

State: Rajasthan
Agriculture Contingency Plan for District: Bundi

1.0 District Agriculture profile							
1.1	Agro-Climatic/Ecological Zone						
	Agro Ecological Sub Region (ICAR)						
	Northern Plain (And Central Highlands) Including Aravallis, Hot Semi-Arid Eco-Region (4.2)						
	Agro-Climatic Zone (Planning Commission)						
	Central Plateau & Hills Region (VIII)						
	Agro Climatic Zone (NARP)						
	Sub Humid Southern Plain Zone (RJ-7)						
	List all the districts or part thereof falling under the NARP Zone						
Bhilwara, Bundi, Chittorgarh and Udaipur							
Geographic coordinates of district headquarters		Latitude		Longitude		Altitude	
		25 ^o 44'N		75 ^o 64'E		268	
Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS		Agricultural Research Station Ummedganj, Post Box No. 7, GPO Nayapura, Kota 324 001					
Mention the KVK located in the district		Krishi Vigyan Kendra, P.Box. No.4 Nainwa Road, Distt. Bundi-323 001					
1.2	Rainfall	Normal RF(mm)	Normal Rainy days (number)	Normal Onset (specify week and month)	Normal Cessation (specify week and month)		
	SW monsoon (June-Sep):	637.1	32	4 th week of June (26 week)	2 nd week of Sept. (37 week)		
	NE Monsoon(Oct-Dec):	17.9	0.9	-	-		
	Winter (Jan- March)	10.2	1.5	-	-		
	Summer (Apr-May)	15.3	1.00	-	-		
	Annual	680.5	35.4	-	-		

1.3	Land use pattern of the district (latest statistics)	Geographic 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)	581.938	296.579	142.086	40.466	24.430	29.892	0.188	48.297	15.290	27.273

1.4	Major Soils (common names like red sandy loam deep soils (etc.))*	Area ('000 ha)	Percent (%) of total
	Deep brown loamy	137.16	23.57
	Deep brown clayey	88.74	15.25
	Medium brown loamy	87.93	15.11
	Shallow yellowish brown gravelly loam	82.86	14.24
	Deep black clayey	50.10	8.61
	Red gravelly loam hilly soil	93.17	16.01

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

1.5	Agricultural land use	Area ('000 ha)	Cropping intensity %
	Net sown area	254.016	159
	Area sown more than once	149.22	
	Gross cropped area	403.236	

1.6	Irrigation	Area ('000 ha)		
	Net irrigated area	200.727		
	Gross irrigated area	264.603		
	Rainfed area	138.633		
	Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
	Canals		160.041	60.48
	Tanks	1801	2.148	0.81
	Open wells	59003	66.816	25.25
	Bore wells	18232	21.532	8.14
	Lift irrigation schemes	-	-	-
	Micro-irrigation		-	-
	Other sources (check dam & anicuts)		14.066	5.32
	Total Irrigated Area		264.603	100
	Pump sets	58200		
	No. of Tractors	7240		
	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	Information not	Information not available	

		available		
	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 (year 2008-09).

1.7	Major field crops cultivated	Area ('000 ha)							Grand total
		Kharif			Rabi			Summer	
		Irrigated	Rainfed	Total	Irrigated	Rainfed	Total		
	Soybean	23.782	52.706	76.488	-	-	-	-	76.488
	Maize	1.971	30.726	32.697	-	-	-	-	32.697
	Paddy	24.506	-	24.506	-	-	-	-	24.506
	Wheat	-	-	-	117.708	0.101	117.809	-	117.809
	Rapeseed & Mustard	-	-	-	68.729	15.556	84.285	-	84.285
	Gram	-	-	-	2.376	2.646	5.022	-	5.022
	Coriander	-	-	-	4.267	-	4.267	-	4.267

Horticulture crops - Fruits	Area ('000 ha)		
	Total	Irrigated	Rainfed
Guava	0.348	0.348	-
Aonla	0.300	0.300	-
Lime	0.098	0.098	-
Horticulture crops – Vegetables	Total	Irrigated	Rainfed
Okra	0.334	0.334	-
Cucurbits	0.200	0.200	-
Potato	0.192	0.192	-
Tomato	0.177	0.177	-
Cabbage and cauliflower	0.173	0.173	-
Chillies	0.150	0.150	-
Brinjal	0.140	0.140	-
Pea	0.120	0.120	-

Garlic	0.583	0.583	
Medicinal and Aromatic crops	Total	Irrigated	Rainfed
Turmeric	0.044	0.044	
Rose	0.037	0.037	
Fodder crops	Total	Irrigated	Rainfed
Berseem	1.181	1.181	
Lucern	1.086	1.086	
Chari Jowar	0.099	0.099	
Total fodder crop area	2366	2366	
Grazing land	24.43	24.43	

1.8	Livestock	Male ('000)	Female ('000)	Total ('000)
	Non descriptive Cattle (local low yielding)	Not available	-	260.832
	Crossbred cattle	-	-	-
	Non descriptive Buffaloes (local low yielding)	-	-	-
	Graded Buffaloes	-	-	244.901
	Goat	-	-	66.921
	Sheep	-	-	308.107
	Others (Camel, Pig, Yak etc.)	-	-	15.405
	Commercial dairy farms (Number)			0.006
1.9	Poultry	No. of farms	Total No. of birds ('000)	
	Commercial	-	42.470	
	Backyard	-	-	

1.10	Fisheries						
	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	
		NIL		8 (1970)		85 (490)	

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)	1403	Village pond 1500 to 2000 kg./ha Lakes 50-150 kg./ha	1.090
Others	-	-	-

1.11 Production and Productivity of major crops (2004-2008)

1.11	Name of crop	Kharif		Rabi		Summer		Total		Crop residue as fodder ('000 tons)
		Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	
Major Field crops (Crops to be identified based on total acreage)										
	Soybean	81.356	1372	-	-	-	-	81.356	1372	-
	Maize	58.266	1680	-	-	-	-	58.266	1680	-
	Paddy	28.262	2903	-	-	-	-	28.262	2903	-
	Wheat	-	-	336.332	3231	-	-	336.332	3231	-
	Mustard	-	-	131.128	1318	-	-	131.128	1318	-
	Gram	-	-	8.153	1026	-	-	8.153	1026	-
	Coriander	-	-	4.136	1144	-	-	4.136	1144	-
Major Horticultural crops (Crops to be identified based on total acreage)										
	Okra	2.849	8530	-	-	-	-	2.849	8530	-
	Tomato	2.212	12500	-	-	-	-	2.212	12500	-
	Potato	-	-	7.680	40000	-	-	7.680	40000	-
	Guava	8.367	24000	-	-	-	-	8.367	24000	-
	Pea	-	-	9.072	7560	-	-	9.072	7560	-

1.12	Sowing window for 5 major field crops (start and end of normal sowing period)	Soybean	Maize	Wheat	Mustard	Coriander
	Kharif- Rainfed	4 th week of June to 2 nd week of July	4 th week of June to 2 nd week of July	-	-	-
	Kharif-Irrigated	4 th week of June to 2 nd week of July	3 rd week of June to 1 st week of July	-	-	-
	Rabi- Rainfed	-	-	4 th week of Oct. to 2 nd week of Nov.	4 th week of Sept. to 2 nd week of Oct.	2 nd week of Oct. to 2 nd week of Nov.
	Rabi-Irrigated	-	-	1-3 rd week of Nov.	1 st -4 th wk. of Oct.	2 nd week of Oct. to 2 nd week of Nov.

