State: RAJASTHAN
Agriculture Contingency Plan for District: CHURU

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)	Arid Western Zone (RJ-1)			
	List all the districts or part thereof falling under the NARP Zone	Barmer, Jodhpur, Churu, Jaisalmer			
	Geographic coordinates of district headquarters	Latitude	Longitude	Altitude	
		$28^0$18'9.83" N	$74^0$58'1.38"E	321.33m	
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/RRTTS	**Dr. P.S. Rathore**, Zonal Director Research, A R S, Bikaner-334002			
	Mention the KVK located in the district	Krishi Vigyan Kendra,Sardar Shahar,Distt. Churu-331 401			
1.2	**Rainfall**	Normal RF(mm)	Normal Rainy days (number)	Normal Onset	Normal Cessation
	SW monsoon (June-Sep):	323.4	8	4^{th} week of June	3^{rd} week of Sept
	NE Monsoon(Oct-Dec):	-	-	-	-
	Winter (Jan- March)	19.1	4	-	-
	Summer (Apr-May)	13.5	3	-	-
	Annual	356	15	-	-

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
	('000 ha)	1385.90	1265.88	6.59	65.00	37.72	10.01	0.019	0.68	58.88	41.00

1. 4	**Major Soils (common names like red sandy loam deep soils (etc.,)***	Aeolian, sand to loamy sand in nature, belonging to mainly Entisols and Aridisols	
		Area 000 ha	**Percent (%) of total**
	Deep Yellowish brown Sandy	1030.0	74.3
	Deep Light yellowish brown Loamy	165.1	11.9

	Deep Pale brown Sandy, Medium Light yellowish brown Loamy, Medium Light yellowish brown Sandy, Deep Pale brown Loamy	189.8	13.7
	Total	1385. 9	100

1.5	**Agricultural land use**	**Area (ha)**	**Cropping intensity %**
	Net sown area	1166. 0	124
	Area sown more than once	282.7	
	Gross sown	1448.7	

1.6	**Irrigation**	**Area (ha)**		
	Gross irrigated area	89.0		
	Rainfed area	1097. 2		
	Sources of Irrigation	Number	Area (‘000 ha)	Percentage of total irrigated area
	Canals		0.4	0.5
	Tanks	-	-	-
	Open wells	-	-	-
	Bore wells	9056	88.5	99.4
	Lift irrigation schemes	1	-	-
	Micro-irrigation		-	-
	Other sources (please specify)	-	-	-
	Total Irrigated Area		90.0	100.0
	Pump sets	387		
	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	2	NA	Good
	Critical	-	-	Marginal saline
	Semi- critical	1	NA	-
	Safe	2	NA	-

	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) Av last five years 2003-04-2007-08

1.7	**Major field crops cultivated**	**Area ('000 ha)**							
		Kharif			***Rabi***				
		Irrigated	**Rainfed**	**Total**	**Irrigated**	**Rainfed**	**Total**	**Summer**	**Grand total**
	Pearl millet	4.6	422.7	427.3					427.3
	Moth	0.2	267.2	267.5					267.5
	Cluster bean	0.2	359.6	359.9					359.9
	Gram				20.9	223.8	244.8		244.8
	Mustard				16.1	6.5	22.6		22.6

	Horticulture crops - Fruits	**Area ('000 ha)**		
		Total	**Irrigated**	**Rainfed**
		-	-	-
	Horticulture crops - Vegetables	**Total**	**Irrigated**	**Rainfed**
	Onion	0.042	-	-
	Cauliflower	0.031	-	-
	Water melon	0.015	-	-
	Long melon	0.020	-	-
	Others (specify)		-	-
	Medicinal and Aromatic crops-NA	**Total**	**Irrigated**	**Rainfed**
	NIL			
	Plantation crops-	**Total**	**Irrigated**	**Rainfed**
	NIL			
	Fodder crops	**Total**	**Irrigated**	**Rainfed**
	NIL			
	Total fodder crop area	-	-	-

