

State: RAJASTHAN
Agriculture Contingency Plan for District: DAUSA

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		
	Agro-Climatic Zone (Planning Commission)		Central Plateau And Hills Region (VIII)		
	Agro Climatic Zone (NARP)		Semi Arid Eastern Plain Zone (RJ-5)		
	List all the districts or part thereof falling under the NARP		Jaipur, Tonk & Dausa		
	Geographic coordinates of district headquarters		Latitude	Longitude	Altitude
			26 ^o 53'21.39"N	76 ^o 20'06.65"E	381 m
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS		Zonal Director Research, Agricultural Research Station, Durgapura, Jaipur-302 018		
Mention the KVK located in the district		Krishi Vigyan Kendra, Dausa-303 303			
1.2	Rainfall	Normal RF(mm)	Normal Rainy days(number)	Normal Onset	Normal Cessation
	SW monsoon (June-Sep):	502.2	27.9	4 th week of June	2 nd Week of Sept
	NE Monsoon(Oct-Dec):	24.3	1.5	-	-
	Winter (Jan- March)	22.4	2.4	-	-
	Summer (Apr-May)	12.1	1.5	-	-
	Annual	561.0	33.3	-	-

1.3	Land use pattern of the district (latest statistics) 2007-8	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)	341.4	244.9	24.7	37.8	26.2	7.2	0.5	17.4	13.6	13.3

1.4	Major Soils (common names like red sandy loam deep soils (etc.,))*	Area ('000 ha)	Percent (%) of total
	1. Deep brown loamy soils	139.6	40.9
	2. Medium Brown Loamy soils	109.5	32.1
	3. Deep dark brown sandy soils	61.7	17.9
	4. Shallow Red gravelly loam soils	30.6	9.0
	Total Area	341.4	

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

1.5	Agricultural land use (2007-8)	Area ('000 ha)	Cropping intensity %
	Net sown area	218.0	155
	Area sown more than once	120.2	
	Gross cropped area	338.2	

1.6	Irrigation (2007-8)	Area ('000 ha)		
	Net irrigated area	158.5		
	Gross irrigated area	164.8		
	Rainfed area	173.4		
	Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
	Canals		-	-
	Tanks	-	-	-
	Open wells	201422	78.7	47.7
	Bore wells	186142	86.1	52.2
	Lift irrigation schemes	-	-	0
	Micro-irrigation		2.3	-
	Other sources (please specify)	-	-	-
	Total Irrigated Area		164.8	
	Pump sets	29148		
	No. of Tractors	852		
	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	5	-	-
	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)

1.7	Major field crops cultivated	Area ('000 ha)							
		Kharif			Rabi			Summer	Grand total
		Irrigated	Rainfed	Total	Irrigated	Rainfed	Total		
Pearlmillet	-	119.6	119.6	-	-	-	-	119.6	
Mustard	-	-	-	71.0	14.9	85.9	-	85.9	
Wheat	-	-	-	77.2	0.2	77.4	-	77.4	
Groundnut	4.8	9.9	14.7	-	-	-	-	14.7	
Barley	-	-	-	8.4	0.1	8.5	-	8.5	
Gram	-	-	-	1.7	5.0	6.7	-	6.7	
Kharif Pulses	-	0.4	0.4	-	-	-	-	0.4	

	Horticulture crops - Fruits	Area ('000 ha)		
		Total	Irrigated	Rainfed
	Mango	0.54	0.54	-
	Guava	0.01	0.01	-
	Ber	0.01	0.01	-
	Aonla	0.03	0.03	-
	Lime	0.09	0.09	-
	Horticulture crops - Vegetables	Total	Irrigated	Rainfed
		Tomato	0.32	0.32
	Brinjal	0.10	0.10	-
	Okra	0.16	0.16	-
	Cole crops	0.17	0.17	-
	Pea	0.05	0.05	-
	Tinda	0.04	0.04	-
	Medicinal and Aromatic crops-NA	Total	Irrigated	Rainfed
	-	-	-	-
	Plantation crops-NA	Total	Irrigated	Rainfed
	-	-	-	-
	Eg., industrial pulpwood crops etc.			
	Fodder crops	Total	Irrigated	Rainfed
	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)		-	-	117.0		
	Crossbred cattle		-	-	4.8		
	Non descriptive Buffaloes (local low yielding)		-	-	-		
	Graded Buffaloes		-	-	381.5		
	Goat		-	-	256.0		
	Sheep		-	-	57.4		
	Others (Camel, Pig, Yak etc.)		-	-	6.3		
	Commercial dairy farms (Number)						
1.9	Poultry		No. of farms	Total No. of birds ('000)			
	Commercial		-	16.9			
	Backyard		-	-			
1.10	Fisheries (Data source: Chief Planning Officer) NA						
	A. Capture						
	i) 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		No. of village tanks		
		N.A					
	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: Ending 2008 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)										
	Pearl millet	113.4	1505	-	-	-	-	113.4	1505	NA

