State: **ASSAM**

Agriculture Contingency Plan for District: **KARIMGANJ**

1.0 District Agriculture profile					
1.1	**Agro-Climatic/Ecological Zone**				
	Agro Ecological Sub Region (ICAR)	Brahmaputra plain and Barak valley,hot moist humid to per humid eco sub region.(15.3).			
	Agro-Climatic Zone (Planning Commission)	Eastern Himalayan Region (II)			
	Agro Climatic Zone (NARP)	Barak Valley Zone (AS-5)			
	List all the districts or part thereof falling under the NARP Zone	Cachar Karimganj Hailakandi			
	Geographic coordinates of district headquarters	**Latitude**	**Longitude**	**Altitude**	
		24°15´ - 25°54´ N	92°23´ - 92°30´ E	16 m AMSL	
	Name and address of the concerned **ZRS/ ZARS/ RARS/ RRS/ RRTTS**	RARS: Karimganj, Assam Agricultural University, District: Karimganj, PIN-788710(ASSAM)			
	Mention the KVK located in the district	Karimganj, District: Karimganj,PIN-788 710 (ASSAM)			

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):	2488.5	85	1st Week of June	last week of September
	NE Monsoon(Oct-Dec):	130.5	9	3rd Week of December	Last week of December
	Winter (Jan- March)	132.1	8		
	Summer (Apr-May)	892.4	32		
	Annual	3643.5	134		

1.3	**Land use pattern of the district** (latest statistics)	Geographical area (‘000 ha)	**Cultivable area (‘000 ha)**	**Forest area (‘000 ha)**	Land under non-agricultural use (‘000 ha)	Permanent Pastures (‘000 ha)	Cultivable wasteland (‘000 ha)	Land under Misc. tree crops and groves (‘000 ha)	Barren and uncultivable land (‘000 ha)	Current Fallows (‘000 ha)	Other fallows (‘000 ha)
	Area (‘000 ha)	180.9	96.29	**26.76**	24.58	2.71	2.1	8.4	14.5	2.50	5.16

1. 4	**Major Soils (common names like red sandy loam deep soils (etc.,)***	**Area (‘000 ha)**	**Percent (%) of total**
	1 Old mountain alluvium(texture varies from sandy or fine loamy to fine clayey)	42.633 Soil is deep and heavy textured varying from silty to clay loam with moderate organic matter content.	23.57
	2 Old riverine alluvium(texture varies from sandy to fine silty loam)	12.654 Sandy to fine silty loam, yearly deposit of silt is a regular feature in this region.	6.99
	3 Peat soil	6.296 High in pH, sometime up to 7.0, rich in organic matter, usually dark gray in colour and heavy in texture.	3.48
	4 Non-laterised red soil	64.929 Soil is silty to clay loam.	35.89
	5 Laterised red soil (Hills and forest soil)	54.338 The texture of the soil is sandy loam, rich in Fe and Al content and high in acidity.	30.04

*** mention colour, depth and texture (heavy, light, sandy, loamy, clayey etc) and give vernacular name, if any, in brackets (data source: Status Report For Barak Valley Zone, NARP).**

1.5	Agricultural land use	Area (‘000 ha)	Cropping intensity %
	Net sown area	68.55	140
	Area sown more than once	27.74	
	Gross cropped area	96.29	

1.6	Irrigation	Area (‘000 ha)		
	Net irrigated area	9.6		
	Gross irrigated area	14.04		
	Rainfed area	58.90		
	Sources of Irrigation	Number	**Area (‘000 ha)**	**% of total irrigated area**
	Canals			
	Tanks	281		
	Open wells	237		
	Bore wells	528		
	Lift irrigation schemes			
	Micro-irrigation			
	Other sources (please specify)			
	Total Irrigated Area	9600 ha		
	Pump sets	1046		
	No. of Tractors	103		
	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			
	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%**				

1.6. a.	**Fertilizer and Pesticides use**	Type	Total quantity (tonnes)
1	Fertilizers*	Urea DAP Potash SSP Other straight fertilizers (specify) Other complex fertilizers (specify)	351.62 (N) 67.21 (P) 80.43 (K)
2	Chemical Pesticides*	Insecticides Fungicides Weedicides Others (specify)	Data not available

* If break up is not available, indicate total quantity used in the district for any recent year, Source: DAO, Karimganj, 2010

1.7 Area under major field crops & horticulture (as per latest figures) (Specify year 2009-10)

1.7	**Major field crops cultivated**	**Area ('000 ha)**							
		Kharif			***Rabi***			**Summer**	**Grand total**
		Irrigated	**Rainfed**	**Total**	**Irrigated**	**Rainfed**	**Total**		
	Paddy		5.13	5.13		65.62	65.62	5.97	76.72
	Pigeon pea		0.05	0.05					0.05
	Black gram					0.03	0.03		0.03
	French bean & country bean					1.39	1.39		1.39
	Mustard					0.32	0.32		0.32
	Pea					0.30	0.30		0.30
	Sugarcane		0.29	0.29					
	Potato					1.94	1.94		1.94