	Grazing land	-	-	-
	Sericulture etc	-	-	-

1.8	**Livestock**	**Male (‘000)**	**Female (‘000)**	**Total (‘000)**
	Non descriptive Cattle (local low yielding)	-	-	215.2
	Crossbred cattle	-	-	-
	Non descriptive Buffaloes (local low yielding)	-	-	194.5
	Graded Buffaloes	-	-	-
	Goat	-	-	595.9
	Sheep	-	-	381.0
	Others (Camel, Pig, Yak etc.)	-	-	51.1
	Commercial dairy farms (Number)			20.6
1.9	**Poultry**	**No. of farms**	**Total No. of birds (‘000)**	
	Commercial	NA	20.6	
	Backyard	-	-	
1.10	**Fisheries** (Data source: Chief Planning Officer) **-NA-**			

1.11 Production and Productivity of 5 major crops (Average of last 5 years) 2003-04-2007-08

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)										
	Pearl millet	187.0	438	-	-	-	-	187.0	438	-
	Moth	66.8	250	-	-	-	-	66.8	250	-
	Cluster bean	50.7	141	-	-	-	-	50.7	141	-
	Gram	-	-	67.3	275	-	-	67.3	275	-
	Mustard	-	-	19.5	863	-	-	19.5	863	-
Major Horticultural crops (Crops to be identified based on total acreage)										
	Onion	30	714	-	-	-	-	30	714	-
	Cauliflower	28	903	-	-	-	-	28	903	-
	Water melon	12	800	-	-	-	-	12	800	-
	Long melon	20	1000	-	-	-	-	20	1000	-

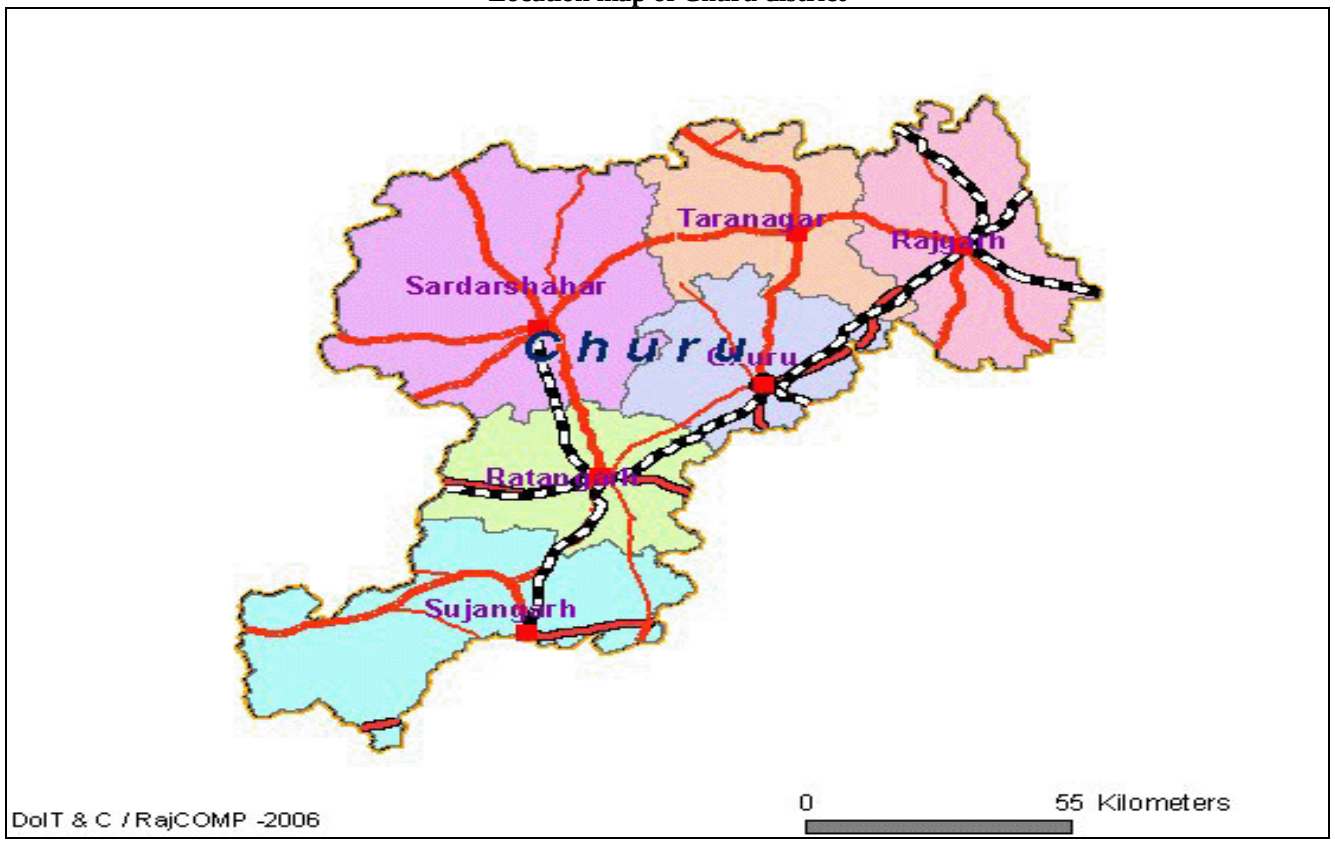
1.12 Sowing window (start and end of sowing period)