	Kharif Pulses	0.1	313	-	-	-	-	0.1	313	NA
	Groundnut	16.8	1211	-	-	-	-	16.8	1211	NA
	Wheat	-	-	229.4	2912	-	-	229.4	2912	NA
	Barley	-	-	148.9	2246	-	-	148.9	2246	NA
Others	Gram	-	-	7.1	993	-	-	7.1	993	NA
Major Horticultural crops (Crops to be identified based on total acreage)										
	Tomato	-	-	-	-	-	-	0.5	14907	NA
	Brinjal	-	-	-	-	-	-	0.1	14300	NA
	Okra	-	-	-	-	-	-	0.2	4872	NA
	Cole crops	-	-	-	-	-	-	0.3	16024	NA
	Pea	-	-	-	-	-	-	0.1	15869	NA
Others	Tinda	-	-	-	-	-	-	0.1	17556	NA

1.12	Sowing window for 5 major field crops	Pearlmillet	Mustard	Wheat	Groundnut	Barley	Gram
	Kharif- Rainfed	1 st week of June-4 th week of July		-	-	-	-
	Kharif-Irrigated	-		-	1 st week of June-4 th week of July	-	-
	Rabi- Rainfed	-		-	-	-	1 st week of Oct-4 th week of Nov
	Rabi-Irrigated	-	1 st week of Oct-4 th week of Nov	1 st week of Oct-4 th week of Nov	-	1 st week of Oct-4 th 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	-	-	√

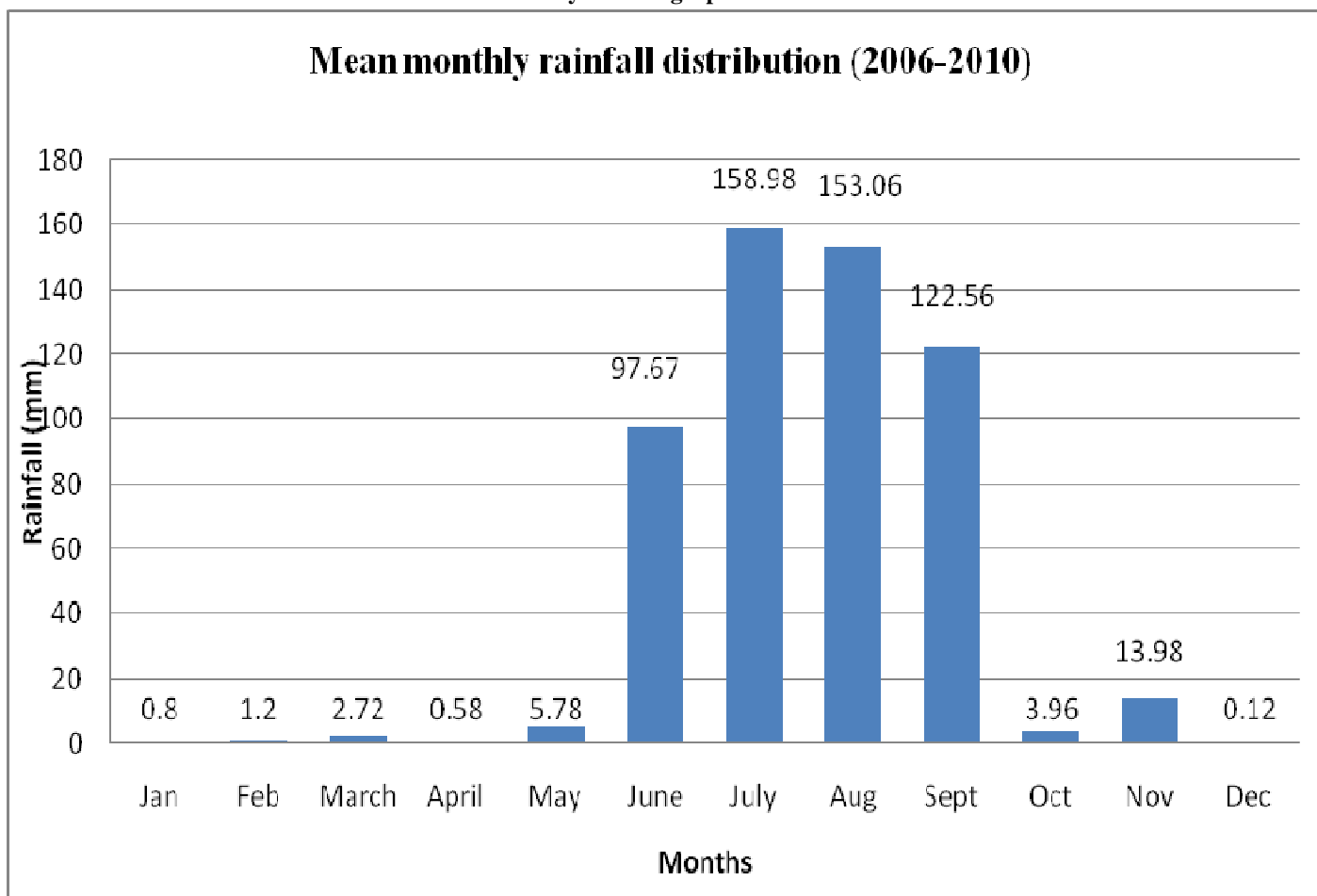
	Pests and disease outbreak (specify)	-	√	-
	Others (specify)	-	-	-