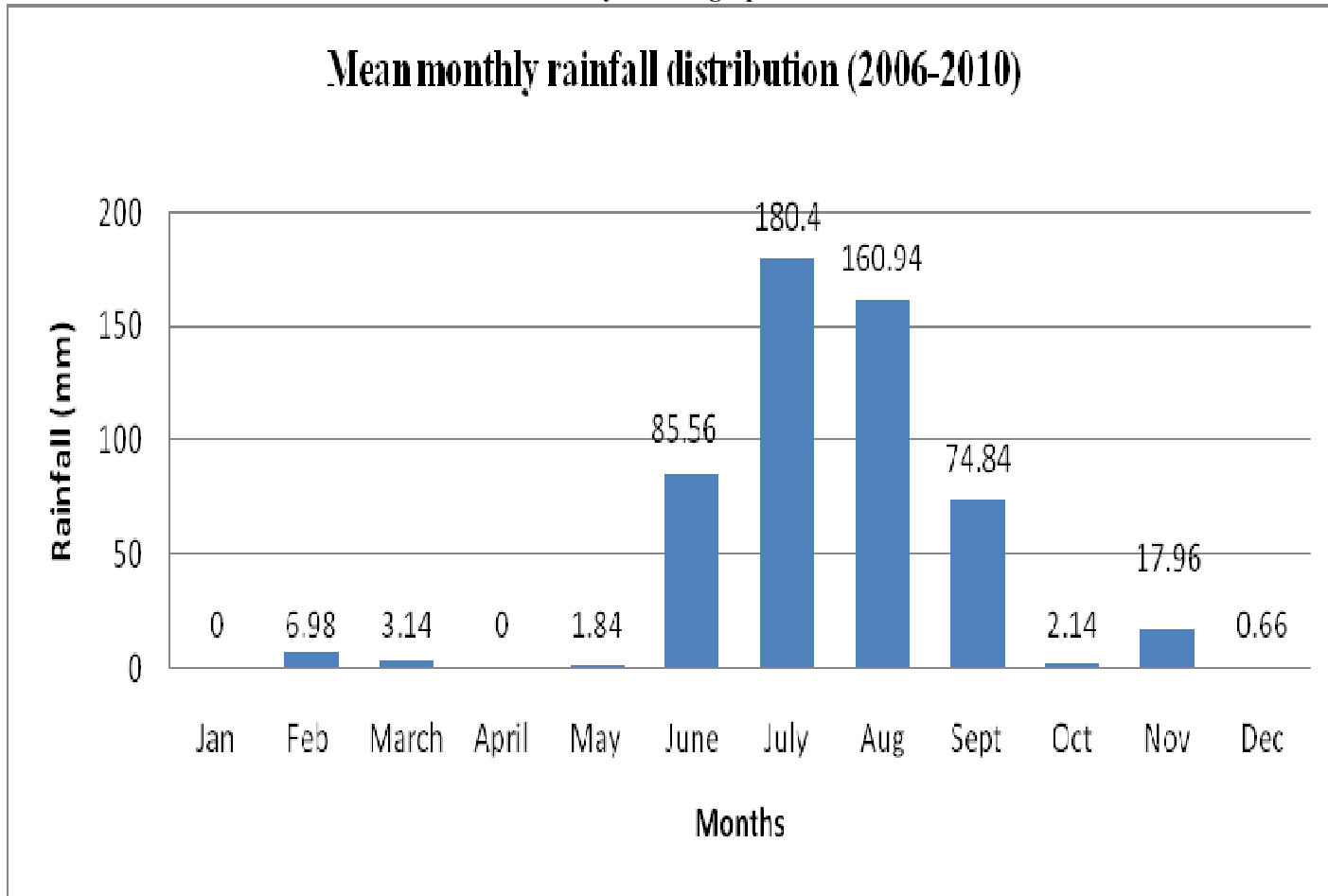
1.13	What is the major contingency the district is prone to?	Regular	Occasional	None
	Drought	-	√	-
	Flood	-	-	√
	Cyclone	-	-	√
	Hail storm	-	-	√
	Heat wave	√	-	-
	Cold wave	-	√	-
	Frost	-	√	-
	Sea water intrusion	-	-	√
	Pests and disease outbreak	-	-	√
	Others	-	-	-

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

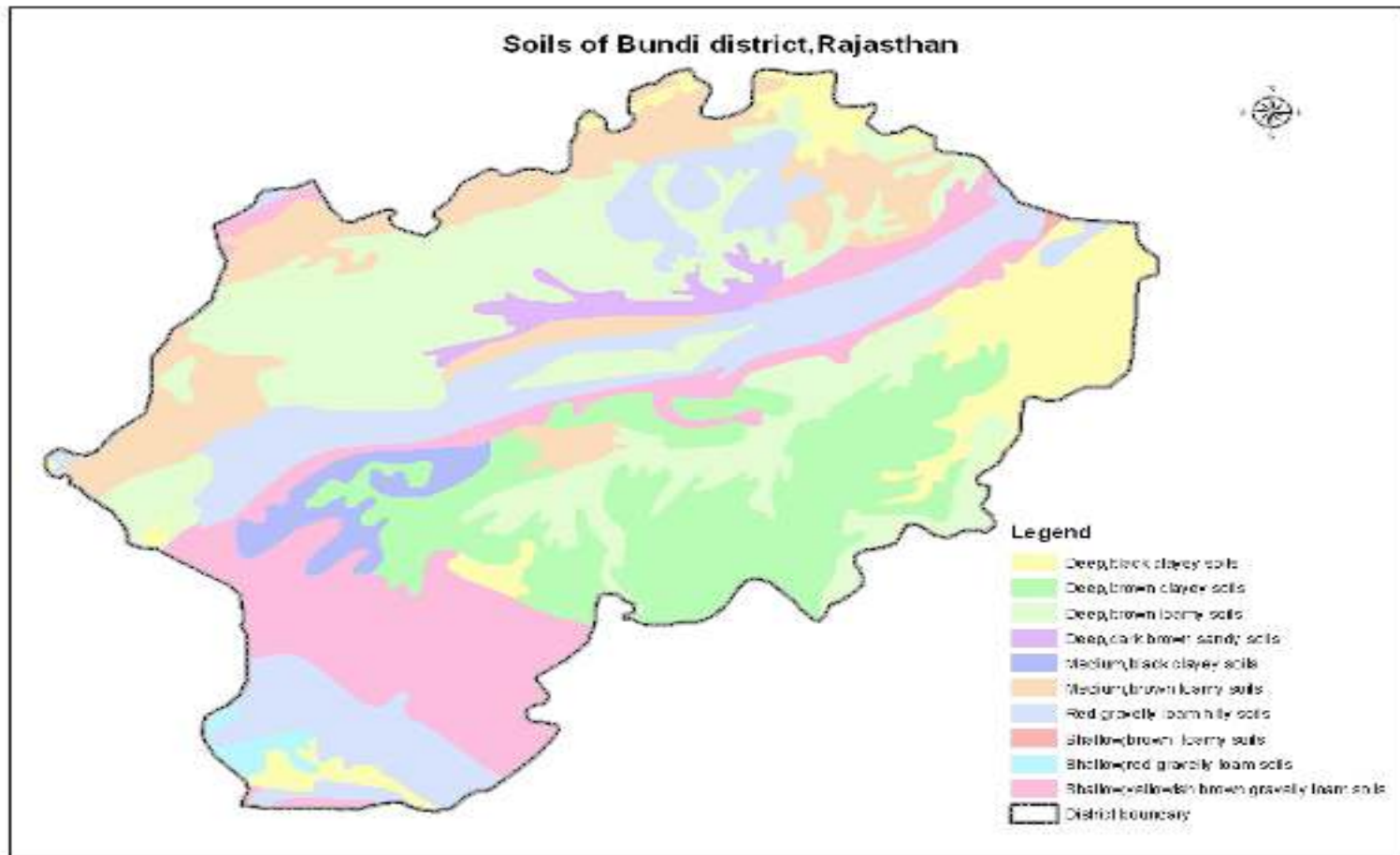
Annexure 1
Location map of Baran district



Annexure 2
Mean monthly rainfall graph of Bundi district



Annexure 3
Soil map



Source: NBSS&LUP, Regional Centre, Udaipur

2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation (kharif)

Condition	Major Farming situation ^a	Normal Crop / Cropping system ^b	Suggested Contingency measures		
			Change in crop / cropping system ^c including variety	Agronomic measures ^d	Remarks on Implementation ^e
Delay by 2 weeks (July 2 nd week)	Deep brown loamy	Soybean (JS 335, NRC-37, MACS-450, JS 93-05, Pratap Soya-1,	Soybean (JS 93-05, JS 95-60, Pratap Soya-1, Pratap soya-2, Pratap Raj-24	• Intercropping of soybean +maize (4:2)	<ul style="list-style-type: none"> • Link RSSC/NSC/ other agencies for good quality seed • Link NFSM, and other agencies to procure seeding equipments
		Maize (Navjyot, Pratap hybrid Makka-1, Pratap Makka-3, PEHM 2,	Maize (Pratap hybrid Makka-1, Pratap Makka-3, Pratap Makka- 5, PEHM 2, Mahi Kanchan)	• Intercropping of soybean +maize (4:2) • Dry Sowing	
		Urdbean (Krishna, T-9, PU-19)	Urdbean (Krishna, T-9, PU-19, KU 96-3)	-	
		Mungbean K 851, ML-267	Mungbean K 851, ML-267	-	
		Sesamum (TC25, Pratap, RT-103, RT 46, RT 123,)	Sesamum (TC25, Pratap, RT-103, RT 46, RT 123, RT 125, RT-127)		