1.12		Bajra	Moth bean	Guar	Ground Nut	Gram
	Kharif- Rainfed	15th June - 15th July)	1st July-21st July	1st July-30th July	-	-
	Kharif-Irrigated			15th June -15th July	4th week of May - 4th week of June	
	Rabi- Rainfed		Taramira (1st week of Oct - last week of Oct)		-	1st week of Oct - last week of Oct
	Rabi-Irrigated		Mustard (1st week of Oct - 1st week of Nov)	Wheat (1st week of Nov - 20 Dec)		(1st week of Oct - last week of Oct.)

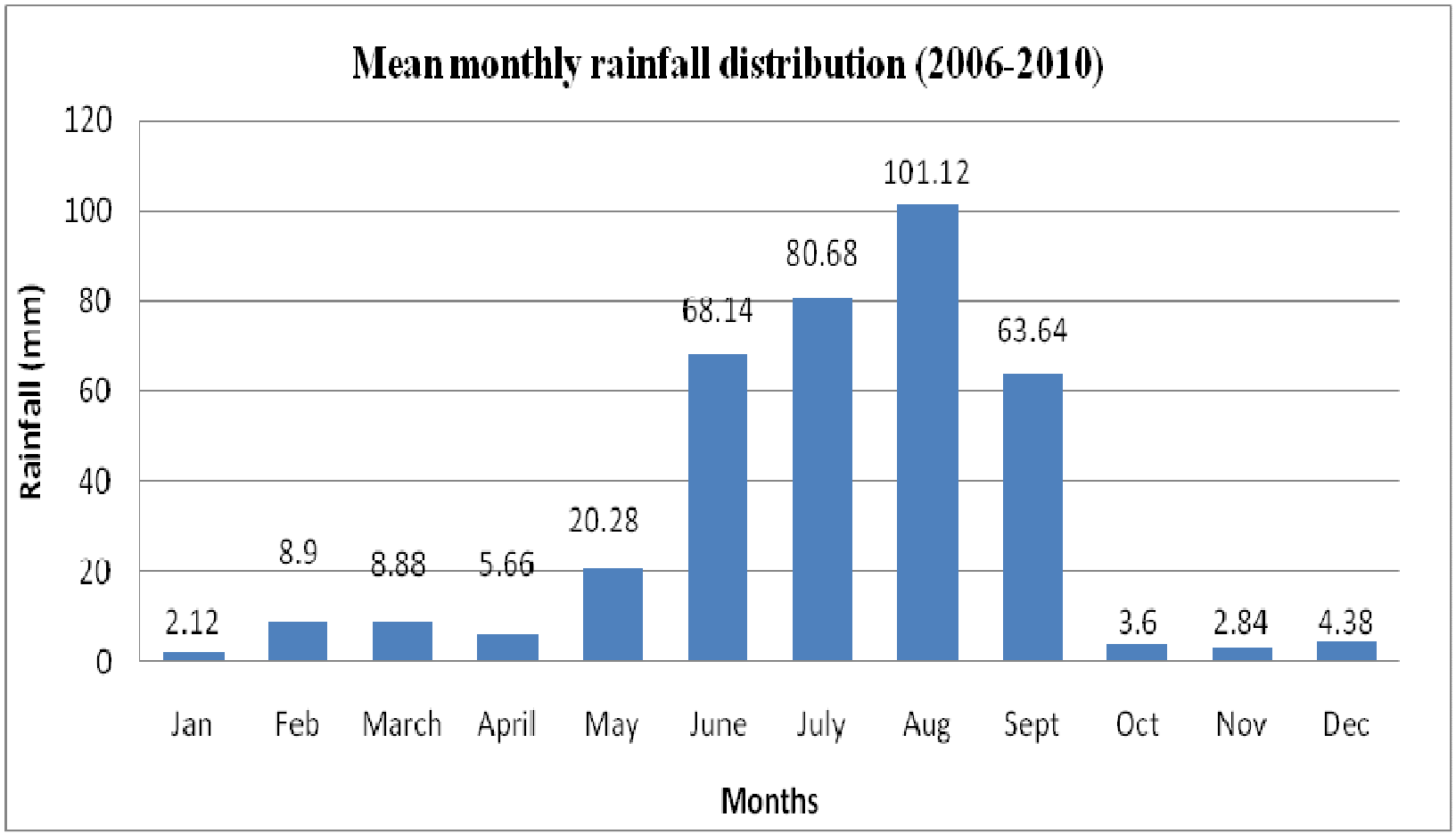
1.13	**What is the major contingency the district is prone to? (Tick mark)**	**Regular**	**Occasional**	**None**
	Drought	√	-	-
	Flood	-	-	√
	Cyclone	-	-	√
	Hail storm	-	-	√
	Heat wave	-	√	-
	Cold wave	-	√	-
	Frost	-	√	-
	Sea water intrusion	-	-	√
	Pests and disease outbreak (specify)	-	√	-
	Others	-	-	√