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: Yes
		Soil map as Annexure 3	Enclosed: Yes

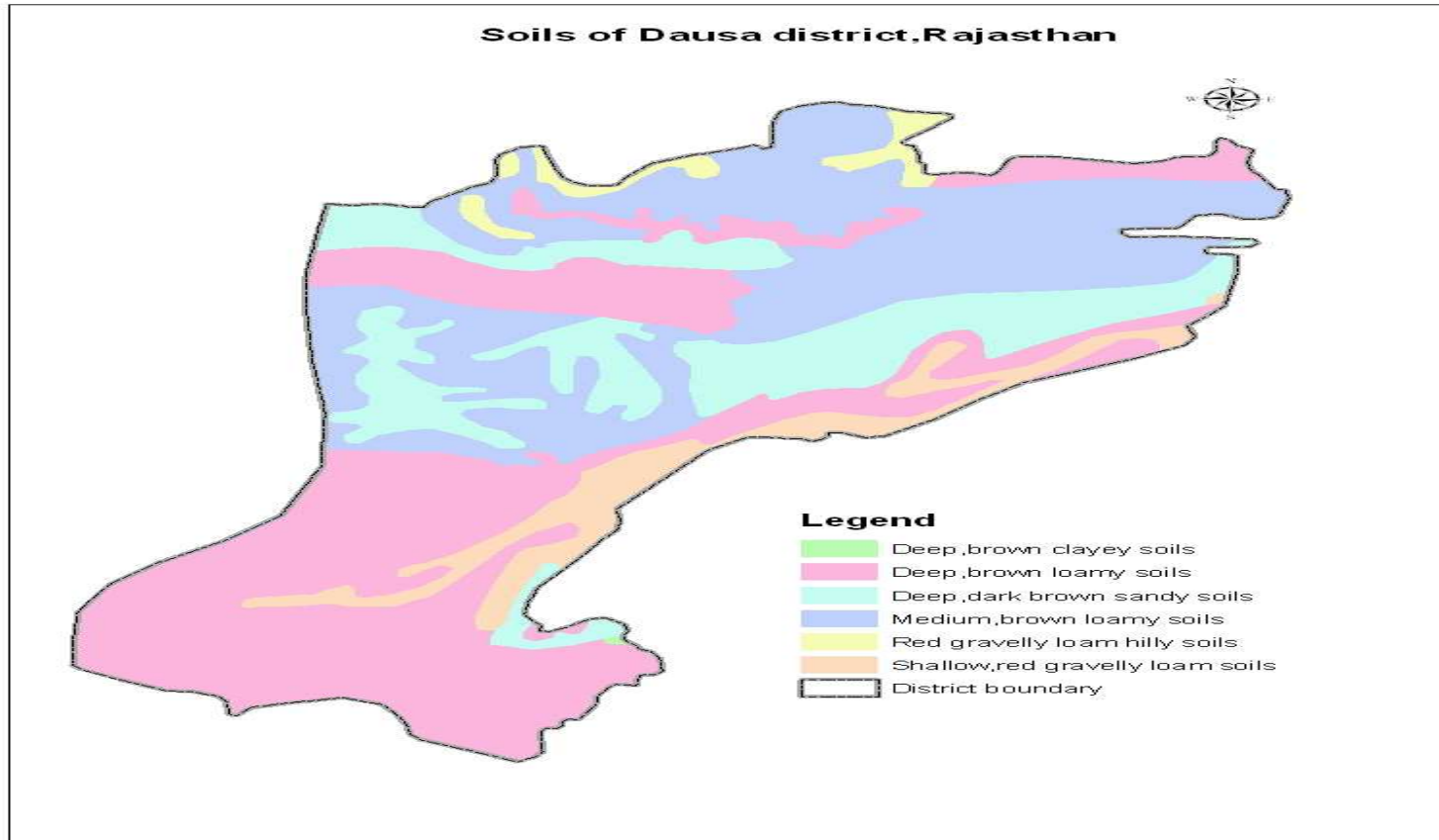
Annexure – I
Location map of Dausa district