1.7b	**Horticulture crops - Fruits**			
		Total	**Irrigated**	**Rainfed ('000 ha)**
	Pineapple	0.40		0.40
	Assam lemon	0.19		0.19
	Litchi	0.06		0.06
	Guava	0.04		0.04
	Jack fruit	0.35		0.35
	Mango	0.89		0.89
	Banana	0.35		0.35
	Papaya	0.08		0.08
	Orange	0.05		0.05
1.7c	**Horticulture crops - Vegetables**	**Total area ('000 ha)**	**Irrigated area ('000 ha)**	**Rainfed area ('000 ha)**
	Summer Vegetables	1.8		1.8
	Winter vegetables	2.8		2.8
Others (specify)	**Spices & Condiments**			
	Chilli	0.17		0.17
	Turmeric	0.25		0.25
	Ginger	0.12		0.12
	Black pepper	0.23		0.23
	Onion	0.03		0.03
1.7d	**Medicinal and**	**Total area ('000 ha)**	**Irrigated area ('000 ha)**	**Rainfed area ('000 ha)**

	Aromatic crops			
1.7e	**Plantation crops**	**Total area (‘000 ha)**	**Irrigated area (‘000 ha)**	**Rainfed area (‘000 ha)**
	Coconut	0.17		0.17
	Arecanut	0.82		0.82
	Eg., industrial pulpwood crops etc.			
1.7f	**Fodder crops**			
1.7g	**Grazing land**	**2.7**		**2.7**
1.7h	**Sericulture etc**	0.04		0.04
1.7i	**Others (specify)**			

1.8	**Livestock (in number)**	**Male (‘000)**	**Female (‘000)**	**Total (‘000)**
	Non descriptive Cattle (local low yielding)			31.45
	Crossbred cattle			15.11
	Non descriptive Buffaloes (local low yielding)			65.28
	Graded Buffaloes			
	Goat			125.59
	Sheep			16.13
	Others (Pig)			8.38
	Commercial dairy farms (Number)			-
1.9	**Poultry**	**No. of farms**	**Total No. of birds (‘000)**	
	Commercial	NA	-	
	Backyard		925.08	

1.10 Fisheries (Data source: Chief Planning Officer of district)

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**
	21275		**212**

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)	**21937.5**	**0.4**	**8.94**
Others			

1.11 Production and Productivity of major crops (2010-11)

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)										
	Autumn paddy			10368.816	2022			10368.816	2022	
	Winter paddy	114173.58	1740					114173.58	1740	
	Summer paddy					11243.712	1884	11243.712	1884	
	Pigeon pea	21.15	450					21.15	450	
	Black gram			15.3	450			15.3	450	
	French bean & Country bean			3055.8	2200			3055.8	2200	
	Mustard			161.50	500			161.50	500	
	Pea			150	500			150	500	
	Sugarcane	6099	21400					6099	21400	
	Potato			19420	10000			19420	10000	
Major Horticultural crops (Crops to be identified based on total acreage)										
	Summer vegetables					12852	7000	12852	7000	
	Winter			42135	15000			42135	15000	

	vegetables									
	chilli			90.18	540			90.18	540	
	Turmeric			4032	16000			4032	16000	
	Ginger			1035	9000			1035	9000	
	Black pepper			63.25	275			63.25	275	
	Onion			94.54	3260			94.54	3260	
	Arecanut			1600.95	1950			1600.95	1950	
	Coconut			336	2000			336	2000	
	Pineapple					13736	34000	13736	34000	
	Assam lemon					950	5000	950	5000	
	Litchi					290	5000	290	5000	
	Jack fruit					11960	33977.3	11960	33977.3	
	Mango					2411	2699.9	2411	2699.9	
	Guava			410	10000			410	10000	
	Banana			10560	30000			10560	30000	
	Papaya			2378	29000			2378	29000	
	Orange			490	10000			490	10000	