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

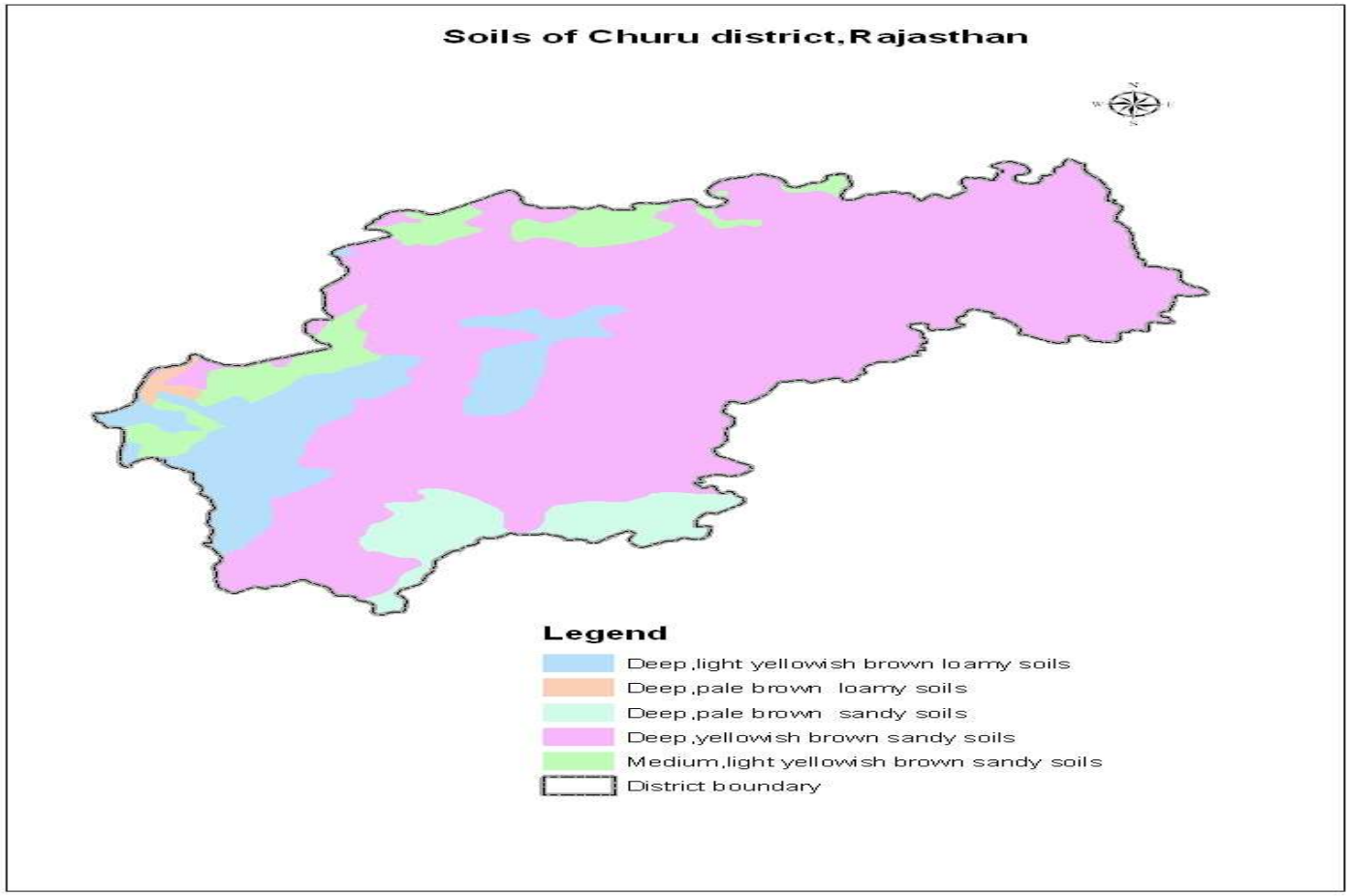
Annexure – I
Location map of Churu district



