State: RAJASTHAN

Agriculture Contingency Plan for District: SRIGANGANAGAR

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 (2.1)			
	Agro-Climatic Zone (Planning Commission)	Trans Gangetic Plain Region (VI)			
	Agro Climatic Zone (NARP)	Irrigated North West Plain Zone (RJ-2)			
	List all the districts or part thereof falling under the NARP Zone	Sriganganagar and Hanumangarh			
	Geographic coordinates of district headquarters	Latitude	Longitude	Altitude	
		28°42'33'' to 30°12'16''	72°39'33'' to 74°17'51''	175.6 m	
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Agricultural Research Station (SK Rajasthan Agricultural University), Sriganganagar-335001			
	Mention the KVK located in the district	Krishi Vigyan Kendra (SKRAU), Padampur (Sriganganagar) 335001			
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):	242.8	11.2	2nd week July	3rd week Sept.
	NE Monsoon(Oct-Dec):	013.9	0.7	NA	NA
	Winter (Jan- March)	037.0	2.7	-	-
	Summer (Apr-May)	028.6	1.1	-	-
	Annual	322.3	15.7	-	-

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)	1093.3	911.6	60.5	68.6	0.1	46.1	4.1	2.4	83.5	103.4

1. 4	**Major Soils (common names like red sandy loam deep soils (etc.,)***	**Area ('000 ha)**	**Percent (%) of total**
	Medium, Light yellowish brown, Loamy	3.46	0.38
	Deep, Light yellowish brown, Loamy	875.77	96.07
	Deep, Light yellowish brown, Clayey	0.55	0.06
	Deep, Yellowish brown, Sandy	31.81	3.49

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

1.5	**Agricultural land use**	Area ('000 ha)	Cropping intensity %
	Net sown area	724.7	145.4
	Area sown more than once	329.3	
	Gross cropped area	1054.0	

1.6	**Irrigation**	Area ('000 ha)		
	Net irrigated area	557.7		
	Gross irrigated area	873.8		
	Rainfed area	167.0		
	Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
	Canals		871.2	99.7

	Tanks	NIL	NIL	NIL
	Open wells	NIL	NIL	NIL
	Bore wells	13903	2.6	0.3
	Lift irrigation schemes	NIL	NIL	NIL
	Micro-irrigation			
	Other sources (please specify)	-	-	
	Total Irrigated Area		873.8	
	Pump sets	8993		
	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	NIL	NIL	
	Critical	NIL	NIL	
	Semi- critical	NIL	NIL	
	Safe	7	100	Saline
	Wastewater availability and use	NA		
	Ground water quality	Saline and sodic		
*over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%				

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

1.7	**Major Field Crops cultivated**	**Area ('000 ha)**							
		Kharif			***Rabi***			**Summer**	**Total**
		Irrigated	***Rainfed***	**Total**	***Irrigated***	***Rainfed***	**Total**		
	A.cotton/Wheat	45.8	-	45.8	190.8	-	190.8	NA	NA
	D.cotton/Barley	9.5	-	9.5			58.8	NA	NA
	Clusterbean/Mustard			235.7			260.2	NA	NA
	Mungbean/Chickpea			34.0			120.2	NA	NA
	Paddy/Taramira	4.1		4.1			8.2	NA	NA
	Others (specify)								

	Horticulture crops - Fruits	**Total area**
	Kinnow	10.7
	Malta & Mosambi	1.4
	Pomagranate	0.6
	Ber	0.5
	Lime	0.4
	Others (specify)	0.39
	Horticultural crops - Vegetables	**Total area ('000 ha)**
	Cucurbits	5.5
	Cole crops	1.4
	Tomato	1.1
	Potato	0.8
	Onion	0.7
	Others (Brinjal, spinach etc)	4.2
	Medicinal and Aromatic crops	-

	Plantation crops	-
	Others such as industrial pulpwood crops etc (specify)	-
	Fodder crops	**Total area**
	Berseem, oat, Lucern	14.5
	Sorghum, Bajra	13.4
	Total fodder crop area	27.9
	Grazing land	0.1
	Sericulture etc	NA
	Others (Specify)	