Condition	Major Farming situation ^a	Normal Crop / Cropping system ^b	Suggested Contingency measures		
			Change in crop / cropping system ^c including variety	Agronomic measures ^d	Remarks on Implementation ^e
Delay by 2 weeks (July 2 nd week)	Deep brown clayey	Soybean (JS 335, NRC-37, MACS-450, JS 93-05, Pratap Soya-1,	Soybean (JS 93-05, JS 95-60, Pratap Soya-1, Pratap soya-2, Pratap Raj-24	• Intercropping of soybean +maize (4:2)	<ul style="list-style-type: none"> • Link RSSC/NSC/ other agencies for good quality seed • Availability of seed drill for inter cropping can be procured from other schemes of farm machinery
		Maize (Navjyot, Pratap hybrid Makka-1, Pratap Makka-3, PEHM 2,	Maize (Pratap hybrid Makka-1, Pratap Makka-3, Pratap Makka- 5, PEHM 2, Mahi Kanchan)	• Intercropping of soybean +maize (4:2) • Dry Sowing	
		Urdbean (Krishna, T-9, PU-19)	Urdbean (Krishna, T-9, PU-19, KU 96-3)	-	
		Mungbean K 851, ML 267	Mungbean K 851, ML 267	-	

		Sesamum (TC25, Pratap, RT-103, RT 46, RT 123,)	Sesamum (TC25, Pratap, RT-103, RT 46, RT 123, RT 125, RT-127)		
Delay by 2 weeks (July 2 nd week)	Medium brown loamy	Soybean (JS 335, NRC-37, MACS-450, JS 93-05, Pratap Soya-1,	Soybean (JS 93-05, JS 95-60, Pratap Soya-1, Pratap soya-2, Pratap Raj-24	• Intercropping of soybean +maize (4:2)	
		Maize (Navjyot, Pratap hybrid Makka-1, Pratap Makka-3, PEHM 2,	Maize (Pratap hybrid Makka-1, Pratap Makka-3, Pratap Makka-5, PEHM 2, Mahi Kanchan)	• Intercropping of soybean +maize (4:2) • Dry Sowing	
		Urdbean (Krishna, T-9, PU-19)	Urdbean (Krishna, T-9, PU-19, KU 96-3)	-	
		Mungbean K 851, ML-267	Mungbean K 851, ML-267	-	
		Sesamum (TC25, Pratap, RT-103, RT 46, RT 123,)	Sesamum (TC25, Pratap, RT-103, RT 46, RT 123, RT 125, RT-127)	-	

Delay by 2 weeks (July 2 nd week)	Shallow yellowish brown gravelly loam	Maize (Navjyot, Pratap hybrid Makka-1, Pratap Makka-3, PEHM 2,	Maize (Pratap hybrid Makka-1, Pratap Makka-3, PEHM 2) or Soybean (JS 93-05, JS 95-60)	• Intercropping of maize + soybean/cowpea (2:4) • Dry Sowing of maize	
		Urdbean (Krishna, T-9, PU-19)	Urdbean (Krishna, T-9, PU-19, KU 96-3)	-	
		Mungbean K 851	Mungbean (K 851)	-	
		Sesamum (TC25, Pratap, RT-103, RT 46, RT 123,)	Sesamum (TC25, Pratap, RT 46, RT 123, RT 125, RT-127)	-	
	Deep black clayey	Soybean (JS 335, PK-472, NRC-37, MACS-450, JS 93-05, Pratap Soya-1,	Soybean (JS 93-05, JS 95-60, Pratap Soya-1, Pratap soya-2, Pratap Raj-24	• Intercropping of soybean +maize (4:2)	
		Maize (Navjyot, Pratap hybrid Makka-1, Pratap Makka-3, PEHM 2,	Maize (Pratap hybrid Makka-1, Pratap Makka-3, Pratap Makka-5, PEHM 2, Mahi Kanchan)	• Intercropping of soybean +maize (4:2) • Dry Sowing	
		Urdbean (Krishna, T-9, PU-19)	Urdbean (Krishna, T-9, PU-19, KU 96-3)	-	

		Mungbean K 851	Mungbean (K 851)	-	
		Sesamum (TC25, Pratap, RT-103, RT 46, RT 123, RT 125, RT -127)	Sesamum (Pratap, RT 46, RT 125, RT-127)	-	

Condition	Major Farming situation ^a	Normal Crop/cropping system ^b	Suggested Contingency measures		
			Change in crop/cropping system ^c	Agronomic measures ^d	Remarks on Implementation ^e
Early season drought (delayed onset) Delay by 4 weeks (July 4 th week)	Deep brown loamy	Soybean (JS 335, JS 93-05, Pratap Soya-1)	Soybean (JS 93-05, JS 95-60) Or Urdbean (T-9, PU-19, KU-96-3) Or Sesamum (TC-25, RT-46, RT-123, RT-125)	• Use of 10-15% higher seed rate in soybean	• Link RSSC/NSC for seed supply and • NREGA, RKVY for Construction of Farm pond
		Urdbean (Krishna, T-9, PU-19)	Urdbean (Krishna, T-9, PU-19, KU 96-3)	-	
		Mungbean K 851, ML-267	Mungbean K 851, ML-267	-	
		Sesamum (TC25, Pratap, RT-103, RT 46, RT 123, RT 125)	Sesamum (RT 46, RT 123, RT 125, RT 127)	-	
	Deep brown clayey	Soybean (JS 335, JS 93-05, Pratap Soya-1)	Soybean (JS 93-05, JS 95-60) Or Urdbean (T-9, PU-19, KU-96-3) Or Sesamum (TC-25, RT-46, RT-123, RT-125)	• Use of 10-15% higher seed rate in soybean	
		Urdbean (Krishna, T-9, PU-19)	Urdbean (Krishna, T-9, PU-19, KU 96-3)	-	
		Mungbean K 851, ML-267	Mungbean K 851, ML-267	-	
		Sesamum (TC25, Pratap, RT-103, RT 46, RT 123, RT 125)	Sesamum (RT 46, RT 123, RT 125, RT 127)	-	
	Medium brown loamy	Soybean (JS 335, JS 93-05, Pratap Soya-1)	Soybean (JS 93-05, JS 95-60) Or Urdbean (T-9, PU-19, KU-96-3) Or Sesamum (TC-25, RT-46, RT-123, RT-125)	• Use of 10-15% higher seed rate in soybean	
		Urdbean (Krishna, T-9, PU-19)	Urdbean (Krishna, T-9, PU-19, KU 96-3)	-	
		Mungbean K 851, ML-267	Mungbean K 851, ML-267	-	

		Sesamum (TC25, Pratap, RT-103, RT 46, RT 123, RT 125)	Sesamum (RT 46, RT 123, RT 125, RT 127)	-	
	Shallow yellowish brown gravelly loam	Urdbean (Krishna, T-9, PU-19,)	Urdbean (T-9, PU-19, KU-96-3)	• Use of 10-15% higher seed rate in soybean	
		Mungbean K 851, ML-267	Mungbean K 851, ML-267	-	
		Sesamum (TC25, Pratap, RT-103, RT 46, RT 123, RT 125)	Sesamum (TC-25, RT-103, RT 46, RT 123, RT 125, RT 127)	-	
	Deep black clayey	Soybean (JS 335)	Soybean (JS 93-05, JS 95-60) Or Urdbean (T-9, PU-19, KU-96-3)	• Use of 10-15% higher seed rate in soybean	
		Urdbean (Krishna, T-9, PU-19, KU 96-3)	Urdbean (Krishna, T-9, PU-19, KU 96-3)	-	
		Mungbean K 851, ML-267	Mungbean K 851, ML-267	-	
		Sesamum (TC25, Pratap, RT-103, RT 46, RT 123, RT 125)	Sesamum (TC-25, RT-103, RT 46, RT 123, RT 125)	-	