Annexure –II
Mean monthly rainfall graph of churu 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)	**Major Farming situation**	**Normal crop/cropping system**	**Change in crop/cropping system including variety**	**Agronomic measures**	**Remarks on Implementation**
Delay by 2 weeks (2nd week of July)	Rainfed Deep yellowish brown sandy soil	Bajra	No change (RHB127,HHB-67,ICMH-356,Raj171,JBV2)	• Sow at 45-60 cm • Use press wheel behind tine to obtain good germination • Seed priming with thiourea (0.05%) for four hours.	Link NSC, RSSC, SAU for quality seed and implements from RKVY Use of NSC, RSSC, SAU quality seed
		Mothbean	No change Prefervar.likeRMO257, GMO2RMO423)	Normal sowing	
		Clusterbean	No change Prefer var. like like Guar-RGC 936, RGC 1003.	Normal sowing	
		Greengram	No change Prefer var. likeRMG62,K851)	Normal sowing	
	Rainfed Deep light yellowish brown loamy soil	-do-	-do-	-do-	
	Rainfed Medium light yellowish brown sandy soil & Other soils	-do-	-do-	-do-	

Early season drought (delayed onset)	**Major Farming situation**	**Crop/cropping system**	**Change in crop/cropping system including vareity**	**Agronomic measures**	**Remarks on Implementation**
Delay by 4 weeks (4th^{t} week of July)	Rainfed Deep yellowish brown sandy soil/ Deep light yellowish brown	Bajra	No change Prefer var. like HHB 67, ICMH 356 (extra early)	Replace 25% pearl millet acreage by guar & moth. Sow Pearl millet at 60 cm Use press wheel	**Link NSC, RSSC, SAU for goodqualityseedand NFSM for thio urea** Thiourea be procured under NFSM

Early season drought (delayed onset)	Major Farming situation	Crop/cropping system	Change in crop/cropping system including vareity	Agronomic measures	Remarks on Implementation
	loamy soil/ Medium light yellowish brown sandy soil & Other soils			Prefer Mix cropping with moth & guar Seed priming with 0.05% thiourea followed by foliar spray at vegetative & flowering.	
		Mothbean	No change	Seed priming with 0.05% thiourea followed by foliar spray at vegetative & flowering. Increase seed rate of moth and guar by 10-15%	
		Clusterbean	No change Prefer var. like Guar-RGC 936, RGC 1003.	Increase seed rate of moth & guar by 10-15% Seed priming with 0.05% thiourea followed by foliar spray at vegetative & flowering	
		Green gram	moth and guar	Increase the seed rateby 10-15%	

Early season drought (delayed onset)	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delay by 6 weeks (1st week August)	Rainfed Deep yellowish brown sandy soil/ Deep light yellowish brown loamy soil/ Medium light yellowish brown sandy soil& Other soils	Bajra	Fodder Pearl millet (Raj.Chari-2)/Moth bean	-	Use of NSC, RSSC, SAU for quality seed
		Moth	No change Prefer var.like RMO 40	Seed priming with 0.05% thio urea followed by foliar spray of 0.05%thio urea at vegetative and flowering stage. Increase seed rate by 15-20 %.	
		Clusterbean	Guar (RGC 936)	Seed priming with 0.05% thio urea followed by foliar spray of 0.05% thiourea at vegetative and flowering stage. Increase seed rate by 15-20 %.	
		Greengram	Moth bean	-	