1.8	**Livestock**	**Male ('000)**	**Female ('000)**	**Total ('000)**
	Non descriptive Cattle (local low yielding)			432.7
	Crossbred cattle			NA
	Non descriptive Buffaloes (local low yielding)			269.1
	Graded Buffaloes			NA
	Goat			268.8
	Sheep			339.0
	Others (Camel, Pig, Yak etc.)			30.0
	Commercial dairy farms (Number)			

1.9	**Poultry**	**No. of farms**	**Total No. of birds ('000)**
	Commercial	NA	NA
	Backyard	NA	NA

1.10 Fisheries (Data source: Chief Planning Officer)

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)	
NIL	NIL	NIL	NIL	NIL	NIL

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)	NIL	NIL	NIL

	ii) **Fresh water** (Data Source: Fisheries Department)	NA	NA	NA
	Others			

1.11 Production and Productivity of major crops

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)										
	A. cotton/ Wheat	269.9	3.12	595.9	3300	-	-	-	-	NA
	D cotton/ Barley	70.7	2.57	110.9	2700	-	-	-	-	NA
	Cluster bean/ Mustard	152.3	933	306.5	1133	-	-	-	-	NA
	Mung bean/ Chickpea	20.5	787	79.4	833	-	-	-	-	NA
	Paddy/ Taramira	12.8	3983	5.4	400	-	-	-	-	NA
*For A cotton and D cotton production and productivity is in ,000 bales										

Source: Department of Agriculture, GOR

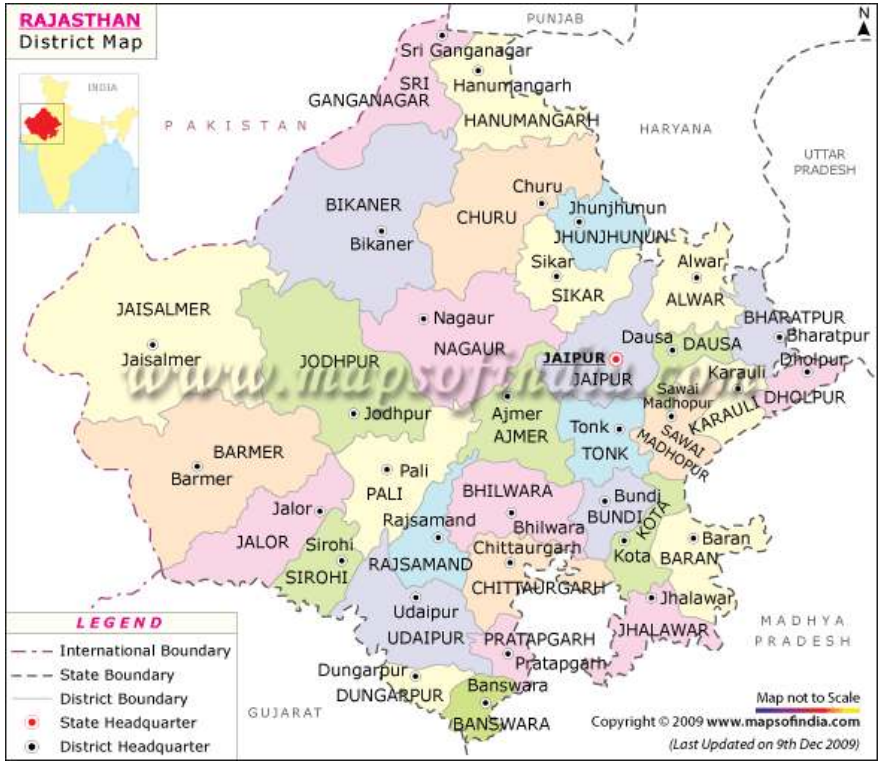
Major Horticultural crops (Crops to be identified based on total acreage)										
	Kinnow							60.0	12500	
	Malta & Mosambi							20.0	8000	
	Pomagranate							0.7	12500	
	Ber							2.5	10000	
	Lime							3.0	6000	
	Others (specify)							0.3	15000	

1.12	**Sowing window for 5 major field crops**	(A.cotton/ Wheat:	(D.cotton/ Mustard)	(Guar/ Gram)	(Mungbean/ Barley)	(Paddy/ Taramira)
	Kharif- Rainfed	-	-	July 8-30	July 8-20	-
	Kharif-Irrigated	May 1-20	April 1-May 7	June 15-July 7	July 1-15	June 25- July 7
	Rabi- Rainfed	-	-	Oct. 15-25	-	Sept15-Oct 15
	Rabi-Irrigated	Nov. 10-20	Oct. 5-20	Oct. 20-Nov 15	Nov. 15-30	--