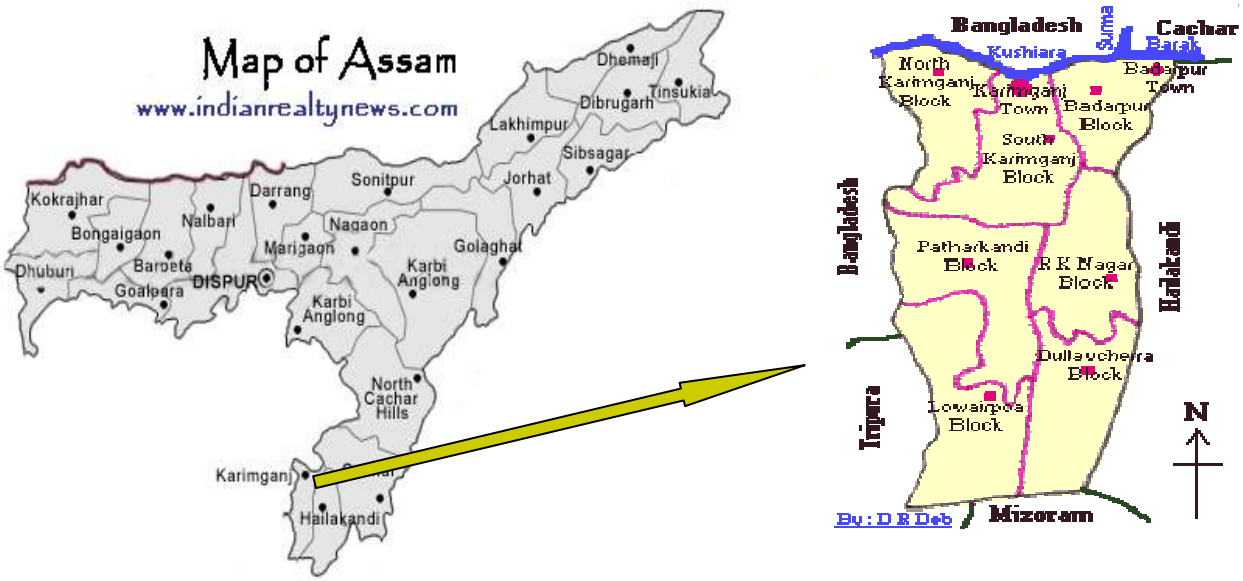
1.12	**Sowing window for 5 major field crops (start and end of normal sowing period)**	**Paddy**	**Rajmah**	**Potato**	**Mustard**	**Pea**
	Kharif- Rainfed	June-July	-	-	-	-
	Kharif-Irrigated	-	-	-	-	-
	Rabi- Rainfed	February-March	October-November	October-November	October-November	October-November
	Rabi-Irrigated	-	-	-	-	-
	Summer-irrigated		-	-	-	-
	Summer-rainfed	November-December	-	-	-	-

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)			