Delay by 8 weeks (3rd week of September)	Rainfed Deep yellowish brown sandy soil/ Deep light yellowish brown loamy soil/ Medium light yellowish brown sandy soil & Other soils	Bajra	Keep fallow	Conserve soil moisture by *Bhakhar* & planking and utilize residual soil moisture for rabi crops like taramira (RTM 314), gram(RSG 888)	
		Mothbean	Keep fallow	-----do----	
		Clusterbean	Keep fallow	---do----	
		Greengram	Keep fallow	----do-----	

Condition			**Suggested Contingency measures**		
Early season drought (Normal onset, followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.)	**Major Farming situation**	**Crop/cropping system**	**Crop management**	**Soil and nutrient moisture conservation measures**	**Remarks on Implementation**
	Rainfed Deep yellowish brown sandy soil	Bajra	Gap fill with transplanted seedlings	hoeing and weeding,	Implements for hoeing & weeding be procured under RKVY
		Mothbean	Gap fill with improved variety if the plant population is around 75%	-----do----	
		Clusterbean	-do-	-----do----	
		Greengram	-do-	-----do----	

Condition			**Suggested Contingency measures**		
Mid season drought (long dry spell)	**Major Farming situation**	**Crop/cropping system**	**Crop management**	**Soil nutrient and moisture conservation measures**	**Remarks on Implementation**
At vegetative stage	Rainfed Deep yellowish brown sandy soil/ Deep light yellowish brown loamy soil/ Medium light yellowish brown sandy soil & Other soils	Bajra	Thinning of 20-25 % plants with in the row, Spray of thiourea @ 500 ppm in pearl millet, Weeding and hoeing	Life saving irrigation if possible. with hold top dressing of urea Dust mulch or vegetative mulch Spray @% urea or MOP Use 10-15kg N/ha after relief of dry spell to gain lost vigor	Link water harvesting structures with MANREGA, watersheds and NREGS
		Mothbean	Spray of thiourea at 500 ppm at vegetative.	---do--	

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	**Major Farming situation**	**Crop/cropping system**	**Crop management**	**Soil nutrient and moisture conservation measures**	**Remarks on Implementation**
		Clusterbean	Spray of thiourea at 500 ppm at vegetative.	---do--	
		Greengram		---do--	

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	**Major Farming situation**	**Crop/cropping system**	**Crop management**	**Soil Nutrient and moisture conservation measures**	**Remarks on Implementation**
At reproductive stage	Rainfed Deep yellowish brown sandy soil/ Deep light yellowish brown loamy soil/ Medium light yellowish brown sandy soil & Other soils	Bajra	➢ Spray of thiourea @ 500 ppm	➢ Life saving irrigation if available ➢ Spray 2% urea or MOP	Link water harvesting structures with MANREGA, watersheds and NREGS
		Mothbean		-	
		Clusterbean	➢ Spray of thiourea @ 500 ppm ➢ Life saving irrigation if available	-	
		Greengram	Life saving irrigation if available	-	

Condition			Suggested Contingency measures		
Terminal drought	**Major Farming situation**	**Crop/cropping system**	**Crop management**	**Rabi Crop planning**	**Remarks on Implementation**
Early withdrawal	Rainfed **Deep yellowish brown sandy soil/** Deep light yellowish brown loamy soil/ Medium light yellowish brown	Bajra	Life saving irrigation with farm pond water If damage will be severe, harvest for fodder	Barley may be sown under poor water if available.	Link water harvesting structures with MANREGA, watersheds and NREGS
		Mothbean	-do-	---do----	
		Custerbean	-do-	---do----	

Condition			Suggested Contingency measures		
Terminal drought	**Major Farming situation**	**Crop/cropping system**	**Crop management**	**Rabi Crop planning**	**Remarks on Implementation**
	sandy soil & Other soils	Greengram	-do-	---do----	

2.1.2 Irrigated situation

Lack of inflows into tanks due to insufficient /delayed onset of monsoon	**N. A.**

Condition			Suggested Contingency measures		
	Major Farming situation	**Crop/cropping system**	**Change in crop/cropping system including variety**	**Agronomic measures**	**Remarks on Implementation**
Insufficient groundwater recharge due to low rainfall	Tube well area	Ground Nut	Moth (RMO 40, RMO 257)/ guar RGC 936,RGC 1003)/ Bajra (HHB 67 I,IC MH 356)	Reduce area under Groundnut Prefer short duration varieties (TG 37 A and TBG 39 Irrigate crop by pressurized irrigation Irrigate at criticalcrop growth stages	Create awareness and impart skills of technology to the farmers with KVKs
		Guar	No change Prefer var. likeRGC-986, RGC 1017, RGC 1003	Irrigate crop by pressurized irrigation Irrigate at critical crop growth stages Seed priming with 0.05% thiourea followed by foliar spray at vegetative & foliar stage.	