Annexure –II
Mean monthly rainfall graph of Dausa 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	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures		
			Change in crop / cropping system including variety	Agronomic measures	Remarks on Implementation
Delay by 2 weeks (2 nd week of July)	Deep brown loamy soils (Rainfed)	Pearlmillet	No change Prefer ICMH356, JBV2, Raj171, HHB67, RHB127	Adopt recommended practice of fertilizer application	LinkNSSC,RSSC, and NSP for good quality seed
		Cluster bean	No change	-do-	
		Green gram	No change Prefervar.RMG62,Gangotri, KM2241	-do-	
		Cowpea	No change Prefer var.likeGC5,RC101, V240,cowpea	-do-	
	Medium brown loamy soils/ Deep dark brown sandy soils/ Other soils	Sorghum-Mustard	No change Prefer.var. CSV23,CSV20 CSH25,CSH18	mulching	
		Urd bean-Mustard	No change Prefer var.(PDU1,Urd3,Barkha, IPU2-43)	-do-	
		Sesame-Gram	No change Prefer var.RT127,RT103,RT125 RT54,Pratap	-do-	
		Cotton-Wheat	Urdbean-fallow	-do-	
		Groundnut-Wheat	Urdbean-fallow	-do-	
		Groundnut-Wheat	Urd bean-fallow	-do-	
		Cotton-Wheat	Urdbean-fallow	-do-	

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 (4 th week of July)	Deep brown loamy soils (Rainfed)	Pearlmillet-Fallow	Greengram-fallow	Seed soaking with 0.1% thiourea	Link NSSC,RSSC, and NSP for good quality seed
		Clusterbean-fallow	Cowpea-fallow	-do-	
		Greengram-fallow	No Change	-do-	
	Medium brown loamy soils/ Deep dark brown sandy soils/ Other soils	Sorghum-Mustard	Urdbean-mustard	mulching	
		Urd bean-Mustard	No Change	-do-	
		Sesame-Gram	Cowpea-gram	-do-	
		Cotton-Wheat	Urdbean-fallow	-do-	
		Groundnut-Wheat	Urdbean-fallow	-do-	
Groundnut-Wheat	Urdbean-fallow	-do-			

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 (2 nd week of August)	Deep brown loamy soils (Rainfed)	Pearlmillet-Fallow	Greengram-fallow Prefer short duration varieties of green gram (RMG-62,RMG-268, RMG-344), Cowpea (RC-19, RC-101)	<ul style="list-style-type: none"> Timely weed control Seed soaking with 0.1% thiourea 	
		Clusterbean-fallow	Cowpea-fallow	-do-	
		Greengram-fallow	Green gram-fallow	-do-	
		Cowpea -fallow	Cowpea- fallow	-do-	
	Medium brown loamy soils/ Deep dark brown sandy soils/ Other soils	Sorghum-mustard	Urdbean-mustard Prefer short duration varieties of green gram (RMG-62,RMG-268, RMG-344), Cowpea (RC-19, RC-101)	Mulching	
		Urdbean-mustard	Urdbean-mustard	-do-	
		Sesame-gram	Cowpea-gram	-do-	
		Cotton-wheat	Urdbean-fallow	-do-	
Groundnut-wheat	Urdbean-fallow	-do-			

			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	Deep brown loamy soils (Rainfed)	Pearlmillet-fallow	Fallow-mustard	Spray of thio urea in pearl millet	Link .NSSC.RSSC NSP for good quality seed
		Cluster bean-fallow	Fallow-gram	-do-	
		Groundnut-fallow	Fallow-gram	-do-	
		Cowpea -fallow	Pearlmillet fodder-fallow	-do-	
	Medium brown loamy soils/ Deep dark brown sandy soils/ Other soils	Sorghum-mustard	Fallow-mustard	Conserve moisture by harrowing and other in-situ measures for sowing rabi crops	
		Urd bean-mustard	Fallow-mustard	-do-	
		Sesame-gram	Fallow-gram	-do-	
		Cotton-wheat	Fallow-mustard	-do-	
	Groundnut-wheat	Fallow-gram	-do-		

Condition			Suggested Contingency measures		
Early season drought (Normal onset)	Major Farming situation	NormalCrop/cropping system	Crop management	Soil nutrient & moisture conservation measues	Remarks on Implementation
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	Deep brown loamy soils (Rainfed)	Pearlmillet	Transplanting the seedlings in gaps	Spray of thiourea @ 500 ppm Hoeing and weeding	Link .NSSC.RSSC .NSP for good quality seed Link WMA,NREGA for the support of water harvesting structure
		Groundnut	Temely weed control either mechanical or chemical	-do-	
		Cluster bean	-do-	-do-	
	Medium brown loamy soils/ Deep dark brown sandy soils/ Other soils	Sorghum	Uprooting weeds and using them as mulch	Spray of thiourea @ 500 ppm Hoeing and weeding to conserve the moisture	
		Sesame	-do-	-do-	
		Groundnut	-do-	-do-	
		Cotton	-do-	-do-	
	Pigeon pea	-do-	-do-		

