Guava	-	-	-	Picking of fruits at physiological maturity
Continuous submergence for more than 2 days				
Soybean	Proper drainage	• Spray of endosulfan or monocrotophas @ 600 – 1000 ml/ha with 400 – 600 litre water for the control of Girdal Beetle • Spray of Trizophos 40 EC @ 800 ml/ha for the control of sami-looper • Spray of 2 gm streptocycline per	• Spray of endosulfan or monocrotophas @ 600 – 1000 ml/ha with 400 – 600 litre water for the control of Girdal Beetle • Spray of Trizophos 40 EC @ 800 ml/ha for the control of sami-looper • Spray of 2 gm streptocycline per	Proper drainage

		hectare with the mix of 20 litre water for the control of bacterial disease	hectare with the mix of 20 litre water for the control of bacterial disease	
Maize	Proper drainage	Use Methyl Parathion 2 % dust @ 25 kg/ha for the control of army worm	Use Methyl Paratthion 2 % dust @ 25 kg/ha for the control of army worm	Proper drainage
Horticulture				
	Proper drainage	Proper drainage	Proper drainage	Proper drainage
Sea water inundation	NA			

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				
Mungbean / urdbean	Application of irrigation	Light and frequent irrigation	Light and frequent irrigation	Picking of pods at physiological maturity
Horticulture				
Tomato	Cultivation in control conditions	Light and frequent irrigation at evening	Light and frequent irrigation at evening	Picking of fruits at physiological maturity
Brinjal	-do-	-do-	-do-	-do-
Cucurbits	-do-	-do-	-do-	-do-
Okra	-	Light and frequent irrigation at evening	Light and frequent irrigation at evening	Picking of fruits at physiological maturity
Cold wave	**Situation rarely exists in the district**			
Wheat	-	• Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1%	• Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1%	NA
Mustard	-	-do-	-do-	NA
Gram	-	-do-	-do-	NA
Coriander	-	-do-	-do-	NA
Horticulture				
Tomato		-do-	-do-	-
Potato		-do-	-do-	-
Brinjal		-do-	-do-	-
Frost				
Wheat	-	• Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1%	• Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1%	NA
Mustard	-	-do-	-do-	NA
Gram	-	-do-	-do-	NA

Coriander	-	-do-	-do-	NA
Horticulture				
Tomato		-do-	-do-	-
Potato		-do-	-do-	-
Brinjal		-do-	-do-	-
Hailstorm	It is rare in the district			
Cyclone	Not applicable			

2.5 Contingent strategies for livestock, Poultry & Fisheries

2.5.1 Livestock

	Suggested contingency measures		
	Before the event	**During the event**	**After the event**
Drought			
Feed and fodder availability	• Storage of feed & fodder in sufficient quantity. • Preparation of Hay & Silage during flush season. • Establishment of fodder bank. • Avoid feed wastage by using chaff cutter, feeding in manger etc. • Cultivation of green fodder and perennial grasses according to availability of land and water. • Develop community pasture land. • Discourage burning of Wheat straw after use of combine harvester • Encourage use of straw combine/straw bailer	• Use unconventional feed and fodder. • Enrichment of low-grade roughages by urea treatment. • Supplementation of feed with mineral mixture. • Use pasture land judiciously.	• Follow normal feeding practices. • Cultivation of green fodder according to availability of land and water.
Drinking water	Generate rain water harvesting structures to ensure sufficient water supply during drought.	Use water judiciously and avoid wastage of water.	
Health and disease management	• Follow proper vaccination proGramme. • Use deworming schedule. • Surveillance and disease monitoring proGramme should be followed.	• Treatment and vaccination camp should be organized. • Establishment of mobile emergency vety. Medical unit.	Follow routine health and disease management proGramme.
Floods	NA	NA	NA
Cyclone	NA	NA	NA
Heat wave and cold wave			
Shelter/environment management	• Construction/ provision of proper shelter to animals. • Put gunny bags/ curtains on windows to protect animals from cold/ hot waves.	• Keep the animals in sheds in extreme weather. • During summer graze the animals in early morning and late evening. • In winter graze the animals during day.	Follow routine practices

		• Use willowing/water splashing/ showering during hot part of the day.	
Health and disease management	• Follow proper vaccination proGramme. • Use deworming schedule. • Surveillance and disease monitoring proGramme should be followed. • Neat & Clean Animal shed	• Treatment and vaccination camp should be organized. • Establishment of mobile emergency vety. Medical unit.	Follow routine health and disease management proGramme.