Condition	Major Farming situation ^a	Normal Crop/cropping system ^b	Suggested Contingency measures		
			Change in crop/cropping system ^c	Agronomic measures ^d	Remarks on Implementation ^e
Early season drought (delayed onset)	Deep brown loamy	Fallow-Mustard	Sorghum Fodder (Raj Chari-1, Raj Chari-2, Pratap Chari-1080, SSG-59-3)- Fallow or Mungbean (K-851, RMG-62) - Fallow or Fallow – Toria/Taramira/ Mustard/ Gram/ Coriander /linseed on conserved moisture	<ul style="list-style-type: none"> • Use of bakkhar for field moisture conservation • Field bunding 	<ul style="list-style-type: none"> • Link RSSC/NSC for seed supply and NREGA, RKVY for Construction of Farm pond
	Deep brown clayey	Fallow-Mustard	Sorghum Fodder (Raj Chari-1, Raj Chari-2, Pratap Chari-1080, SSG-59-3) or Mungbean (K-851, RMG-62) or Fallow – Toria/Taramira/ Mustard/ Gram/ Coriander on conserved moisture	<ul style="list-style-type: none"> • Use of bakkhar for field moisture conservation • Field bunding 	
	Medium brown loamy	Fallow-Mustard	Sorghum Fodder (Raj Chari-1, Raj Chari-2, Pratap Chari-1080, SSG-59-3)- Fallow or Mungbean (K-851, RMG-62) - Fallow or Fallow – Toria/Taramira/ Mustard/ Gram/ Coriander/linseed on conserved moisture	<ul style="list-style-type: none"> • Use of bakkhar for field moisture conservation • Field bunding 	

	Shallow yellowish brown gravelly loam	Fallow-Mustard	Fallow – Toria/Taramira/ Mustard/Gram/Coriander/ Lentil on conserved moisture	<ul style="list-style-type: none"> • Use of bakkhar for field moisture conservation • Field bunding 	
	Deep black clayey	Fallow-Mustard	Sorghum Fodder (Raj Chari-1, Raj Chari-2, Pratap Chari-1080, SSG-59-3)- Fallow or Mungbean (K-851, RMG-62) - Fallow or Fallow – Toria/Taramira/ Mustard/ Gram/ Coriander/linseed on conserved moisture	<ul style="list-style-type: none"> • Use of bakkhar for field moisture conservation • Field bunding 	

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming situation^a	Normal Crop/cropping system^b	Change in crop/cropping system^c	Agronomic measures^d	Remarks on Implementation^e
Delay by 8 weeks (Aug 4 th week)	Deep brown loamy	Fallow-Mustard	Fallow – Toria/Taramira/ Mustard/Gram/Coriander/ Lentil/Linseed on conserved moisture	<ul style="list-style-type: none"> • Use of bakkhar for field moisture conservation • Field bunding 	<ul style="list-style-type: none"> • Link RSSC/NSC for seed supply and NREGA, RKVY for Construction of Farm pond
	Deep brown clayey	Fallow-Mustard	Fallow – Toria/Taramira/ Mustard/Gram/Coriander/ Lentil/Linseed on conserved moisture	<ul style="list-style-type: none"> • Use of bakkhar for field moisture conservation • Field bunding 	
	Medium brown loamy	Fallow-Mustard	Fallow – Toria/Taramira/ Mustard/Gram/Coriander/ Lentil/Linseed on conserved moisture	<ul style="list-style-type: none"> • Use of bakkhar for field moisture conservation • Field bunding 	
	Shallow yellowish brown gravelly loam	Fallow-Mustard	Fallow – Toria/Taramira/ Mustard/Gram/Coriander/ Lentil/Linseed on conserved moisture	<ul style="list-style-type: none"> • Use of bakkhar for field moisture conservation • Field bunding 	
	Deep black clayey	Fallow-Mustard	Fallow – Toria/Taramira/ Mustard/Gram/Coriander/ Lentil/Linseed on conserved moisture	<ul style="list-style-type: none"> • Use of bakkhar for field moisture conservation • Field bunding 	

Condition	Major Farming situation ^a	Normal Crop/cropping system ^b	Suggested Contingency measures		
			Crop management ^c	Soil nutrient & moisture conservation measures	Remarks on Implementation ^e
Early season drought (Normal onset)	Deep brown loamy	Soybean	<ul style="list-style-type: none"> If germination is less than 50% then farmers should go for re-sowing with early maturing varieties using 25% higher seed rate if plant population is more than 75% go for gap filling. 	<ul style="list-style-type: none"> Hoing by hand hoe to develop soil mulch Removal of weeds in time. <i>In situ</i> mulching of weeds 	<ul style="list-style-type: none"> Crop insurance Availability of inter-culture implements i.e. wheel hand hoe through RKVY
		Maize	<ul style="list-style-type: none"> If germination is less than 50% then go for gap filling with urdbean/moonbeam if plant population is more than 75% go for transplanting of thinned plants 	<ul style="list-style-type: none"> Hoing by hand hoe to develop soil mulch Removal of weeds in time. <i>In situ</i> mulching of weeds 	
		Urdbean/Mungbean	<ul style="list-style-type: none"> If germination is less than 50% then go for re-sowing with early maturing varieties 	<ul style="list-style-type: none"> Hoing by hand hoe to develop soil mulch Removal of weeds in time. <i>In situ</i> mulching of weeds 	
		Sesamum	<ul style="list-style-type: none"> If germination is less than 50% then go for gap filling 	<ul style="list-style-type: none"> Hoing by hand hoe to develop soil mulch Removal of weeds in time. <i>In situ</i> mulching of weeds 	
	Deep brown clayey	Soybean	<ul style="list-style-type: none"> If germination is less than 50% then farmers should go for re-sowing with early maturing varieties using 25% higher seed rate if plant population is more than 75% go for gap filling. 	<ul style="list-style-type: none"> Hoing by hand hoe to develop soil mulch Removal of weeds in time. <i>In situ</i> mulching of weeds 	
		Maize	<ul style="list-style-type: none"> If germination is less than 50% then go for gap filling with urdbean/mungbean if plant population is more than 75% go for transplanting of thinned plants 	<ul style="list-style-type: none"> Hoing by hand hoe to develop soil mulch Removal of weeds in time. <i>In situ</i> mulching of weeds 	
		Urdbean/	<ul style="list-style-type: none"> If germination is less than 50% 	<ul style="list-style-type: none"> Hoing by hand hoe to develop 	

		Mungbean	then go for re-sowing with early maturing varieties	soil mulch <ul style="list-style-type: none"> • Removal of weeds in time. • <i>In situ</i> mulching of weeds
		Sesamum	<ul style="list-style-type: none"> • If germination is less than 50% then go for gap filling 	<ul style="list-style-type: none"> • Hoeing by hand hoe to develop soil mulch • Removal of weeds in time. • <i>In situ</i> mulching of weeds
	Medium brown loamy	Soybean	<ul style="list-style-type: none"> • If germination is less than 50% then farmers should go for re-sowing with early maturing varieties using 25% higher seed rate • If plant population is more than 75% go for gap filling. 	<ul style="list-style-type: none"> • Hoeing by hand hoe to develop soil mulch • Removal of weeds in time. • <i>In situ</i> mulching of weeds
		Maize	<ul style="list-style-type: none"> • If germination is less than 50% then go for gap filling with urdbean/mungbean • if plant population is more than 75% go for transplanting of thinned plants 	<ul style="list-style-type: none"> • Hoeing by hand hoe to develop soil mulch • Removal of weeds in time. • <i>In situ</i> mulching of weeds
		Urdbean/ Mungbean	<ul style="list-style-type: none"> • If germination is less than 50% then go for re-sowing with early maturing varieties 	<ul style="list-style-type: none"> • Hoeing by hand hoe to develop soil mulch • Removal of weeds in time. • <i>In situ</i> mulching of weeds
		Sesamum	<ul style="list-style-type: none"> • If germination is less than 50% then go for gap filling 	<ul style="list-style-type: none"> • Hoeing by hand hoe to develop soil mulch • Removal of weeds in time. • <i>In situ</i> mulching of weeds
	Shallow yellowish brown gravelly loam	Soybean	<ul style="list-style-type: none"> • If germination is less than 50% then farmers should go for re-sowing with early maturing varieties using 25% higher seed rate • if plant population is more than 75% go for gap filling. 	<ul style="list-style-type: none"> • Hoeing by hand hoe to develop soil mulch • Removal of weeds in time. • <i>In situ</i> mulching of weeds • Life saving irrigation
		Maize	<ul style="list-style-type: none"> • If germination is less than 50% then go for gap filling with urdbean/mungbean • if plant population is more then 	<ul style="list-style-type: none"> • Hoeing by hand hoe to develop soil mulch • Removal of weeds in time. • <i>In situ</i> mulching of weeds