Condition			Suggested Contingency measures		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	Major Farming situation	Normal Crop/cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
At vegetative stage	Deep brown loamy soils (Rainfed)	Pearlmillet	Removal of alternate rows Timely weed control	Dust mulch with hoeing Life saving irrigation	Link .NSSC.RSSC .NSP for good quality seed , Link W MA,NREGA for the support of water harvesting structure
		Sorghum	Removal of alternate rows Timely weed control	Dust mulch with hoeing Life saving irrigation	
		Clusterbean	Removal of alternate rows Timely weed control	Dust mulch with hoeing Life saving irrigation	
	Medium brown loamy soils/ Deep dark brown sandy soils/ Other soils	Sorghum	-	Spray of thio urea @ 500 ppm	
		Sesamum	-	Spray of thio urea @ 500 ppm to conserve the moisture Life saving irrigatin	
		Pigeonpea	-	Spray of thiourea @ 500 ppm to conserve the moisture Life saving irrigatin	
		Cotton	-	Hoeing and weeding to conserve moisture Life saving irrigation	

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	Major Farming situation	Normal Crop/cropping system	Crop management	Soil nutrient & moisture conservation measues	Remarks on Implementation
At flowering/ fruiting stage	Deep brown loamy soils (Rainfed)	Pearlmillet	Supplementary/ Life saving irrigation	-	Link .NSSC.RSSC .NSP for good quality seed , Link W MA,NREGA for the support of water harvesting structure
		Sorghum	-do-	-	
		Clusterbean	-do-	-	
	Medium brown loamy soils/ Deep dark brown sandy soils/ Other soils	Sorghum	Supplementary/ life saving irrigation	-	
		Sesame	-do-	-	
		Pigeonpea	-do-	-	
		Cotton	-do-	-	

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Crop management	Rabi Crop planning	Remarks on Implementation
Terminal drought (Early withdrawal of monsoon)	Deep brown loamy soils (Rainfed)	Pearlmillet	Life saving irrigation Harvest at physiological maturity or harvest for fodder if damage will be severe	Do not take rabi crop	Link .NSSC.RSSC .NSP for good quality seed , Link W MA,NREGA for the support of water harvesting structure
		Cluster bean	-do-	-do-	
		Kharif pulses	-do-	-do-	
	Medium brown loamy soils/ Deep dark brown sandy soils/ Other soils	Sorghum	Life saving irrigation Harvest at physiological maturity or harvest for fodder if damage will bw severe	Do not take rabi crop	
		Sesamum	-do-	-do-	
		Pigeon pea	Life saving irrigation	-do-	
		Cotton	-do-	-do-	

2.1.2 Drought - Irrigated situation

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delayed release of water in canals due to low rainfall : NA	N.A				

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Limited release of water in canals due to low rainfall: NA	N.A				

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Non release of water in canals under delayed onset of monsoon in catchment :NA	N.A				

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	Tank bed and River	Fallow-Mustard	No Change	Use moisture conservation techniques	Create awareness and skills of the technologies to the farming community through KVKS
		Fallow-Gram	-do-	-do-	
		Fallow-Linseed	-do-	-do-	
		Fallow-Mustard-Watermelon	Fallow-Fallow-Watermelon	-do-	
		Fallow-Mustard-Muskmelon	Fallow-Fallow-Muskmelon	-do-	
		Fallow-Gram-Cucurbits	Fallow-Fallow-Cucurbits	-do-	

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	Coarse textured soils (Borewell/Openwell) (Irrigated)	Pearlmillet-Wheat	Green gram -Mustard	Select short duration and low water requirement cultivars Give irrigation at critical crop growth stages Use micro irrigation systems like sprinklers if feasible Alternate furrow irrigation Mulching crop rows	Create awareness and skills of the technologies to the farming community through KVKS
		Groundnut-Wheat	Cowpea-Mustard	-do-	
		Clusterbean - Barley	Clusterbean -Gram	-do-	
	Medium textured soils (Borewell/openwell) (Irrigated)	Cotton-Wheat	Pearlmillet-Barley	-do-	
		Groundnut-Wheat	Greengram-Mustard	-do-	
		Sorghum-Mustard	Urdbean-Mustard	-do-	
	Brackish Irrigation water areas	Fallow-Barley	Fallow-Barley	Seed treatment with 0.1% NaCl Give irrigation at critical crop growth stages Use micro irrigation systems like sprinklers if feasible Alternate furrow irrigation	
		Fallow-Wheat	Fallow-Fallow	-do-	