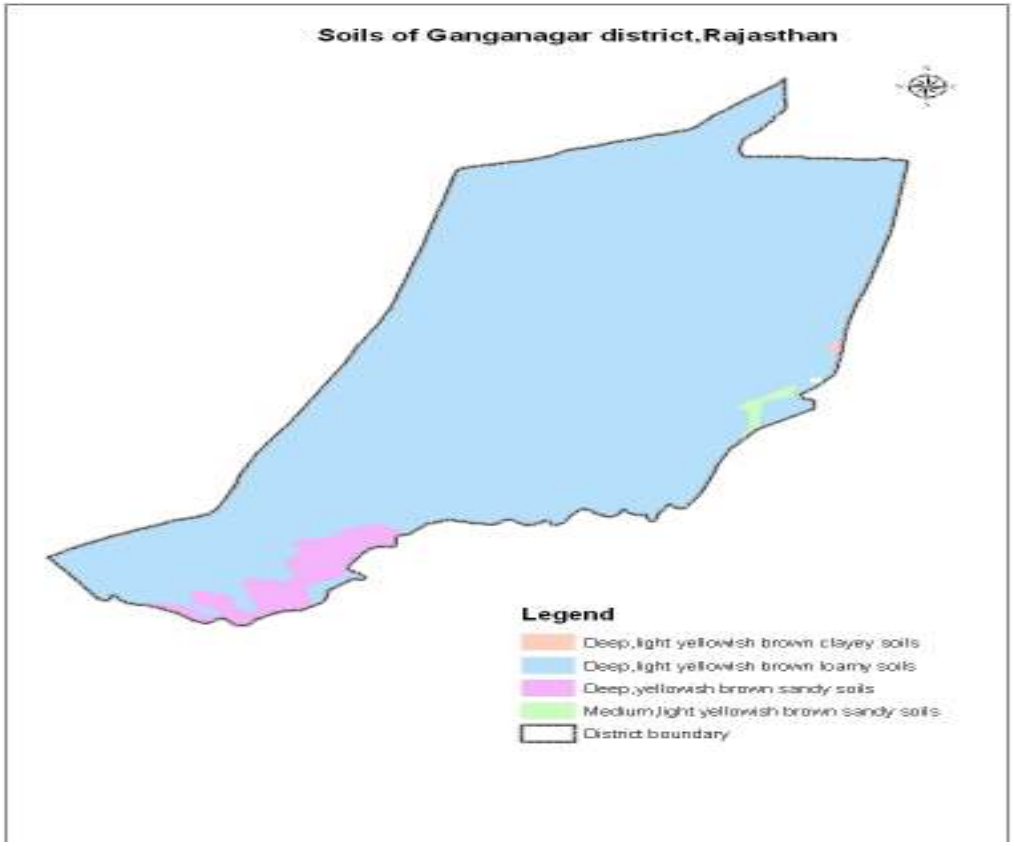
1.13	**What is the major contingency the district is prone to?** (Tick mark)	Regular	Occasional	None
	Drought	√		
	Flood			√
	Cyclone			√
	Hail storm		√	
	Heat wave		√	
	Cold wave		√	
	Frost		√	
	Sea water intrusion			√
	Pests and disease outbreak (specify)	√		
	Others (specify)			

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 / No
		Soil map as Annexure 3	Enclosed: Yes