Condition			Suggested Contingency measures		
	Major Farming situation	**Crop/cropping system**	**Change in crop/cropping system including variety**	**Agronomic measures**	**Remarks on Implementation**
		Greengram	No change Prefer var. of RMG-62, RMG 268	Irrigate crop by pressurized irrigation Irrigate at critical growth stages	

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	Canal Irrigated areas-AES-IV	Wheat	Reduce area under wheat depending upon water availability Grow Raj 3077, 3765, 3777 and 4083 Allocate Wheat area to gram (RSG 888) /taramira(RTM-314), Isabgol (RI 1)	Irrigate crop by sprinkler irrigation at critical stages Dust mulching	Create awareness and impart skills of technology to the farmers with KVKs
		Gram	Reduce area under cropping Sowing of early maturing and drought tolerant varieties of Gram viz. RSG 888, RSG 807, RSG 44, GNG 663	Irrigate crop by sprinkler irrigation at critical stages Dust mulching	
		Mustard	Mustard Reduce area under cropping Grow Bio 902,Pusa bold, Aravali, RGN 13, RGN 48	Irrigate crop by sprinkler irrigation at critical stages Dust mulching Spray 0.05 % Thiourea at Vegetative and reproductive stage.	

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**
Bajra/moth/guar	Drain excess water with proper drainage mechanism Use 10-15kg N/ha to regain lost vigor Improve aeration of soil with Bhakhar	Drain excess water with proper drainage mechanism Use 10-15kg N/ha to regain lost vigor Improve aeration of soil with Bhakhar Use multi nutrient spray or planofix to promote flowering	Control heliothis by spraying Indoxacarb 14.5 SC 0.1% or Spinosad 45 SC 0.03%. Control fungal diseases by spraying 0.2% carbendazim	Drying of the produce immediately after stoppage of rain
Horticulture				
Crop1 (specify)	N.A.	N.A.	N.A.	N.A.
Heavy rainfall with high speed winds in a short span				
Chickpea	Drain excess water with proper drainage mechanism Use 10-15kg N/ha to regain lost vigor Improve aeration of soil with Bhakhar	Drain excess water with proper drainage mechanism Use 10-15kg N/ha to regain lost vigor Improve aeration of soil with Bhakhar Use multi nutrient spray or planofix to promote flowering	Control heliothis by spraying Indoxacarb 14.5 SC 0.1% or Spinosad 45 SC 0.03%. Control fungal diseases by spraying 0.2% carbendazim	Drying of the produce immediately after stoppage of rain

Condition	**Suggested contingency measure**			
Mustard	Drain excess water with proper drainage mechanism Use 10-15kg N/ha to regain lost vigor Improve aeration of soil with Bhakhar	Drain excess water with proper drainage mechanism Use 10-15kg N/ha to regain lost vigor Improve aeration of soil with Bhakhar Use multi nutrient spray or planofix to promote flowering	Drain excess water Spraying of 0.2 % *Trichoderma hamatum* + *T.Viride* for control of stem rot	Drying of the produce immediately after stoppage of rain
Wheat	-do	-do	Drain excess water Harvest on clear sunny day	Drying of the produce immediately after stoppage of rain
Horticulture				
Ber	Drain excess water in the basin and also in the field Stir the soil in the basin with hoe to improve the soil aeration UseFym /nutrients in the basin.	Foliar spray of NAA 50 ppm Drain excess water in the basin and also in the field Sitr the soil in the basin with hoe to improve the soil aeration	Drain excess water in the basin and also in the field Sitr the soil in the basin with hoe to improve the soil aeration	Dispose of the dropped fruits or prepare value added products
Outbreak of pests and diseases due to unseasonal rains				
Chickpea	Spray trizophos 40 % EC @ 1-1.5 l/ha in chickpea against pest incidence. “T” shaped pegs placed in late sown chickpea field for biological control of pod borer and for chemical control spraying of Quinolphas 25 EC or Chlorpyriphos 20 EC C or Methyle Parathiyan 50 EC @ 600 ml dissolve in 500 L of water should be used. Dusting of Felvunerate 0.4% or	Spray trizophos 40 % EC @ 1-1.5 l/ha in chickpea against pest incidence. “T” shaped pegs placed in late sown chickpea field for biological control of pod borer and for chemical control spraying of Quinolphas 25 EC or Chlorpyriphos 20 EC C or Methyle Parathiyan 50 EC @ 600 ml dissolve in 500 L of water should	Spray trizophos 40 % EC @ 1-1.5 l/ha in chickpea against pest incidence. Carry out critical survey of fields for insect and disease attack in crops	Dry the produce before storage to prevent storage pest and fungal infection