2.2 Unusual rains (untimely, unseasonal etc) (for both rainfed and irrigated situations)

Condition	Suggested contingency measure			
Continuous high rainfall in a short span leading to water logging	Vegetative stage	Flowering stage	Crop maturity stage	Post harvest
Pearlmillet	<ul style="list-style-type: none"> • Drain excess water as early as possible • Intercultivation with hoe • Apply 20 kg additional N / ha after draining of excess water • Intercultivate the land to improve aeration and to control weeds 	<ul style="list-style-type: none"> • Drain excess water as early as possible • Intercultivation with hoe • Apply 20 kg additional N / ha after draining of excess water 	<ul style="list-style-type: none"> • Drain excess water as early as possible • Harvest at physiological maturity 	Dry the grain to optimum moisture content before storage
Groundnut	-do-	-do-	-do-	Dry the pods to optimum moisture before bagging and marketing
Sorghum	Drain excess water as early as possible Intercultivation with hoe Apply 25 kg additional N / ha after draining of excess water	Drain excess water as early as possible Intercultivation with hoe Apply 25 kg additional N / ha after draining of excess water	Drain excess water as early as possible Harvest the earheads after they are dried up properly or use ear head drier	Dry the grain to optimum moisture content before storage
Kharif Pulses	Open field channels to drain excess water and avoid surface ponding Interculture at optimum soil moisture to improve aeration	Open field channels to drain excess water and avoid surface ponding Interculture at optimum soil moisture to improve aeration	Drain excess water as early as possible Allow the crop to dry completely before harvesting	Spread the bundles drenched in the rain on field bunds / drying floors to quicken drying Thresh bundles after they are dried properly Dry the grain to proper moisture content before bagging and storing
Maize	Drain excess water as early as possible Intercultivation with hoe Apply 25 kg additional N / ha after draining of excess water	Drain excess water as early as possible Intercultivation with hoe Apply 25 kg additional N / ha	Drain excess water as early as possible Harvest green cobs from dislodged plants for immediate marketing	Harvest the cobs after they are dried up properly Dry the grain to optimum moisture content before storage

		after draining of excess water		
Horticulture				
Tomato	Drain excess water with proper drainage Remove excess water in root zone	Spray the crop with cypermethrin@0.1% to control fruit borer	Harvest the produce on clear sunny day	-
Brinjal	Drain excess water	Clipping off the infested shoot by brinjal fruit and shoot borer at regular interval and spraying the crop with Cartap hydrochloride @ 1 g/l of water / Spinosad @ (0.15ml/l), 0.25% Carbaryl or 0.05% Endosulfan at the early flowering stage and after harvesting of fruits during bearing stage is very effective	Immediate harvesting	-
Pea	Drain excess water from the field as soon as possible Interculture the field to loosen the soil and to improve aeration	Drain excess water from the field as early as possible Staking the plants Multi nutrient application to promote flowering	Drain excess water from the field as early as possible Drain excess water from the field as early as possible Harvest on clear sunny day	Shift the produce safely to the shed Market the produce as early as possible
Carrot	-do	-do-	-do-	-do-
Radish	-do-	-do-	-do-	-do-
Heavy rainfall with high speed winds in a short span				
Crop1	N.A			
Horticulture				
Crop1 (specify)	-	-	-	-
Outbreak of pests and diseases due to unseasonal rains				
Pearl millet	Downy mildew - Metalaxyl 8 % + Mancozeb 64% @ 0.2% Army worm- Dust Methyl parathion 2% @ 20 kg/ha	Downy mildew	-	-
Groundnut	Diseases Leaf spot & Rust – Spray Mancozeb 75 WP 0.25 % or Carbendenzim 50WP 0.1 %	Diseases Leaf spot & Rust – Spray Mancozeb 75 WP 0.25 % or Carbendenzim 50WP 0.1 %	--	Proper drying for control of Aflatoxin due to Aspergillus
Sorghum	Insect pests Seed treatment offuradan50sp@100g/kg Of seed to control shhot fly Thrips & Jassids: Spraying of	Leaf Roller: Spraying of Quinolphos 25 EC 2 ml/L	--	-

	Dimethoate 1 ml/L or Methyl demeton1 ml/L			
Khari pulses	Soil application of <i>Trichoderma harzianum</i> along with FYM as side dressing to prevent <i>Fusarium</i> wilt	Drenching of carbendazim 0.1% at plant base to control wilt Foliar application of acephate 1.5 gm / lt or Miticide to prevent sterility mosaic virus	Drench with carbendazim 0.1% at plant base to control wilt	Quick drying to prevent molds
Maize	-	Foliar application of Mancozeb 0.25 to 0.4% at 8-10 days interval to control Turcicum leaf blight	<i>Trichoderma</i> mixed with FYM 10 gm / kg at 10 days prior to its use in the field can be applied to control stalk rot which is likely during post flowering	-