Annexure I –Location map of Sriganganagar



Annexure III–Soil map



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**	**Agronomic measures**	**Remarks on Implementation**
Delay by 2 **weeks (July 4th wk)**	Rainfed Deep light yellowish brown loamy Soils	Guar (RGC 936, RGC 986, RGC 1002, HG 365, HG 563) Moth bean (RMO 40) Bajra (HHB 67, Raj 171) Mungbean (SML-668, Ganga-8, Ganga-1, MUM 2)	Guar (RGC-936, RGC 1002) Moth bean (RMO-40) Bajra (HHB 67) Mungbean (SML 668)	Normal recommended agronomical practices	Seed source 1.NSC 2.RSSC 3.NSP
	Rainfed Other Soils	DO-	Guar (RGC-936, RGC 1002) Moth bean (RMO-40) Bajra (HHB 67) Mungbean (SML 668)	Normal recommended agronomical practices	
Delay by 4 weeks (Aug 2nd wk)	Rainfed Deep light yellowish brown loamy Soils	DO-	Moth bean (RMO-40) Bajra (Fodder) Bajra + Moth inter crop	Reduce seed rate by 10-15 percent Increase row to row spacing to 45 cm	
	Rainfed Other Soils	DO-	DO-	DO-	
Delay by 6 weeks (Aug 4th wk)	Rainfed Deep light yellowish brown loamy Soils	Guar (RGC 936, RGC 986, RGC 1002, HG 365, HG 563) Moth bean (RMO 40) Bajra (HHB 67, Raj 171) Mungbean (SML-668, Ganga-8, Ganga-1, MUM 2)	Bajra (Fodder) Fallow	Increase N application by 10- 15 percent Moisture conservation by shallow tillage + planking	Seed source 1.NSC 2.RSSC 3.NSP

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**
	Rainfed Other Soils	DO-	Bajra (Fodder) Fallow	Increase N application by 10- 15 percent Moisture conservation by shallow tillage + planking	

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 (Sep 2nd wk)	1 Rainfed Deep light yellowish brown loamy Soils	DO-	No Kharif crop can be taken	Conserve soil moisture by shallow ploughing for Rabi crops	Seed source 1.NSC 2.RSSC 3.NSP
	Rainfed Other Soils	DO-	No Kharif crop can be taken	Conserve soil moisture by shallow ploughing for Rabi crops	

Early season drought (Normal onset, followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil management**	**Remarks on Implementation**
	Rainfed Deep light yellowish brown loamy Soils	Guar (RGC 936, RGC 986, RGC 1002, HG 365, HG 563) Moth bean (RMO 40) Bajra (HHB 67, Raj 171) Mungbean (SML-668, Ganga-8, Ganga-1, MUM 2)	Gap filling/ Re-sowing of crops just after rains received after dry spell, depending upon plant stand	Dust mulching	Seed source 1.NSC 2.RSSC 3.NSP

Early season drought (Normal onset, followed by	Major Farming situation	Normal Crop/cropping system	Crop management	Soil management	Remarks on Implementation
	Rainfed Other Soils	DO-	DO-	Dust mulching	Seed source 1.NSC 2.RSSC 3.NSP

Mid season drought (long dry spell)	Major Farming situation	Normal Crop/cropping system	Crop management	Soil management	Remarks on Implementation
At vegetative stage	Rainfed Deep light yellowish brown loamy Soils	Guar Mungbean bean Moth bean Bajra	Reduce the plant population Depending on the period of drought Foliar Spray of 2% urea just after rains	Inter culture operation for moisture conservation	
	Rainfed Other Soils	Guar Mungbean bean Moth bean Bajra	DO-	Inter culture operation for moisture conservation	

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil management**	**Remarks on Implementation**
At flowering/ fruiting stage	Rainfed Deep light yellowish brown loamy Soils	Guar Mungbean bean Moth bean Bajra	Life saving irrigation may be applied if available Reduce the plant population by 50 % depending on the period of drought Under severe condition crop may be harvested as fodder crop	Inter culture operation for moisture conservation Use uprooted plants as green mulch	

	Rainfed Other Soils	Guar Mungbean bean, Moth bean Bajra	**DO-**	**DO-**	

Terminal drought (Early withdrawal of monsoon)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Rabi Crop planning**	**Remarks on Implementation**
	Rainfed Deep light yellowish brown loamy Soils	Guar Mungbean bean Moth bean Bajra	Life saving irrigation may be applied if available Under severe condition crop may be harvested if forced maturity is there.	If marginal quality ground water is available then Toria (variety TL-15) may be grown after pre sowing irrigation	
	Major Farming situation	**Normal Crop/cropping system**	**Crop management**	**Rabi Crop planning**	**Remarks on Implementation**
	Rainfed Other Soils	Guar, Mungbean bean, Moth bean, Bajra	DO-	DO-	