	Endosulphan 4% 15-20 kg or Quinolphas 1.5 WP 20-25 per hectare with duster.	be used. Dusting of Felvunerate 0.4% or Endosulphan 4% 15-20 kg or Quinolphas 1.5 WP 20-25 per hectare with duster.		
Mustard	-	-	-	-
Wheat	Spray 0.2 % mencozeb 76% WP against wheat rust.	Spray 0.2 % mencozeb 76% WP against wheat rust.	Carry out critical survey of fields for disease attack in crops	

2.3 Floods: Not Applicable

Condition	**Suggested contingency measure**			
Transient water logging/ partial inundation	**Seedling / nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Crop1 (specify)	N.A.	N.A.	N.A.	N.A.
Continuous submergence for more than 2 days				
Crop1				
Horticulture	N.A.	N.A.	N.A.	N.A.
Crop1 (specify)				
Sea water inundation	N.A.	N.A.	N.A.	N.A.
Crop1				

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.	Light irrigation spray 1000 ppm thio urea at grain filling stage	Harvest at physiological maturity-
Mustard	Light irrigation Provision of wind breaks	Light irrigation.	Apply surface irrigation, spray 1000 ppm thiourea at grain filling stage	Harvest at physiological maturity
Chickpea	-do-	-do-	-do-	-do-

Horticulture				
Cold wave				
Mustard	Light irrigation Smoking during night	Light irrigation Smoking during night	Spray of 0.1% H_2SO_4, apply light irrigation	Harvest at physiological maturity
Chickpea	Light irrigation Smoking during night	Light irrigation Smoking during night	Spray of 0.1% H_2SO_4, apply light irrigation	Harvest at physiological maturity
Horticulture				
Aonla	Light irrigation Smoking during night	Light irrigation Smoking during night	Spray of 0.1% H_2SO_4, apply light irrigation	Harvest the crop as early as possible and marketed or keep in cold storage Store the produce in a shed or safe place

Frost				
Mustard	Light irrigation Smoking during night	Light irrigation Smoking during night	Spray of 0.1% H_2SO_4 , smoking at night, apply light irrigation	Harvest at physiological maturity
Chickpea	Light irrigation Smoking during night	Apply irrigation, Spray of 0.1% H_2SO_4 ,	Spray of 0.1% H_2SO_4 , smoking at night, apply light irrigation	Harvest at physiological maturity
Horticulture				
Aonla	Light irrigation Smoking during night	Light irrigation Smoking during night	Apply irrigation, Spray of 0.1% H_2SO_4 ,	Harvest the crop as early as possible and marketed or keep in cold storage Store the produce in a shed or safe place
Hailstorm				
Wheat	N.A.	N.A.	-	-
Mustard	N.A.	N.A.	-	-
Chickpea	N.A.	N.A.	-	-
Horticulture				
Cyclone	N.A.	N.A.	N.A.	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	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 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	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	Flushing the stock to recoup Replenish the feed and fodder banks

	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	keepers for procurement of feed	
Cyclone	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) H_2O sprinklers / foggers in the shed	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	Feed the animals as per routine schedule Allow the animals for grazing (normal timings)

	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)	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 H_2O during severe heat waves. Apply / sprinkle lime powder in the animal shed during cold waves to neutralize ammonia accumulation	
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 the birds
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
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 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	Routine practices are followed

		water or feed	
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: Not Applicable.