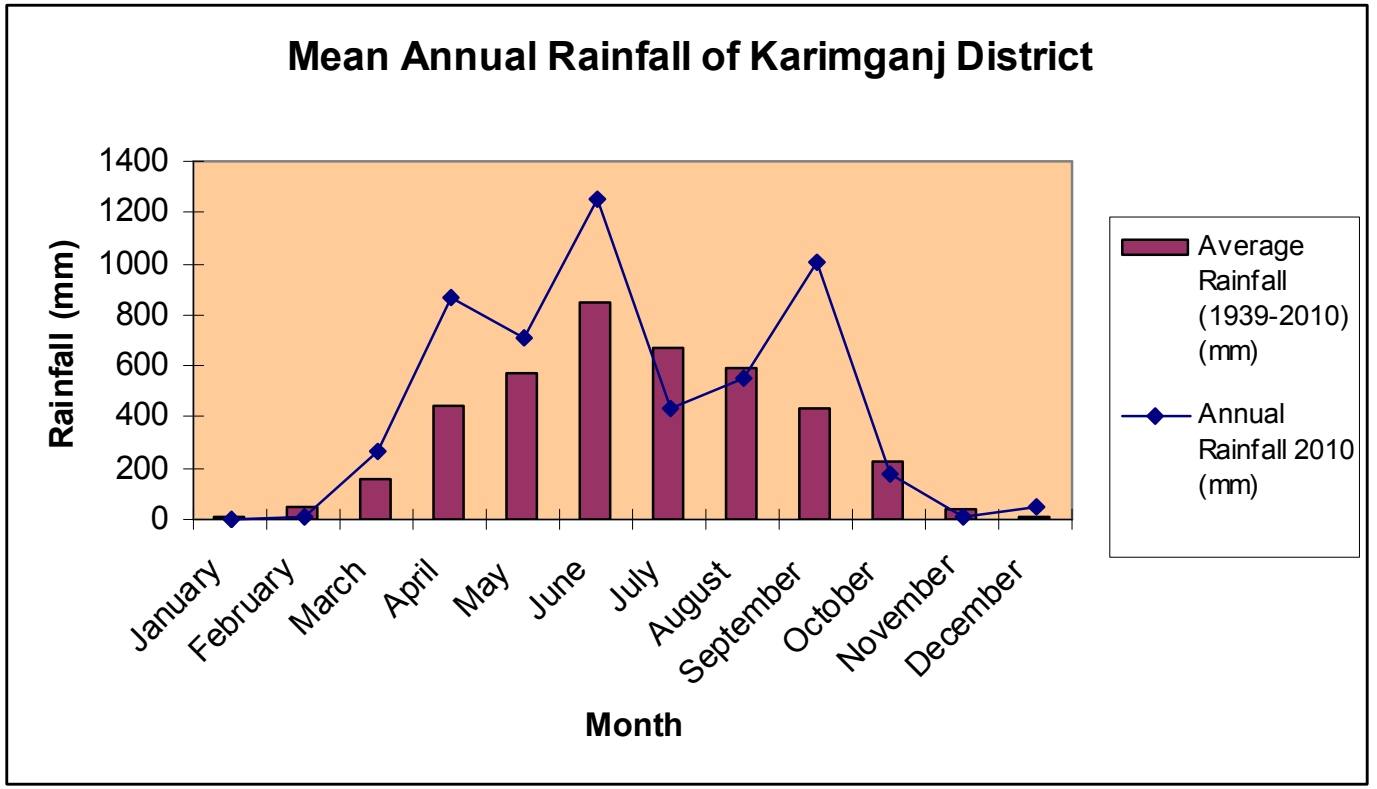
6 out of 10 years = Regular

1.14	**Include Digital maps of the district for**	Location map of district within State as Annexure I	Enclosed: Yes / No **Yes**
		Mean annual rainfall as Annexure 2	Enclosed: Yes / No **Yes**
		Soil map as Annexure 3	Enclosed: Yes / No **Yes**

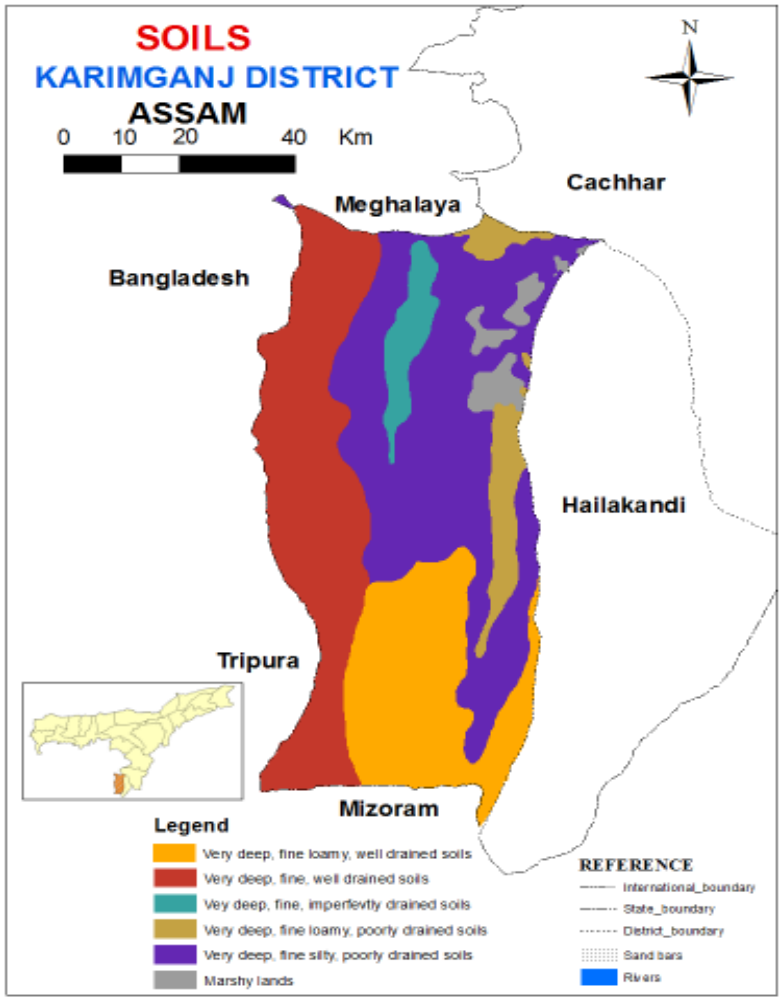
Annexure – 1: LOCATION MAP OF KARIMGANJ DISTRICT IN ASSAM



Annexure – 2: MEAN ANNUAL RAINFALL OF KARIMGANJ DISTRICT



Annexure – 3: SOIL MAP OF KARIMGANJ DISTRICT, ASSAM



Source: NBSS & LUP (ICAR),

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[a]**	**Normal Crop / Cropping system[b]**	**Change in crop / cropping system[c] including variety**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 2 weeks June 3rd week	Abundant & erratic rainfall shallow dark grey to brown soils (low land) & Deep dark grey to brown soils(Up & Medium land)	***Sali* rice (Mono crop-Low & medium land)** ***Sali* rice:** Ranjit, Bahadur, Pankaj, Kushal, Moniram.**Glutinous rice:**Gandhi Biroin (local).**Scented rice :**Badshabhog.	No change in crop/cropping system	Preparation of seed bed & main field immediately after rainfall. Rain water harvesting by 30 cm high bunding. Utilization of waters for irrigation from nearby beels, ponds, rivers, natural depressions etc. Keep constant visit in the field to check any cracks & crevices and take immediate measures by repairing/mud plastering. Number of seedlings per hill be increased to 3-4 with closer spacing of 15 cm x 10 cm.	Supply of seeds through National Calamity Relief Fund, National Disaster Management Fund. Procurement of certified seeds from ASC Ltd. & RARS, AAU. Supply of Water pumps, STW, LLP under RKVY.
		***Sali* rice - Oil seeds/pulses (medium land)** **For *Sali* rice Same as cropping system-1.** **Rapeseed:** TS-36, TS-38, TS-29, M-27.**Linseed**: T-397 & local. **Sesamum**: Madhavi, Gouri, Vinayak, Punjab tall No.1, RT-1.**Pulses**: **Rajmah** (Local, Uday, PDR-14), **Pea** (Azad P-1, T-163, Boneville, Local), **Black gram** (Local, T-9, T-27, KU-309).	No change in crop/cropping system	**For *Sali* rice Same as cropping system-1.** Early sowing of rapeseed. Soil & moisture conservation measures (Organic mulches + more FYM).Timely land preparation & sowing. Seed soaking for toria. Weeding & breaking of soil mulch by finger weeder. Ridge & furrow cultivation of Rajmah. Grow short duration pulses (Black gram, Rajmah, Pea etc.). Utilization of waters for irrigation from nearby *beels*, ponds, rivers, natural depressions etc.	Same as Cropping system-1. Supply of Finger weeder under RKVY. Supply of Water pumps, STW, LLP under RKVY.