2.1.2 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	Canal irrigated Light to medium Soil (Light brown colour, deep, loamy sand to sandy loam soils with scarce rainfall)	A. cotton, D. Cotton. Guar Ground Nut, Sugar Cane, Mungbean , Castor, Bajra, Fodder crops	Prefer American cotton instead of desi cotton, Prefer cotton varieties instead of hybrids, Sowing of Clusterbean, mungbean, Bajra etc. low water requiring crops may be encouraged	Use Pressurized irrigation method, Furrow and alternate furrow irrigation in wide row crops	Seed source 1.NSC 2.RSSC 3.NSP

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
	Canal irrigated Heavy Soil (dark brown, clay loam to silty clay loam soils with scarce rainfall)	A. cotton, D. Cotton. Guar	Prefer cotton varieties (RST-9) instead of hybrids, Sowing of Guar, mungbean, Bajra etc. low water requiring crops may be encouraged	Use Pressurized irrigation method, Furrow and alternate furrow irrigation in wide row crops	
	Ghaggar Flood Plain Soil (Dark brown colour, deep, silty clay loam soils with scarce rainfall)	Paddy, A. cotton D. Cotton. Fodder crops Sugarcane, Guar	Prefer American cotton instead of desi cotton, Replace part of paddy area under cotton and guar	Delay transplanting of paddy by two weeks Apply irrigation to paddy two days after disappearance of ponded water	
	Salt affected soils (Variable in colour, deep, Loamy sand to silty clay loam soils with scarce rainfall)	A. cotton, D. Cotton, Sugar Cane, Castor, Bajra, Fodder crops	Do-	Use Pressurized irrigation method, Furrow and alternate furrow irrigation in wide row crops	

Condition			Suggested Contingency measures		
	Major Farming situation	**Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Limited release of water in canals due to low rainfall	Canal irrigated Light to medium Soil (Light brown colour, deep, loamy sand to sandy loam soils with scarce rainfall)	A. cotton, D. Cotton. Guar Ground Nut, Sugar Cane, Mungbean , Castor, Bajra, Fodder crops	Prefer desi cotton varieties instead of hybrids and American cotton, Sowing of Guar, mungbean, Bajra etc. low water requiring crops may be encouraged	Use Pressurized irrigation method, Irrigation at critical stages Furrow and alternate furrow irrigation in wide row crops Use mulches	Seed source 1.NSC 2.RSSC 3.NSP

Condition			Suggested Contingency measures		
	Major Farming situation	**Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
	Canal irrigated Heavy Soil (dark brown, clay loam to silty clay loam soils with scarce rainfall)	A. cotton, D. Cotton. Guar	Prefer RST-9 variety of A.cotton instead of hybrids, Sowing of Guar, mungbean, Bajra etc. low water requiring crops may be encouraged	Do-	
	Ghaggar Flood Plain Soil (Dark brown colour, deep, silty clay loam soils with scarce rainfall)	Paddy, A. cotton D. Cotton. Fodder crops Sugarcane, Guar	Prefer desi cotton varieties instead of hybrids and American cotton, Replace part of paddy area under cotton and guar	Delay transplanting of paddy by two weeks Irrigation at critical stages Apply irrigation to paddy two days after disappearance of ponded water	
	Salt affected soils (Variable in colour, deep, Loamy sand to silty clay loam soils with scarce rainfall)	A. cotton, D. Cotton, Sugar Cane, Castor, Bajra, Fodder crops	Prefer desi cotton varieties instead of hybrids and American cotton, Replace part of cotton area by Castor and Bajra	Use Pressurized irrigation method, Irrigation at critical stages Furrow and alternate furrow irrigation in wide row crops Use mulches	

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	Canal irrigated Light to medium Soil	A. cotton, D. Cotton. Guar Ground Nut, Sugar Cane, Mungbean been, Castor, Bajra, Fodder crops	Grow cotton in limited area, Grow guar, mungbean, Bajra, Ground nut, fodder crops on onset of monsoon	Sowing of cotton under limited area may be done where ground water having E C up to 5 dS/m is available. Use gypsum with irrigation for alkali waters	Seed source 1.NSC 2.RSSC 3.NSP