2.3 Floods: NA

Condition	Suggested contingency measure			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Transient water logging/ partial inundation ¹				
Crop1 (specify)	N.A			
Continuous submergence for more than 2 days	NA			
Sea water intrusion ³	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 Wind breaks at 3M interval	Light irrigation	Frequent irrigation & spray of Thiourea @500 ppm	Harvest at physiological maturity
Barley	Light irrigation	Light irrigation	Frequent irrigation & spray of Thiourea @500 ppm	Harvest at physiological maturity

	Wind breaks at 3M interval			
Gram	Light irrigation Wind breaks at 3M interval	Light irrigation	Frequent irrigation & spray of Thiourea @500 ppm	Harvest at physiological maturity
Horticulture				
Tomato	Protect the seedlings by providing the shed Arrangement of wind breaks	Light irrigation at night hours	Frequent irrigation and Application of N fertilizers	Harvest and marketed as early as possible
Brinjal	-do-	-do-	-do-	-do-
Pea	-do-	-do--	-do-	-do-
Cold wave				
Mustard	-	Light irrigation,	Light irrigation,	-
Pea	-	-do-	-do-	-
Gram	•Light irrigation (5cm) •Smoking during night	•Light irrigation(5cm) •Smoking during night	•Light irrigation(5cm) •Smoking during night	Harvest at physiological maturity
Wheat	•Light irrigation •Smoking during night •Provision of windbreaks	•Light irrigation •Smoking during night	•Light irrigation •Smoking during night	Harvest at physiological maturity
Barley	-do-	-do-	-do-	-do-
Horticulture				
Tomato	•Light irrigation •Smoking during night	•Light irrigation •Smoking during the night	•Light irrigation •Smoking during the night	•Harvesting of crop as early as possible and marketed or keep in cold store •Store the produce in shed or safe place.
Brinjal	-do-	--do-	--do-	-do-
Pea	-do-	--do-	--do-	-do-
Frost				
Mustard	Light irrigation Smoking during night	Light irrigation	Light irrigation, Spray of 0.1 % H ₂ SO ₄	Harvest the crop at physiological maturity
Pea	-do-	-do-	-do-	-do-
Gram	-do-	-do-	-do-	-do-
Wheat	-do-	-do-	-do-	-do-
Barley	-do-	-do-	-do-	-do-
Horticulture				
Tomato	Light irrigation	Light irrigation	Light irrigation	Harvest and marketed as early as

	Smoking during night	Smoking during night	Smoking during night	possible
Brinjal	-do-	-do-	-do-	-
Pea	-do-	-do-	-do-	-
Hailstorm				
Mustard				
Wheat	-	-	Protect the crop from rodents attack	Keep the produce in protected area preferably under the roof
Gram	-	-	Protect the crop from rodents attack	Keep the produce in protected area preferably under the roof
Horticulture				
Cyclone	-	-	-	-
Crop1	N.A			
Horticulture				
Crop1 (specify)	N.A			

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	<p>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</p> <p>Urea molasses mineral bricks (UMMB):50-100 t Hay:100-250 t Concentrates: 20-50 t Minerals and vitamin supplements</p>	<p>Harvest and use all the failed crop (Sorghum, Mothbean, Clusterbean, Greengram Wheat, Groundnut etc..) material as fodder and feed the Livestock.</p> <p>Use judiciously the karabi, Preserved sewan /Dhaman /Bharut, Wheat straw, Lopped Khejari</p> <p>High productive animals should be Supplemented with tree fodder</p> <p>Available feed and fodder should be cut from CPRs and stall fed in order to reduce the energy requirements of the animals</p> <p>In case of Severe drought: UMMB, hay, concentrates and vitamin & mineral mixture should be</p>	<p>Flushing the stock to recoup</p> <p>Replenish the feed and fodder banks</p>