		***Sali* rice-Winter vegetables(medium land)** **For *Sali* rice Same as cropping system-1.** **Winter Vegetables**: **Cabbage**: Drum head, Pride of India, Golden acre. **Cauliflower**: Snowball-16, Pusa snowball, Pusa Deepali (Early).**Tomato**: Arka Alok, Suraksha (Hybrid), Pusa ruby, local.**Brinjal**: JC-1, Pusa purple round, Pusa purple long, Pusa Kranti, Longai (Local). **Chilli**: Pusa Jwala, Krishna, local. **Coriander**: UP 41, Pusa 860, local selection. **Spinach**: All green, Pusa Jyoti, local. **Dolichus bean**: Pusa early profile, HD-18, local. **Potato**: Kufri chandramukhi, Kufri Jyoti, Kufri sindhuri.**Pumpkin**: Local. **Amaranthas**: Local. **Cow pea**: Pusa Barsati, local.	No change in crop / cropping system	**For *Sali* rice Same as cropping system-1.** Grow important early winter vegetables. Timely land preparation & sowing. Soil & Moisture conservation measures (Organic mulches + more FYM).Ridge & furrow cultivation. Utilization of waters for irrigation from nearby *beels*, ponds, rivers, natural depressions etc.	Same as Cropping system-1. Supply of Water pumps, STW, LLP under RKVY.
		***Sali* rice-*Boro* rice(low land)** **For *Sali* rice Same as cropping system-1.** ***Boro* rice:** Kanaklata, Chandrama Local (Rataboro, Kalaboro), Bishnu Prasad,IR-68.	No change in crop /cropping system	**For *Sali* rice Same as cropping system-1.** Timely land preparation, sowing & Transplanting. Rain water harvesting by raising the height of bund to 30 cm.	Same as Cropping system-1.
		***Sali* rice-*ahu* rice(low & medium land)** **For *Sali* rice Same as cropping system-1.** ***Ahu* rice** (Transplanted): Luit, Disang, Krishna, Gopinath, Jaya, Cauvery, IR-36, IR-50, Ratna, Culture-1, Soket-4. ***Ahu* rice** (Direct seeded): Koimurali. Luit.	No change in crop/cropping system	Timely land preparation, sowing & transplanting. Integrated weed management. Rain water harvesting by 30 cm high bunding. Utilization of waters for irrigation from nearby *beels*, ponds, rivers, natural depressions etc.Use of Drum seeder.	Same as Cropping system-1. Supply of Water pumps, Drum seeder, STW, LLP under RKVY.

		***Fallow* - *Boro* rice(Typical low land)** **For *Boro* rice Same as cropping system-4.**	No change in crop/cropping system	**For *Boro* rice Same as cropping system-4.**	Same as Cropping system-1.
		***Summer* vegetables - Winter vegetables (River bank, up land & medium land)** **Summer Vegetables**: **Okra** (Prabhani Kranti, Pusa Sawani, Arka anamika, local).**Cucumber** (Chinese green, Pusa sanyog, Poinsette, AAUC-1, AAUC-2, AAUC-3, AAUC-4, local).**Ridge gourd** (Pusa Nasdar, AAUJ-2, AAUJ-3, local).**Bitter gourd** (For spring season-Pusa Do Mausmi, Long green, local, Extra long. For summer-Monsoon monarch, Long green monsoon, Coimbatore long).**Bottle gourd**: Pusa summer prolific long, Pusa summer prolific round, local.**Snake gourd**: Long green, Long white, Extra long, local. **Winter Vegetables**: Same as Cropping System-3.	No change in crop /cropping system	Timely sowing & planting. Pitcher pot irrigation (conventional drip irrigation).Ensure stand establishment. Soil & Moisture conservation measures (Organic mulches + more FYM).Ridge & furrow cultivation. Utilization of waters for irrigation from nearby *beels*, ponds, rivers, natural depressions etc. **For Winter Vegetables**: Same as Cropping System-3.	Same as Cropping system-1.Supply of Water pumps, STW, LLP under RKVY.