Condition			Suggested Contingency measures		
	Major Farming situation	**Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
	Canal irrigated Heavy Soil	A. cotton, D. Cotton, Guar Mungbean, Bajra Fodder crops	Grow cotton in limited area, Grow guar, mungbean, Bajra, fodder crops on onset of monsoon	Sowing of cotton under limited area may be done where ground water having E C up to 3 dS/m is available. Use gypsum with irrigation for alkali waters	
	Ghaggar Flood Plain Soil	Paddy, A. cotton D. Cotton. Fodder crops Sugar Cane, Guar	Reduce paddy cultivation, Grow cotton in tube well command area Grow guar, mungbean, fodder crops on onset of monsoon	Delay transplanting of paddy by two weeks Apply irrigation to paddy two days after disappearance of ponded water	
	Salt affected soils	A. cotton, D. Cotton, Sugar Cane, Castor, Bajra, Fodder crops	Grow cotton in limited area, Grow Bajra and fodder crops on onset of monsoon	Sowing of cotton under limited area may be done where ground water having E C up to 5 dS/m is available. Use gypsum with irrigation for alkali waters	

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**	**Agronomic measures**	**Remarks on Implementation**
Insufficient groundwater recharge due to low rainfall	Ghaggar Flood Plain Soil	Paddy, A. cotton D. Cotton. Fodder crops Sugar Cane, Guar	Avoid paddy cultivation Restrict cotton cultivation, Encourage low water requiring crops like Guar,	Encourage pressurized irrigation, Irrigate at critical growth stages Extensive use of irrigation water	Seed source 1.NSC 2.RSSC 3.NSP

2.2 Un-timely (unseasonal) rains

Condition	Suggested contingency measure			
	Vegetative stage	**Flowering stage**	**Crop maturity stage**	**Post harvest**
Continuous high rainfall in a short span leading to water logging	N.A.			
Heavy rainfall with high speed winds in a short span				
Chickpea	N.A.	Hormonal spray is advised to induce flowering	Control heliothis by spraying chemicals like Indoxacarb 14.5 SC 0.1% or Spinosad 45 SC 0.03%. To control fungal diseases spray 0.2% carbendazim	Dry the produce before storage to prevent the attack of storage pest and fungal infection

Condition	Suggested contingency measure			
Mustard	N.A.	Hormonal spray is advised to induce flowering	To prevent stem rot disease spray 0.2% Carbendizim	
Wheat		N.A.	Stop irrigation in lodged crop	
Horticulture				
Kinnow	N.A.	Spray hormones	Spray Antracol 0.2% to avoid secondary fungal infection	

Outbreak of pests and diseases due to unseasonal rains				
Chickpea	-	Hormonal spray is advised to induce flowering	Control heliothis by spraying chemicals like Indoxacarb 14.5 SC 0.1% or Spinosad 45 SC 0.03%. To control fungal diseases spray 0.2% carbendazim	Dry the produce before storage to prevent the attack of storage pest and fungal infection
Mustard	-	Hormonal spray is advised to induce flowering	To prevent stem rot disease spray 0.2% Carbendizim	
Wheat		N.A.	Stop irrigation in lodged crop	
Horticulture				
Kinnow	-	Spray hormones	Spray Antracol 0.2% to avoid secondary fungal infection	

2.3 Floods

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

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	-	-	Apply irrigation, spray 1000 ppm thiourea	Water spray in evening

Mustard	Delay sowing by 10 – 15 days, use variety RGN 13	-	-	Do-
Chickpea	-	-	-	Do-
Cotton	-	spray 500 ppm thiourea	Spray 500 ppm thiourea along with 2% KNO_3	-
Horticulture				
Kinnow	-	Apply irrigation, spray 500 ppm thiourea	Spray of 10 ppm 2 4 D (Horticultural grade) or 20 ppm GA	-
Cold wave				
Mustard	-	-	Spray of 0.1% H_2SO_4 , mass smoking at night, apply light irrigation or spray 500 ppm thiourea	-
Chickpea	-	-	Do-	-
Castor	-	-	Do-	-
Horticulture				
Aonla	-	-	-	Spray of 0.1% H_2SO_4 , mass smoking at night, apply light irrigation or spray 500 ppm thiourea
Frost				
Mustard	-	Apply irrigation, Spray of 0.1% H_2SO_4 , or spray 500 ppm thiourea	Spray of 0.1% H_2SO_4 , mass smoking at night, apply light irrigation or spray 500 ppm thiourea	-
Chickpea	-	Apply irrigation, Spray of 0.1% H_2SO_4 , or spray 500 ppm thiourea	Spray of 0.1% H_2SO_4 , mass smoking at night, apply light irrigation or spray 500 ppm thiourea	-
Castor	-	-	Spray of 0.1% H_2SO_4 , mass smoking at night, apply light irrigation or spray 500 ppm thiourea	-
Horticulture				
Aonla	-	-	Apply irrigation, Spray of 0.1% H_2SO_4 , or spray 500 ppm thiourea	Apply irrigation, Spray of 0.1% H_2SO_4 , or spray 500 ppm thiourea
Hailstorm				