			75% go for transplanting of thinned plants	<ul style="list-style-type: none"> • Life saving irrigation 	
		Urdbean/ Mungbean	<ul style="list-style-type: none"> • If germination is less than 50% then go for re-sowing with early maturing varieties 	<ul style="list-style-type: none"> • Hoeing by hand hoe to develop soil mulch • Removal of weeds in time. • In situ mulching of weeds 	
		Sesamum	<ul style="list-style-type: none"> • If germination is less than 50% then go for gap filling 	<ul style="list-style-type: none"> • Hoeing by hand hoe to develop soil mulch • Removal of weeds in time. • In situ mulching of weeds 	
	Deep black clayey	Soybean	<ul style="list-style-type: none"> • If germination is less than 50% then farmers should go for re-sowing with early maturing varieties using 25% higher seed rate • if plant population is more than 75% go for gap filling. 	<ul style="list-style-type: none"> • Hoeing by hand hoe to develop soil mulch • Removal of weeds in time. • <i>In situ</i> mulching of weeds 	
		Maize	<ul style="list-style-type: none"> • If germination is less than 50% then go for gap filling with urdbean/mungbean • if plant population is more than 75% go for transplanting of thinned plants 	<ul style="list-style-type: none"> • Hoeing by hand hoe to develop soil mulch • Removal of weeds in time. • In situ mulching of weeds 	
		Urdbean/ Mungbean	<ul style="list-style-type: none"> • If germination is less than 50% then go for re-sowing with early maturing varieties 	<ul style="list-style-type: none"> • Hoeing by hand hoe to develop soil mulch • Removal of weeds in time. • In situ mulching of weeds 	
		Sesamum	<ul style="list-style-type: none"> • If germination is less than 50% then go for gap filling 	<ul style="list-style-type: none"> • Hoeing by hand hoe to develop soil mulch • Removal of weeds in time. • In situ mulching of weeds 	

Condition			Suggested Contingency measures		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	Major Farming situation ^a	Normal Crop/ cropping system ^b	Crop management	Soil nutrient & moisture conservation measures ^d	Remarks on Implementation ^e
At vegetative stage	Deep brown loamy	Soybean	<ul style="list-style-type: none"> • Thinning of plants by 30 to 50% • Weeding & hoeing 	<ul style="list-style-type: none"> • Use of organic material as mulch • Use of anti-Transpirants like kaolin • Life saving irrigation from farm pond in Alternate rows 	Crop insurance Availability of inter-culture implements i.e. wheel hand hoe through RKVY Link watersheds,NREGA for the support of farm pond technology/water harvesting structures
		Maize	<ul style="list-style-type: none"> • Thinning of plants by 30 to 50% • Weeding & hoeing 	<ul style="list-style-type: none"> • Use of organic materials as mulch • Spray of 2% urea • Use of anti-transpirants like kaolin • Life saving Irrigation in alternate furrow system • Spray 2% urea 	
		Urdbean/ Mungbean	<ul style="list-style-type: none"> • Weeding & hoeing 	<ul style="list-style-type: none"> • Use of anti-transparent like kaolin. • Spray 2% urea 	
		Sesamum	<ul style="list-style-type: none"> • Weeding & hoeing 	<ul style="list-style-type: none"> • Use of anti-transpirants like kaolin. • Spray 2% urea 	
	Deep brown clayey	Soybean	<ul style="list-style-type: none"> • Thinning of plants by 30 to 50% • Weeding & hoeing 	<ul style="list-style-type: none"> • Use of organic material as mulch. • Use of anti-transpirants like kaolin. • Spray 2% urea • Life saving Irrigation in alternate furrow system 	
		Maize	<ul style="list-style-type: none"> • Thinning of plants by 30 to 50% • Weeding & hoeing 	<ul style="list-style-type: none"> • Use of organic material as mulch. • Spray of 2% urea • Use of anti-transpirants like kaolin. • Life saving Irrigation in alternate furrow system • Spray 2% urea 	

		Urdbean/ Mungbean	<ul style="list-style-type: none"> • Weeding & hoeing 	<ul style="list-style-type: none"> • Use of anti-transparent like kaolin.
		Sesamum	<ul style="list-style-type: none"> • Weeding & hoeing 	<ul style="list-style-type: none"> • Use of anti-transpirants like kaolin. • Life saving irrigation in alternate furrow system
	Medium brown loamy	Soybean	<ul style="list-style-type: none"> • Thinning of plants by 30 to 50% • Weeding & hoeing 	<ul style="list-style-type: none"> • Use of organic material as mulch. • Use of anti-transpirants like kaolin • Life saving Irrigatio in alternate furrow system
		Maize	-do-	<ul style="list-style-type: none"> • Use o organic materials as mulch • Spray of 2% urea • Use of anti-transpirants like kaolin • Life saving Irrigation in alternate furrows • Spray 2% urea
		Urdbean/ Mungbean	<ul style="list-style-type: none"> • Weeding & hoeing 	<ul style="list-style-type: none"> • Use of anti-transparent like kaolin.
		Sesamum	<ul style="list-style-type: none"> • Weeding & hoeing 	<ul style="list-style-type: none"> • Use of anti-transpirants like kaolin.
		Soybean	<ul style="list-style-type: none"> • Thinning of plants by 30 to 50% • Weeding & hoeing • 	<ul style="list-style-type: none"> • Use of organic materials as mulch. • Use of Life saving Irrigation • anti-transpirants like kaolin •
	Shallow yellowish brown gravelly loam	Maize	<ul style="list-style-type: none"> • Thinning of plants by 30 to 50% • Weeding & hoeing 	<ul style="list-style-type: none"> • Use of organic materials as mulch. • Use of anti-transpirants like kaolin • Life saving Irrigation in alternate furrows
		Urdbean/ Mungbean	<ul style="list-style-type: none"> • Weeding & hoeing 	<ul style="list-style-type: none"> • Use of anti-transparent like kaolin. • Spray 2% of urea

	Deep black clayey			<ul style="list-style-type: none"> • Life saving irrigation in alternate furrows
		Sesamum	<ul style="list-style-type: none"> • Weeding & hoeing 	<ul style="list-style-type: none"> • Use of anti-transpirants like kaolin.
		Soybean	<ul style="list-style-type: none"> • Thinning of plants by 30 to 50% • Weeding & hoeing 	<ul style="list-style-type: none"> • Use of organic materials as mulch. • Use of anti-transpirants like kaolin • Life saving Irrigation in alternate furrows
		Maize	-do-	<ul style="list-style-type: none"> • Use of organic materials as as mulch. • Spray of 2% urea • Use of anti-transpirants like kaolin • Life saving Irrigation in alternate furrows
		Urdbean/ Mungbean	<ul style="list-style-type: none"> • Weeding & hoeing 	<ul style="list-style-type: none"> • Use of anti-transparent like kaolin.
		Sesamum	<ul style="list-style-type: none"> • Weeding & hoeing 	<ul style="list-style-type: none"> • Use of anti-transpirants like kaolin.

Condition	Major Farming situation ^a	Normal Crop/cropping system ^b	Suggested Contingency measures		Remarks on Implementation ^e
			Crop management ^c	Soil nutrient & moisture conservation measues ^d	
Mid season drought (long dry spell)					
At flowering/ fruiting stage	Deep brown loamy	Soybean		<ul style="list-style-type: none"> • Spray of 0.1% thio urea • Life saving Irrigation in alternate furrows 	Link watersheds,NREGA for the support of farm pond technology/water harvesting structures
		Maize	<ul style="list-style-type: none"> • Removal of lower leaves for fodder • Harvest cobs for table purpose (if market is available) and for green fodder • Harvesting of green cobs and green fodder 	<ul style="list-style-type: none"> • Spray of 0.1% thio urea • Life saving Irrigation in alternate furrows 	
		Urdbean/ Mungbean		<ul style="list-style-type: none"> • Spray of 2.0% urea Life saving Irrigation by the harvested rainwater in 	