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop / Cropping system[b]**	**Change in crop / cropping system[c] including variety**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 4 weeks July 1st week	Erratic rainfall shallow dark grey to brown soils (low land) & Deep dark grey to brown soils(Up & Medium land)	***Sali* rice (Mono crop-Low & medium land)** ***Sali* rice:** Pankaj,Lakhimi, Manoharsali, Andrewsali, Prafulla, Gitesh. **Glutinous rice:** Gandhi Biroin (local).**Scented rice:** Badshabhog.	No change in crop/cropping system	Preparation of seed bed & main field immediately after rainfall. Rain water harvesting by 30 cm high bunding. Utilization of waters for irrigation from nearby beels, ponds, rivers, natural depressions etc.Irrigate only 2-3 days after recession of ponded water. Care should be taken that cracks do not appear in the field. Divert some area from paddy to pulses and oil seeds in medium land. Keep constant visit in the field to check any cracks & crevices and take immediate measures by repairing/ mud plastering Number of seedlings per hill be increased to 4 – 5 with closer spacing of 15 cm x 10 cm. Use suitable short duration rice varieties either for direct sowing/transplanting. Grow seedlings accordingly. Apply whole of the fertilizers at the time of sowing/transplanting unlike normal condition. Topdress additional dose of 2-3 kg MOP per bigha in case of acute drought.	Supply of seeds through National Calamity relief fund, National disaster management fund. Procurement of certified seeds from ASC Ltd. & RARS, AAU. Supply of Water pumps, STW, LLP under RKVY.

		***Sali* rice - Oil seeds/pulses (medium land)** **For *Sali* rice Same as cropping system-1.** **Rapeseed:** TS-36, TS-38, TS-29, M-27.**Linseed**: T-397 & local. **Sesamum**: Madhavi, Gouri, Vinayak, Punjab tall No.1, RT-1.**Pulses**: **Rajmah** (Local, Uday, PDR-14), **Pea** (Azad P-1, T-163, Boneville, Local), **Black gram** (Local, T-9, T-27, KU-309).	No change in crop/cropping system	**For *Sali* rice Same as cropping system-1.** Early sowing of rapeseed. Soil & moisture conservation measures (Organic mulches + more FYM).Timely land preparation & sowing. Seed soaking for toria. Weeding & breaking of soil mulch by finger weeder. Ridge & furrow cultivation of Rajmah. Grow short duration pulses (Black gram, Rajmah, Pea etc.). Utilization of waters for irrigation from nearby *beels*, ponds, rivers, natural depressions etc. Soil compaction wherever possible.	Same as Cropping system-1. Supply of Finger weeder under RKVY. Supply of Water pumps, STW, LLP under RKVY.
		***Sali* rice-Winter vegetables(medium land)** **For *Sali* rice Same as cropping system-1.** **Winter Vegetables**: **Cabbage**: Drum head, Pride of India, Golden acre. **Cauliflower**: Snowball-16, Pusa snowball, Pusa Deepali (Early).**Tomato**: Arka Alok, Suraksha (Hybrid), Pusa ruby, local.**Brinjal**: JC-1, Pusa purple round, Pusa purple long, Pusa Kranti, Longai (Local). **Chilli**: Pusa Jwala, Krishna, local. **Coriander**: UP 41, Pusa 860, local selection. **Spinach**: All green, Pusa Jyoti, local. **Dolichus bean**: Pusa early profile, HD-18, local.	No change in crop/cropping system	**For *Sali* rice Same as cropping system-1.** Grow important early winter vegetables. Timely land preparation & sowing. Soil & Moisture conservation measures (Organic mulches + more FYM).Ridge & furrow cultivation. Utilization of waters for irrigation from nearby *beels*, ponds, rivers, natural depressions etc. Pitcher pot irrigation may be followed wherever possible.	Same as Cropping system-1. Supply of Water pumps, STW, LLP under RKVY.