2.5.2 Poultry

	Suggested contingency measures		
	Before the event	**During the event**	**After the event**
Drought			
Feed and fodder availability	• Rural poultry/Backyard Poultry is reared on scavenging system therefore there is no need to prepare contingent plan with respect to feed and fodder.	Ensure supplementary feeding through kitchen waste/ available grain	Follow normal feeding routine.
Drinking water	Provision of sufficient waters/ water pots	Ensure sufficient water availability to birds.	Follow normal routine practices.
Health and disease management	• Follow proper vaccination proGramme. • Use deworming schedule. • Surveillance and disease monitoring proGramme should be followed.	• Treatment and vaccination camp should be organized. • Establishment of mobile emergency vety. Medical unit.	Follow routine health and disease management proGramme.
Floods	NA	NA	NA
Cyclone	NA	NA	NA
Heat wave and cold wave			
Shelter/environment management	• Construction/ provision of proper shelter to poultry birds. • Put gunny bags/ curtains on windows to prevent birds from cold/ hot waves.	Keep the birds in sheds in extreme weather.	Follow routine practices
Health and disease management	• Follow proper vaccination proGramme. • Use deworming schedule. • Surveillance and disease monitoring proGramme should be followed.	• Treatment and vaccination camp should be organized. • Establishment of mobile emergency vety. Medical unit.	Follow routine health and disease management proGramme.

2.5.3 : Fisheries/Aquaculture

	Suggested Contingency Measures		
	Before the Event	**During the Event**	**After the Event**
1) Drought			
A.Capture			
Marine	-	-	-
Inland			
(i)Shallow water depth due to insufficient rains/inflow	• Harvest the available fish stock.	• Weed clearance from pond • Either market it if marketable size or stock in pond with sufficient water	• Stocking of fish seed on arrival of sufficient rain water. • Desilting of ponds on drying • Repair the embankments.
(ii) Changes in water quality	• Assess physico-chemical properties of water.	• Use buffering agent like lime/alum based on water analysis.	• Repeat water quality assessment.
(iii) Any other			
B.Aquaculture			
(i)Shallow water depth in ponds due to insufficient rains/inflow			
(ii) Impact of salt load build up in ponds/Changes in water quality			
(iii) Any other			
2)Floods			
A.Capture			
Marine			
Inland			
(i)Average compensation paid dueto loss of human life			
(ii) No of boats/nets damaged			
(iii) No of houses damaged			
(iv)Loss to stock			
(v) Change in water quality			
(vi) Health and diseases			

A.Aquaculture			
(i)Inundation with flood water	▪ Clear obstacle from the water ways i.e. inlet & outlet fix screens at inlet & out let	• Clear the screen during flood and remove obstacles from screen	• Stock assess
(ii) Water continuation and changes in quality	• Check entry of polluted water in the pond	• Monitoring and management of water quality	• Periodical harvesting

(iii) Health and diseases	• Assess water quality and health status of fish Biomass	• Use recommended treatment against disease indentified if any after flood is over	• Stock assessment for losses if any
(iv)Loss to stock and inputs(feed,chemicals etc)	Nil	Nil	Nil
(v) Infrastructure damage(pumps,aerators, hut etc)	Nil	Nil	Nil
(vi) Any other			
3)Cyclone/Tsunami	NA	NA	NA
A.Capture			
Marine			
(i)Average compensation paid due to Fishermen lives			
(ii) Average No of boats/nets damaged			
(iii) Average No of houses damaged			
Inland			
B.Aquaculture			
(i)Overflow/floding of ponds			
(ii)Change in water quality(fresh/brackish water ratio)			
(iii) Health and diseases			
(iv)Loss to stock and inputs(feed,chemicals etc)			
(v) Infrastructure damage(pumps,aerators, hut etc)			
(vi) Any other			

4)Heat & cold wave			
A.Capture			
Marine	-	-	-
Inland	• Selection of suitable species i.e. common carp and IMC for culture • Sufficient water is to be maintained and assess water quality.	• Changing feeding regimes, • De-stocking • Add water to maintain temperature • Stop manuring	• Maintain water level
B.Aquaculture			

(i)Change in pond environment(water quality)	• Selection of suitable species i.e. common carp and IMC for culture • Sufficient water is to be maintained and assess water quality.	• Increasing water depth • Providing oxygen supplementation, • Changing feeding regimes, • Recalculating water • Add water to maintain temperature • stop manuring	Maintain water level
(ii) Health and diseases management	• Assess water quality and health status of fish Biomass	• Use recommended treatment against disease (if indentified)	Routine management
(iii) Any other			