			alternate furrows
	Sesamum		Life saving Irrigation by the harvested rainwater
Deep brown clayey	Soybean		<ul style="list-style-type: none"> • Spray of 0.1% thio urea • Life saving Irrigation in alternate furrows
	Maize	<ul style="list-style-type: none"> • Removal of lower leaves for fodder • Harvest cobs for table purpose (if market is available) and for green fodder • Harvesting of green cobs and green fodder 	<ul style="list-style-type: none"> • Spray of 0.1% thio urea • Life saving Irrigation by the harvested rainwater in alternate furrows
	Urdbean/ Mungbean		<ul style="list-style-type: none"> • Spray of 2.0% urea • Life saving Irrigation by the harvested rainwater in alternate furrows
	Sesamum		Life saving Irrigation by the harvested rainwater in alternate furrows
Medium brown loamy	Soybean		<ul style="list-style-type: none"> • Spray of 0.1% thio urea • Life saving Irrigation in alternate furrow
	Maize	<ul style="list-style-type: none"> • Removal of lower leaves for fodder • Harvest cobs for table purpose (if market is available) and for green fodder • Harvesting of green cobs and green fodder 	<ul style="list-style-type: none"> • Spray of 0.1% thio urea • Life saving Irrigation by the harvested rainwater in alternate furrows
	Urdbean/ Mungbean		<ul style="list-style-type: none"> • Spray of 2.0% urea • Life saving Irrigation by the harvested rainwater in alternate furrows
	Sesamum		Life saving Irrigation by the harvested rainwater
Shallow yellowish brown gravelly loam	Soybean		<ul style="list-style-type: none"> • Spray of 0.1% thio urea • Life saving Irrigation in alternate furrows
	Maize	<ul style="list-style-type: none"> • Removal of lower leaves for fodder • Harvest cobs for table purpose (if market is available) and for green fodder 	<ul style="list-style-type: none"> • Spray of 0.1% thio urea • Life saving Irrigation by the harvested rainwater in alternate furrows

			<ul style="list-style-type: none"> Harvesting of green cobs and green fodder 		
		Urdbean/ Mungbean		<ul style="list-style-type: none"> Spray of 2.0% urea Life saving Irrigation by the harvested rainwater in alternate furrows 	
		Sesamum	<ul style="list-style-type: none"> Life saving Irrigation by the harvested rainwater 	Life saving Irrigation by the harvested rainwater	
	Deep black clayey	Soybean	<ul style="list-style-type: none"> Life saving Irrigation 	<ul style="list-style-type: none"> Spray of 0.1% thio urea Life saving Irrigation by the harvested rainwater in alternate furrows 	
		Maize	<ul style="list-style-type: none"> Removal of lower leaves for fodder Harvest cobs for table purpose (if market is available) and for green fodder Harvesting of green cobs and green fodder 	<ul style="list-style-type: none"> Spray of 0.1% thio urea Life saving Irrigation by the harvested rainwater in alternate furrows 	
		Urdbean/ Mungbean		<ul style="list-style-type: none"> Spray of 2.0% urea Life saving Irrigation by the harvested rainwater in alternate furrows 	
		Sesamum	<ul style="list-style-type: none"> Life saving Irrigation by the harvested rainwater 	Life saving Irrigation by the harvested rainwater in alternate furrows	

Condition	Major Farming situation ^a	Normal Crop/cropping system ^b	Suggested Contingency measures		
			Crop management ^c	Rabi Crop planning ^d	Remarks on Implementation ^e
Terminal drought (Early withdrawal of monsoon)	Deep brown loamy	Soybean	<ul style="list-style-type: none"> Life saving Irrigation by harvesting rainwater in alternate furrows 	If the damage will be severe, Plan for rabi crops rabi crops like chickpea, lentil and wheat	Link watersheds, NREG A for the support of farm pond technology/water harvesting structures
		Maize	<ul style="list-style-type: none"> Life saving Irrigation with the harvested rainwater in alternate furrows Removal of lower leaves for fodder Harvesting of green cobs and green fodder 	-do-	

		Urdbean/Mungbean	Harvesting at physiological maturity	-do-
		Sesamum	Harvesting at physiological maturity	-do-
	Deep brown clayey	Soybean	• Life saving Irrigation in alternate furrows	-do-
		Maize	• Life saving Irrigation by the harvested rainwater in alternate furrows • Removal of lower leaves for fodder • Harvesting of green cobs and green fodder	-do-
		Urdbean/ Mungbean	Harvesting at physiological maturity	-do-
		Sesamum	Harvesting at physiological maturity	-do-
		Soybean	• Life saving Irrigation in alternate furrows	-do-
	Medium brown loamy	Maize	• Life saving Irrigation by the harvested rainwater in alternate furrows • Removal of lower leaves for fodder • Harvesting of green cobs and green fodder	-do-
		Urdbean/Mungbean	Harvesting at physiological maturity	-do-
		Sesamum	Harvesting at physiological maturity	-do-
		Soybean	• Life saving Irrigation in alternate furrows	-do-
		Maize	• Life saving Irrigation by the harvested rainwater in alternate furrows • Removal of lower leaves for fodder • Harvesting of green cobs and green fodder	-do-
	Shallow yellowish brown gravelly loam	Urdbean/Mungbean	Harvesting at physiological maturity	-do-
		Sesamum	Harvesting at physiological maturity	-do-
		Soybean	• Life saving Irrigation in alternate furrows	-do-
		Maize	• Life saving Irrigation by the harvested rainwater in alternate furrows • Removal of lower leaves for fodder • Harvesting of green cobs and green fodder	-do-
		Urdbean/Mungbean	Harvesting at physiological maturity	-do-
	Deep black clayey	Sesamum	Harvesting at physiological maturity	-do-
		Soybean	• Life saving Irrigation in alternate furrows	-do-
		Maize	• Life saving Irrigation by the harvested rainwater in alternate furrows • Removal of lower leaves for fodder • Harvesting of green cobs and green fodder	-do-
Urdbean/ Mungbean		Harvesting at physiological maturity	-do-	
Sesamum		Harvesting at physiological maturity	-do-	

2.1.2 Drought - Irrigated situation

Condition	Suggested Contingency measures				
	Major Farming situation ^f	Normal Crop/cropping system ^g	Change in crop/cropping system ^h	Agronomic measures ⁱ	Remarks on Implementation ^j
Delayed release of water in canals due to low rainfall	Deep brown loamy	Soybean/ Maize-wheat	Soybean/Maize –wheat/ barley/gram/ coriander Wheat : Raj 3077, HI 8498, Raj 3765, Raj 4037, Raj 3777, HI 1531, LoK-1 Coriander : RCr-20, 436, 480, 684, CS-6 Gram : C-235, Dahod yellow, Pratap chana – 1, GNG 469, KAK 2 Barley: RD-2552, RD-2052	<ul style="list-style-type: none"> Irrigation at critical crop growth stages pressurized irrigation system (Sprinkler) 	If pond is available sowing can be done by harvested rain water Create awareness and skill improvement to the farmers through KVK and other related agencies
	Deep brown clayey	Soybean/ Maize-wheat	Soybean/Maize –wheat/ barley/gram/ coriander Wheat : Raj 3077, HI 8498, Raj 3765, Raj 4037, Raj 3777, HI 1531, LoK-1 Coriander : RCr-20, 436, 480, 684, CS-6 Gram : C-235, Dahod yellow, Pratap chana – 1, GNG 469, KAK 2 Barley: RD-2552, RD-2052	-do-	
		Paddy-wheat	Paddy-Wheat Wheat: Raj-3777, Lok-1, Raj-3765	<ul style="list-style-type: none"> Irrigation at critical crop growth stages pressurized irrigation system (Sprinkler) Use of Roto till drill for sowing 	
	Medium brown loamy	Soybean/ Maize-wheat	Soybean/Maize –wheat/ barley/gram/ coriander Wheat : Raj 3077, HI 8498, Raj 3765, Raj 4037, Raj 3777, HI 1531, LoK-1 Coriander : RCr-20, 436, 480, 684, CS-6 Gram : C-235, Dahod yellow, Pratap chana – 1, GNG 469, KAK 2 Barley: RD-2552, RD-2052	<ul style="list-style-type: none"> Irrigation at critical crop growth stages pressurized irrigation system (Sprinkler) 	
	Shallow yellowish brown gravelly loam	Soybean/Maize-wheat	Soybean/Maize –wheat/ barley/gram/ coriander Wheat : Raj 3077, HI 8498, Raj 3765, Raj 4037, Raj 3777, HI 1531, LoK-1 Coriander : RCr-20, 436, 480, 684, CS-6 Gram : C-235, Dahod yellow, Pratap chana – 1, GNG 469, KAK 2	<ul style="list-style-type: none"> Irrigation at critical crop growth stages pressurized irrigation system (Sprinkler) 	