		Potato: Kufri chandramukhi, Kufri Jyoti, Kufri sindhuri.**Pumpkin**: Local. **Amaranthas**: Local. **Cow pea**: Pusa Barsati, local.			
		***Sali* rice-*Boro* rice(low land)** **For *Sali* rice Same as cropping system-1.** ***Boro* rice:** Kanaklata, Chandrama Local (Rataboro, Kalaboro), Bishnu Prasad,IR-68.	No change in crop/cropping system	**For *Sali* rice Same as cropping system-1.** Timely land preparation, sowing & Transplanting. Rain water harvesting by 30 cm high bunding. Utilization of waters for irrigation from nearby *beels*, ponds, rivers, natural depressions etc. Preferably short duration HYV may be sown.	Same as Cropping system-1.
		***Sali* rice-*ahu* rice(low & medium land)** **For *Sali* rice Same as cropping system-1.** ***Ahu* rice** (Transplanted): Luit, Disang, Krishna, Gopinath, Jaya, Cauvery, IR-36, IR-50, Ratna, Culture-1, Soket-4. ***Ahu* rice** (Direct seeded): Koimurali. Luit.	No change in crop/cropping system	Timely land preparation, sowing & transplanting. Integrated weed management. Rain water harvesting by 30 cm high bunding. Utilization of waters for irrigation from nearby *beels*, ponds, rivers, natural depressions etc.Use of Drum seeder.	Same as Cropping system-1. Supply of Water pumps, Drum seeder, STW, LLP under RKVY.
		***Fallow* - *Boro* rice(Typical low land)** **For *Boro* rice Same as cropping system-4.**	No change in crop/cropping system	**For *Boro* rice Same as cropping system-4.**	Same as Cropping system-1.
		***Summer* vegetables - Winter vegetables (River bank, up land & medium land)** **Summer Vegetables**: **Okra** (Prabhani Kranti, Pusa Sawani, Arka anamika, local).**Cucumber** (Chinese green, Pusa sanyog, Poinsette, AAUC-1, AAUC-2,	No change in crop/cropping system	Timely sowing & planting. Pitcher pot irrigation (conventional drip irrigation).Ensure stand establishment. Soil & Moisture conservation measures (Organic mulches + more FYM).Ridge & furrow cultivation. Utilization of waters for irrigation from nearby *beels*, ponds,	Same as Cropping system-1.Supply of Water pumps, STW, LLP under RKVY.

		AAUC-3, AAUC-4, local).**Ridge gourd** (Pusa Nasdar, AAUJ-2, AAUJ-3, local).**Bitter gourd** (For spring season-Pusa Do Mausmi, Long green, local, Extra long. For summer-Monsoon monarch, Long green monsoon, Coimbatore long).**Bottle gourd**: Pusa summer prolific long, Pusa summer prolific round, local. **Snake gourd**: Long green, Long white, Extra long, local. **Winter Vegetables**: Same as Cropping System-3.		rivers, natural depressions etc. **For Winter Vegetables**: Same as Cropping System-3.	

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 **6 weeks** (Specify month) **July 3rd week**	**Abundant & erratic rainfall shallow dark grey to brown soils (low land) & Deep dark grey to brown soils(Up & Medium land)**	***Sali* rice (Mono crop-Low & medium land)** ***Sali* rice:** Pankaj,Lakhimi, Swarnaprova, Manoharsali, Andrewsali, Prafulla, Gitesh (as transplanted) ,Luit & Disang(as direct seeded)	No change in crop/cropping system	Preparation of seed bed & main field immediately after rainfall. Rain water harvesting by 30 cm high bunding. Utilization of waters for irrigation from nearby beels, ponds, rivers, natural depressions etc.Irrigate only 2-3 days after disappearance of ponded water. Care should be taken that cracks do not appear in the field. Divert some area from paddy to pulses and oil seeds in medium land, wherever possible. Apply enough organic matter. Keep constant visit in the field to check any cracks & crevices and take immediate measures by repairing/ mud plastering. Number of seedlings per hill be increased to 5-6 with closer spacing of 10 cm x 10 cm. Use aged seedlings of suitable varieties for delayed planting condition e.,g., Prafulla (75 d), Gitesh (60 d), Manoharsali (50 d) etc. Use suitable short duration rice varieties either for direct sowing/transplanting. Grow seedlings accordingly. Apply whole of the fertilizers at the time of sowing/transplanting unlike normal condition. Topdress additional dose of 2-3 kg MOP per bigha in case of acute drought.	Supply of seeds through National Calamity relief fund, National disaster management fund. Procurement of certified seeds from ASC Ltd. & RARS, AAU. Supply of Water pumps, STW, LLP under RKVY/Govt Schemes.

		***Sali* rice - Oil seeds/pulses (medium land)** **For *Sali* rice Same as cropping system-1.** **Toria/Rapeseed:** TS-36, TS-38, TS-46, M-27.**Linseed**: T-397 & local. **Sesamum**: Madhavi, Gouri, Vinayak, Punjab tall No.1, RT-1.**Pulses**: **Rajmah** (Local, Uday, PDR-14), **Pea** (Azad P-1, T-163, Boneville, Local), **Black gram** (Local, T-9, T-27, KU-309).	No change in crop/cropping system	**For *Sali* rice Same as cropping system-1.** Early sowing of rapeseed. Soil & moisture conservation measures (Organic mulches + more FYM).Timely land preparation & sowing. Seed soaking for toria. Weeding & breaking of soil mulch by finger weeder. Ridge & furrow cultivation of Rajmah. Grow short duration pulses (Black gram, Rajmah, Pea etc.). Utilization of water for irrigation from nearby *beels*, ponds, rivers, natural depressions etc. Use of black polythene mulch if possible. Soil compaction wherever possible.	Same as Cropping system-1. Supply of Finger weeder under RKVY. Supply of Water pumps, STW, LLP under RKVY/Govt Schemes.