Wheat	-	-	Harvest and use as fodder	
Mustard	-	-	Spray 0.2% Ridomil (Metalaxyl + Mencozeb)	
Chickpea	-	-	Spray 0.1% Carbendazim to control secondary fungal infection, Spray chemicals like Indoxacarb 14.5 SC 0.1% or Spinosad 45 SC 0.03%.	
Horticulture				
Kinnow	-	-	Spray 100 ppm streptocycline + 0.2% Copper Oxichloride to prevent bacterial infection	Spray 100 ppm streptocycline + 0.2% Copper Oxichloride to prevent bacterial infection
Cyclone	NA			

2.5 Contingent strategies for Livestock, Poultry & Fisheries

2.5.1 Livestock

	Suggested contingency measures		
	Before the event	**During the event**	**After the event**
Drought			
Feed and fodder availability	Training for mass awareness and establishment of fodder bank	Operationalization of fodder bank, Preparation of compact fodder bricks	Review and feedback collection to face the future requirement
Drinking water	Storage of water in reservoirs	Monitoring and distribution	Review and feedback collection to face the future requirement
Health and disease management	Organize health camp	Distribute medicines	Review and feedback collection to face the future requirement
Floods	N.A.	N.A.	N.A.

Feed and fodder availability			
Drinking water			
Health and disease management			
Cyclone	N.A.	N.A.	N.A.
Feed and fodder availability			
Drinking water			
Health and disease management			
Heat wave and cold wave			
Shelter/environment management	Repair and maintenance of shelter	Shifting of live stocks in shelters and monitoring	Review and feedback collection to face the future requirement
Health and disease management	Organize health camp	All the curative measures needs to be taken	Review and feedback collection to face the future requirement

2.5.2 Poultry

	Suggested contingency measures		
	Before the event	**During the event**	**After the event**
Drought			
Shortage of feed ingredients	Training for mass awareness	Alternative Supplementary feed	Review and feedback collection to face the future requirement
Drinking water	Storage of water in reservoirs	Judicious supply of stored drinking water	Review and feedback collection to face the future requirement
Health and disease management	Organize health camp	Distribute medicines	Review and feedback collection to face the future requirement
Floods	N.A.	N.A.	N.A.
Shortage of feed ingredients			

Drinking water			
Health and disease management			
Cyclone	N.A.	N.A.	N.A.
Shortage of feed ingredients			
Drinking water			
Health and disease management			
Heat wave and cold wave			
Shelter/environment management	Repair and maintenance of shelter	Shifting of birds in shelters and monitoring	Review and feedback collection to face the future requirement
Health and disease management	Organize health camp	All the curative measures needs to be taken	Review and preparation to mitigate the future requirement

2.5.3 Fisheries / Aquaculture

	Suggested contingency measures		
	Before the event	**During the event**	**After the event**
Drought			
Shallow water in ponds due to insufficient rains/inflows	Stop the release of water for irrigation	Supplement part of water requirement through tube well	Review and preparation to mitigate the future requirement
Impact of heat and salt load build up in ponds / change in water quality			
Floods	N.A.	N.A.	N.A.
Inundation with flood waters			
Water contamination and changes in BOD			

Health and disease management			
Cyclone	N.A.	N.A.	N.A.
Overflow / flooding of ponds			
Change in fresh/brackish water ratio			
Health and disease management			
Heat wave and cold wave			
Management of pond environment	Tree plantation around the pond		
Health and disease management	Organize health camp	All the curative measures needs to be taken	Review and preparation to mitigate the future requirement