Condition	Suggested Contingency measures				
	Major Farming situation ^f	Normal Crop/cropping system ^g	Change in crop/cropping system ^h	Agronomic measures ⁱ	Remarks on Implementation ^j
			Barley: RD-2552, RD-2052		
	Deep black clayey	Soybean/Maize-wheat	Soybean/Maize –wheat/ barley/gram/ coriander Wheat : Raj 3077, HI 8498, Raj 3765, Raj 4037, Raj 3777, HI 1531, LoK-1 Coriander : RCr-20, 436, 480, 684, CS-6 Gram : C-235, Dahod yellow, Pratap chana – 1, GNG 469, KAK 2 Barley: RD-2552, RD-2052	-do-	
		Paddy-wheat	Paddy-Wheat Wheat: Raj-3777, Lok-1, Raj-3765	<ul style="list-style-type: none"> • Use of Roto till drill for sow ing • Irrigation at critical crop growth stages pressurized irrigation system (Sprinkler) 	

condition	Suggested Contingency measures				
	Major Farming situation ^f	Crop/cropping system ^g	Change in crop/cropping system ^h	Agronomic measures ⁱ	Remarks on Implementation ^j
Non release of water in canals under delayed onset of monsoon in catchment's	Deep brown loamy	Soybean/Maize-Wheat/Gram Or Fallow-Mustard	Soybean/Maize-Gram/ Coriander/ Or Fallow-Mustard/ Gram/ Coriander	<ul style="list-style-type: none"> • Irrigatio by sprinkler system if water is available from other sources • Soil stirring for dust mulch • Weed removal • Use of anti transpirant i.e. Kaolin • Spray of urea at 2-3% as per recommendation • Spray of thio urea 0.1% 	Link watersheds and NREGA for Construction of Rain water harvesting structures
	Deep brown clayey	Soybean/Maize-Wheat/Gram Or Fallow-Mustard Or Paddy-Fallow	Soybean/Maize-Gram/ Coriander/ Or Fallow-Mustard/ Gram/ Coriander Or Paddy-Lentil	<ul style="list-style-type: none"> • Irrigation by sprinkler irrigation system if water is available from other sources • Soil stirring for dust mulch • Weed removal • Use of anti transpirant i.e. Kaolin • Spray of urea at 2-3% as per recommendation • Spray of thio urea 0.1% 	

condition	Suggested Contingency measures				
	Major Farming situation ^f	Crop/cropping system ^g	Change in crop/cropping system ^h	Agronomic measures ⁱ	Remarks on Implementation ^j
	Medium brown loamy	Soybean/Maize-Wheat/Gram Or Fallow-Mustard	Soybean/Maize-Gram/ Coriander/ Or Fallow-Mustard/ Gram/ Coriander	<ul style="list-style-type: none"> • Irrigation by sprinkler irrigation system if water is available from other sources • Soil stirring for dust mulch • Weed removal • Use of anti transpirant i.e. Kaolin • Spray of urea at 2-3% as per recommendation • Spray of thio urea 0.1% 	
	Shallow yellowish brown gravelly loam	Soybean/Maize-Wheat/Gram Or Fallow-Mustard	Soybean/Maize-Gram/ Coriander/ Or Fallow-Mustard/ Gram/ Coriander	<ul style="list-style-type: none"> • Irrigation by Sprinkler irrigation system if water is available from other sources • Soil stirring for dust mulch • Weed removal • Use of anti transpirant i.e. Kaolin • Spray of urea at 2-3% as per recommendation • Spray of thio urea 0.1% 	
	Deep black clayey	Soybean/Maize-Wheat/Gram Or Fallow-Mustard Or Paddy-Fallow	Soybean/Maize-Gram/ Coriander/ Or Fallow-Mustard/ Gram/ Coriander Or Paddy-Lentil	<ul style="list-style-type: none"> • Irrigation by Sprinkler irrigation system if water is available from other sources • Soil stirring for dust mulch • Weed removal • Use of anti transpirant i.e. Kaolin • Spray of urea at 2-3% as per recommendation • Spray of thio urea 0.1% 	

Condition	Suggested Contingency measures				
	Major Farming situation ^f	Crop/cropping system ^g	Change in crop/cropping system ^h	Agronomic measures ⁱ	Remarks on Implementation ^j
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	Deep brown loamy	No Sowing and water is used for drinking of Animals and other domestic use	If adequate moisture is available for germination sowing of crops i.e. mustard, Gram, Lentil, Taramira in Tank beds	<ul style="list-style-type: none"> • Soil stirring for dust mulch • Weed removal • Use of anti transpirant i.e. Kaolin • Spray of urea @ 2-3% as per recommendation • Spray of thio urea 0.1% 	Deepening of Tanks under NREGA if tanks are kept fallow
	Deep brown clayey	No Sowing and water is used for drinking of	If adequate moisture is available for germination	<ul style="list-style-type: none"> • Soil stirring for dust mulch • Weed removal 	

Condition	Suggested Contingency measures				
	Major Farming situation ^f	Crop/cropping system ^g	Change in crop/cropping system ^h	Agronomic measures ⁱ	Remarks on Implementation ^j
		Animals and other domestic use	sowing of crops i.e. mustard, Gram, Lentil, Taramira in Tank beds	<ul style="list-style-type: none"> • Use of anti transpirant i.e. Kaolin • Spray of urea @ 2-3% as per recommendation • Spray of thio urea 0.1% 	
	Medium brown loamy	No Sowing and water is used for drinking of Animals and other domestic use	If adequate moisture is available for germination sowing of crops i.e. mustard, Gram, Lentil, Taramira in Tank beds	<ul style="list-style-type: none"> • Soil stirring for dust mulch • Weed removal • Use of anti transpirant i.e. Kaolin • Spray of urea @ 2-3% as per recommendation • Spray of thio urea 0.1% 	
	Shallow yellowish brown gravelly loam	No Sowing and water is used for drinking of Animals and other domestic use	If adequate moisture is available for germination sowing of crops i.e. mustard, Gram, Lentil, Taramira in Tank beds	<ul style="list-style-type: none"> • Soil stirring for dust mulch • Weed removal • Use of anti transpirant i.e. Kaolin • Spray of urea @ 2-3% as per recommendation • Spray of thio urea 0.1% 	
	Deep black clayey	No Sowing and water is used for drinking of Animals and other domestic use	If adequate moisture is available for germination sowing of crops i.e. mustard, Gram, Lentil, Taramira in Tank beds	<ul style="list-style-type: none"> • Soil stirring for dust mulch • Weed removal • Use of anti transpirant i.e. Kaolin • Spray of urea @ 2-3% as per recommendation • Spray of thio urea 0.1% 	

Condition	Suggested Contingency measures				
	Major Farming situation ^f	Crop/cropping system ^g	Change in crop/cropping system ^h	Agronomic measures ⁱ	Remarks on Implementation ^j
Insufficient groundwater recharge due to low rainfall	Deep brown loamy	Soybean/Maize-Wheat	Soybean/Maize-Gram/Coriander/Linseed/Lentil/Mustard/Durum Wheat	<ul style="list-style-type: none"> • Irrigation by pressurized irrigation system (DRIP or Sprinkler) • If one irrigation apply at CRI stage in wheat, if two apply at CRI and Flowering • Soil stirring for dust mulch • Timely weed removal • Use of Anti Transpirant i.e. Keoline • Spray of Thiourea 0.1% 	<ul style="list-style-type: none"> • Rain water harvesting and Recharge of dead Wells from NREGA

2.2 Un-timely (unseasonal) rains- Situation does not exist

Condition	Suggested contingency measure			
	Vegetative stage ^k	Flowering stage ^l	Crop maturity stage ^m	Post harvest ⁿ
Continuous high rainfall in a short span leading to water logging				
Horticulture		NA		
Vegetables		NA		
Heavy rainfall with high speed winds in a short span ²		NA		