	<p>mixture:5-10 t</p> <p>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.</p> <p>Harvest the top fodder (Khejari, Neem, Subabul, Acasia, Pipol etc) and create fodder banks at village level</p> <p>Sowing of Horsegram, lucerne etc during north east monsoon</p> <p>Establishment of silvi-pastoral system in CPRs with <i>Stylosanthus hamata</i> and <i>Cenchrus ciliaris</i> as grass with <i>Leucaena leucocephala</i> as tree component</p> <p>Top dressing of N in 2-3 split doses @ 20-25 kg N/ha in CPRs with the monsoon pattern for higher biomass production</p> <p>Increase area under short duration fodder crops of sorghum/bajra/maize(UP chari, MP chari, HC-136, HD-2, GAIN T BAJRA, L-74, K-677, Ananad/African Tall, Kisan composite, Moti, Manjari, B1-7 etc.,) on farmers fields with some input subsidy</p> <p>Avoid burning of wheat straw</p> <p>Harvesting and collection of perennial vegetation particularly grasses which grow during monsoon</p> <p>Proper drying, bailing and densification of harvested grass</p> <p>Capacity building and preparedness of the stakeholders and official staff for the extreme</p>	<p>transported to the drought affected villages</p> <p>All the hay should be enriched with 2% Urea molasses solution or 1% common salt solution and fed to LS</p> <p>Herd should be split and supplementation should be given only to the highly productive and breeding animals</p> <p>Provision of emergency grazing/feeding (Cow-calf camps or other special arrangements to protect high productive & breeding stock)</p> <p>Available kitchen waste should be mixed with dry fodder while feeding</p> <p>Arrangements should be made for mobilization of small ruminants across the districts where no drought exits</p> <p>Unproductive livestock should to be culled during severe drought</p> <p>Create transportation and marketing facilities for the culled and unproductive animals (10000-20000 animals)</p> <p>Subsidized loans should be provided to the livestock keepers for procurement of feed</p>	
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	events		
Cyclone/Floods	<p>Harvest all the possible wetted grain (Sorghum, Barley, Wheat, Groundnut etc) and use as animal feed.</p> <p>Don't allow the animals for grazing in case of early fore warning (EFW)</p> <p>Incase of EFW, shift the animals to safer places.</p>	<p>Treatment of the sick, injured and affected animals through arrangement of mobile emergency veterinary hospitals / rescue animal health workers.</p> <p>Diarrhea out break may happen arrangement should be made to mitigate the problem</p> <p>Protect the animals from heavy rains and thunder storms</p> <p>In severe cases un-tether or let loose the animals</p> <p>Arrange transportation of highly productive animals to safer place</p> <p>Spraying of fly repellants in animal sheds</p>	<p>Repair of animal shed</p> <p>Deworm the animals through mass camps</p> <p>Vaccinate against possible out breaks</p> <p>Proper disposable of the dead animals / carcasses by burning / burying with lime powder in pit</p> <p>Bleach / chlorinate (0.1%) drinking water or water resources</p> <p>Collect drowned crop material, dry it and store for future use</p> <p>Sowing of above mention short duration fodder crops in unsown and water logged areas</p> <p>Application of urea (20-25kg/ha) in the CPR's to enhance the bio mass production.</p>
Heat & Cold wave	<p>Arrangement for protection from heat wave</p> <ol style="list-style-type: none"> 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 <p>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)</p>	<p>Allow the animals early in the morning or late in the evening for grazing during heat waves</p> <p>Allow for grazing between 10AM to 3PM during cold waves</p> <p>Feed green fodder/silage / concentrates during day time and roughages / hay during night time in case of heat waves</p> <p>Add 25-50 ml of edible oil in concentrates and fed to the animal during cold waves</p> <p>Put on the foggers / sprinklers during heat waves and heaters during cold waves</p> <p>In severe cases, vitamin 'C' and electrolytes should be added in H₂O during severe heat waves.</p> <p>Apply / sprinkle lime powder in the animal shed</p>	<p>Feed the animals as per routine schedule</p> <p>Allow the animals for grazing (normal timings)</p>

		during cold waves to neutralize ammonia accumulation	
Health and Disease management	<p>Procure and stock emergency medicines and vaccines for important endemic diseases of the area</p> <p>All the stock must be immunized for endemic diseases of the area</p> <p>Surveillance and disease monitoring network to be established at Joint Director (Animal Husbandry) office in the district</p> <p>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</p>	<p>Carryout deworming to all animals entering into relief camps</p> <p>Identification and quarantine of sick animals</p> <p>Constitution of Rapid Action Veterinary Force</p> <p>Performing ring vaccination (8 km radius) in case of any outbreak</p> <p>Restricting movement of livestock in case of any epidemic</p> <p>Rescue of sick and injured animals and their treatment</p> <p>Organize with community, daily lifting of dung from relief camps</p>	<p>Keep close surveillance on disease outbreak.</p> <p>Undertake the vaccination depending on need</p> <p>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</p>
Insurance	Encouraging insurance of livestock	Listing out the details of the dead animals	<p>Submission for insurance claim and availing insurance benefit</p> <p>Purchase of new productive animals</p>
Drinking water	<p>Identification of water resources</p> <p>Desilting of ponds</p> <p>Rain water harvesting and create water bodies/watering points (when water is scarce use only as drinking water for animals)</p> <p>Construction of drinking water tanks in herding places/village junctions/relief camp locations</p> <p>Community drinking water trough can be arranged in shandies /community grazing areas</p>	<p>Restrict wallowing of animals in water bodies/resources</p> <p>Provide clean drinking water</p>	<p>Bleach (0.1%) drinking water / water sources</p> <p>Provide clean drinking water</p>

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 lime powder in pit
Cyclone/Floods			Cyclone
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, Culling of weak birds	Use stored feed as supplement Don't allow for scavenging Protect from thunder storms	Supplementation to all the 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	Hygienic and sanitation of poultry house Disposal of dead birds by burning / burying with lime powder in pit

		accumulation due to dampness	
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: NA