2.3 Floods

Condition	Suggested contingency measure ^o			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Transient water logging/ partial inundation ¹				
Soybean	<ul style="list-style-type: none"> Drain excess water by proper drainage Intercultivation with hoe to improve the aeration and to control weeds Apply 20kg N/ha at optimum moisture content 	<ul style="list-style-type: none"> Drain excess water by proper drainage Intercultivation with hoe to improve soil aeration and to control weeds Apply multi nutrient or hormonal spray Planofix to promote flowering 	<ul style="list-style-type: none"> Drain excess water by proper drainage as early as possible Harvest at physiological maturity on clear sunny day 	Dry the produce up to 10-12% moisture level before storage /bagging
Maize	<ul style="list-style-type: none"> Drain excess water by proper drainage Earthing up of crop for anchorage Intercultivation with hoe to improve the aeration and to control weeds Apply 20kg N/ha at optimum moisture content 	<ul style="list-style-type: none"> Drain excess water by proper drainage Earthing up of crop for anchorage Intercultivation with hoe to improve soil aeration and to control weeds Apply multi nutrient or hormonal spray to promote flowering 	<ul style="list-style-type: none"> Drain excess water by proper drainage as early as possible Harvest green cobs from dislodged plants for immediate marketing Shift the produce into the shed 	Harvest the cobs after they are dried up properly Dry the grains up to 10-12% moisture level before storage /bagging
Paddy	<ul style="list-style-type: none"> Drain excess water by proper drainage Take up gap filling either with available nursery or from 	<ul style="list-style-type: none"> Drain excess water by proper drainage Need based micronutrient spray 	Tie the group of fallen plants in small bundles to avoid grain damage in ear	Dry the grain up to 10-12% moisture level before storage /bagging Spray common salt (5%) on

	<p>splitting the tillers from the surviving hills</p> <ul style="list-style-type: none"> • Intercultivation with hoe to improve the aeration of soil and to control weeds • Apply 240 kg N/ha at optimum moisture content • Micro nutrient deficiency corrections for Zn and Fe foliar application of 0.2% of ZnSO₄, Fe SO₄ two to three times at 4-5 days interval 	<ul style="list-style-type: none"> • Apply 40-50kg N/ha as booster dose at optimum moisture content • Spray Zn SO₄ 0.2% if it is less than 45 days after transplanting 	<p>heads</p> <p>Protect against false smut and gain discoloration</p>	<p>panicles to prevent germination and spoilage of straw from the moulds</p> <p>Quick drying against discoloration</p>
Orchards	<p>Drain excess water from the basin/field</p> <p>Apply N10-20kgN/ha to regain vigor</p> <p>Need based plant protection</p>	<p>Drain excess water with proper drainage</p> <p>Application of N-fertilizers (10-20KgN/ha)</p> <p>Need based plant protection</p> <p>Spray planofix to promote flowering</p>	<p>Fruit harvest at proper stage</p>	<p>Grading , shorting and produce placed in proper way to avoid rotten</p>
Continuous submergence for more than 2 days²				
Soybean	<ul style="list-style-type: none"> • Drain excess water by proper drainage • Gap filling if the damage will be severe • Intercultivation with hoe to improve the aeration and to control weeds • Apply 20kg N/ha at optimum moisture content 	<ul style="list-style-type: none"> • Drain excess water by proper drainage • Intercultivation with hoe to improve soil aeration and to control weeds • Apply multi nutrient or hormonal spray • Planofix to promote flowering 	<ul style="list-style-type: none"> • Drain excess water by proper drainage as early as possible • Harvest at physiological maturity on clear sunny day 	<p>Dry the produce up to 10-12% moisture level before storage /bagging</p>
Maize	<ul style="list-style-type: none"> • Drain excess water by proper drainage • Gap filling with improved seed if the damage will be very severe • Intercultivation with hoe to improve the aeration and to control weeds • Apply 20kg N/ha at optimum moisture content 	<ul style="list-style-type: none"> • Drain excess water by proper drainage • Intercultivation with hoe to improve soil aeration and to control weeds • Apply multi nutrient or hormonal spray to promote flowering • Need based Micro nutrient spray 	<ul style="list-style-type: none"> • Drain excess water by proper drainage as early as possible • Harvest green cobs for marketing • Shift the produce into the shed 	<p>Dry the grains up to 10-12% moisture level before storage /bagging</p>

Paddy	<p>Drain excess water by proper drainage</p> <p>Intercultivation with hoe to improve the aeration of soil and to control weeds</p> <p>Apply 20kg N/ha at optimum moisture tent</p> <p>Micro nutrient deficiency corrections for Zn and Fe foliar application of 0.2% of ZnSO₄,Fe SO₄ two to three times at 4-5 days interval</p>	<ul style="list-style-type: none"> • Drain excess water by proper drainage • Apply 20kg-30 N/ha at optimum moisture content • Need based micronutrient spray 	<p>Tie the group of fallen plants in small bundles to avoid grain damage in ear heads</p> <p>Apply 20-30kgN/ha at optimum moisture content</p>	<p>Spray common salt (5%) on panicles to prevent germination and spoilage of straw from the moulds</p> <p>Quick drying against discoloration</p>
Orchards(Guava)	<p>Drain the excess water as soon as possible</p> <p>Spray 1% KNO₃ or Urea 2% solution 2-3 times.</p>	<p>Drain the excess water as soon as possible</p> <p>Spray 1% KNO₃ or Urea 2% solution 2-3 times.</p>	<p>Drain the excess water as soon as possible</p> <p>Harvest the mature produce as soon as possible.</p>	<p>Store the produce in well-ventilated place temporarily before it can be marketed. Market the produce as soon as possible.</p>
Sea water inundation³		NA		

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

Extreme event type	Suggested contingency measure ^f			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Heat Wave^p				
Mungbean/urdbean	Application of irrigation	Light and frequent irrigation	Light and frequent irrigation	Picking of pods at physiological maturity
Horticulture				
Tomato	Cultivation in control conditions	Light and frequent irrigation at evening	Light and frequent irrigation at evening	Picking of fruits at physiological maturity
Brinjal	Cultivation in control conditions	Light and frequent irrigation at evening	Light and frequent irrigation at evening	Picking of fruits at physiological maturity
Cucurbits	Cultivation in control conditions	Light and frequent irrigation at evening	Light and frequent irrigation at evening	Picking of fruits at physiological maturity

Okra	-	Light and frequent irrigation at evening	Light and frequent irrigation at evening	Picking of fruits at physiological maturity
Papaya	Cultivation in control conditions	Light and frequent irrigation at evening	Light and frequent irrigation at evening	Picking of fruits at physiological maturity
Cold wave^q	Situation rare exists in the district			
Wheat	-	<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	NA
Mustard	-	<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	NA
Gram	-	<ul style="list-style-type: none"> • Burning of farm waste for Smoke • light irrigation • Spray of sulphuric acid 0.1% 	<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	NA
Coriander	-	<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	NA
Horticulture				
Tomato	Cultivation in control conditions	<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	NA
Potato	-	<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	NA
Brinjal	Cultivation in control conditions	<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	NA
Papaya	Cultivation in control conditions	<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	NA
Frost				
Wheat	-	<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	NA
Mustard	-	<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	NA

Gram	-	<ul style="list-style-type: none"> • Burning of farm waste for Smoke • light irrigation • Spray of sulphuric acid 0.1% 	<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	NA
Coriander	-	<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	NA
Horticulture				
Tomato		<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	NA
Potato		<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	NA
Brinjal		<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	NA
Papaya	Cultivation in control conditions	<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	<ul style="list-style-type: none"> • Burning of farm waste for Smoke, • light irrigation • Spray of sulphuric acid 0.1% 	NA
Hailstorm	Not applicable			
Cyclone	Not applicable			

2.5 Contingent strategies for livestock, Poultry & Fisheries

2.5.1 Livestock

	Suggested contingency measures		
	Before the event	During the event	After the event
Drought			
Feed and Fodder availability	<p>As the district is occasionally prone to drought the under mentioned measures may be taken to enhance the availability of feed and fodder base at the village/ household level</p> <p>Sowing of horsegram/Lucerne etc., during NE monsoon</p> <p>Preservation green maize fodder as silage</p> <p>All the crop residues especially Bajra Karabi, paddy/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>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>Harvest and use all the failed crop (Maize, Blackgram, Sorghum, Ground nut, Cluster bean, Wheat, Barley, Green gram, Soybean 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>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>Subsidized loans should be provided to the livestock keepers for procurement of feed</p>	<p>Flushing the stock to recoup</p> <p>Replenish the feed and fodder banks</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 events</p>		
Floods	<p>Harvest all the possible wetted grain (Sorghum, 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> <ul 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</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</p>	<p>Feed the animals as per routine schedule</p> <p>Allow the animals for grazing (normal timings)</p>

	and putting down during night time)	heaters during cold waves In severe cases, vitamin 'C' and electrolytes should be added in H ₂ O 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 maize, 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 lime powder in pit
Floods			
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 bird	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 lime 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	Routine practices are followed

		electrolytes and vit. C In hot summer, add anti-stress probiotics in drinking 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/Aquaculture: Not Applicable