		***Sali* rice-Winter vegetables(medium land)** **For *Sali* rice Same as cropping system-1.** **Winter Vegetables**: **Cabbage**: Drum head, Pride of India, Golden acre. **Cauliflower**: Snowball-16, Pusa snowball, Pusa Deepali (Early).**Tomato**: Arka Alok, Suraksha (Hybrid), Pusa ruby, local.**Brinjal**: JC-1, Pusa purple round, Pusa purple long, Pusa Kranti, Longai (Local). **Chilli**: Pusa Jwala, Krishna, local. **Coriander**: UP 41, Pusa 860, local selection. **Spinach**: All green, Pusa Jyoti, local. **Dolichus bean**: Pusa early profile, HD-18, local. **Potato**: Kufri chandramukhi, Kufri Jyoti, Kufri sindhuri.**Pumpkin**: Local. **Amaranthas**: Local. **Cow pea**: Pusa Barsati, local.	No change in crop/cropping system	**For *Sali* rice Same as cropping system-1.** Grow important winter vegetables. Timely land preparation & sowing. Soil & Moisture conservation measures (Organic mulches + more FYM).Ridge & furrow cultivation. Utilization of water for irrigation from nearby *beels*, ponds, rivers, natural depressions etc. Pitcher pot irrigation may be followed wherever possible.	Same as Cropping system-1. Supply of Water pumps, STW, LLP under RKVY.

		***Sali* rice-*Boro* rice(low land)** **For *Sali* rice Same as cropping system-1.** ***Boro* rice:** Kanaklata, Joymati Chandrama, Bishnu Prasad,IR-68,Local (Rataboro, Kalaboro).	No change in crop/cropping system	**For *Sali* rice Same as cropping system-1.** Timely land preparation, sowing & transplanting. Rain water harvesting by 30 cm high bunding. Utilization of water for irrigation from nearby *beels*, ponds, rivers, natural depressions etc. Preferably short duration HYV may be sown.	Same as Cropping system-1.
		***Sali* rice-*ahu* rice(low & medium land)** **For *Sali* rice Same as cropping system-1.** ***Ahu* rice** (Transplanted): Luit, Disang, Gopinath, Jaya. ***Ahu* rice** (Direct seeded): Luit., Disang, Koimurali.	No change in crop/cropping system	Timely land preparation, sowing & transplanting. Integrated weed management. Rain water harvesting by 30 cm high bunding. Utilization of water for irrigation from nearby *beels*, ponds, rivers, natural depressions etc.Use of Drum seeder.	Same as Cropping system-1. Supply of Water pumps, Drum seeder, STW, LLP under RKVY.
		***Fallow - Boro* rice(Typical low land)** **For *Boro* rice Same as cropping system-4.**	No change in crop/cropping system	**For *Boro* rice Same as cropping system-4.**	Same as Cropping system-1.

		***Summer* vegetables - Winter vegetables (River bank, upland & medium land)** **Summer Vegetables**: **Okra** (Prabhani Kranti, Pusa Sawani, Arka Anamika, local).**Cucumber** (Chinese green, Pusa sanyog, Poinsette, AAUC-1, AAUC-2, AAUC-3, AAUC-4, local).**Ridge gourd** (Pusa Nasdar, AAUJ-2, AAUJ-3, local).**Bitter gourd** (For spring season-Pusa Do Mausami, Long green, local, Extra long. For summer-Monsoon monarch, Long green monsoon, Coimbatore long).**Bottle gourd**: Pusa summer prolific long, Pusa summer prolific round, local. **Snake gourd**: Long green, Long white, Extra long, local. **Winter Vegetables**: Same as Cropping System-3.	No change in crop/cropping system	Timely sowing & planting. Pitcher pot irrigation (conventional drip irrigation).Ensure stand establishment. Soil & moisture conservation measures (Organic mulches + more FYM).Ridge & furrow cultivation. Utilization of water for irrigation from nearby *beels*, ponds, rivers, natural depressions etc. Use of black polythene mulch, if possible. **For Winter Vegetables**: Same as Cropping System-3.	Same as Cropping system-1.Supply of Water pumps, STW, LLP under RKVY.

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 (Specify month) **August 1 st week**	**Abundant & erratic rainfall shallow dark grey to brown soils (low land) & Deep dark grey to brown soils(Up & Medium land)**	***Sali* rice (Mono crop-Low & medium land)** ***Sali* rice:** Manoharsali, Andrewsali, Prafulla, Gitesh (as transplanted) ,Luit & Disang(as direct seeded)	No change in crop/cropping system	Preparation of seed bed & main field immediately after rainfall. Closer spacing with more no.of seedlings (4-5) per hill. Staggered/double transplanting with 7-8 weeks old seedlings. Rain water harvesting by 30 cm high bunding. Utilization of waters for irrigation from nearby beels, ponds, rivers, natural depressions etc.Irrigate only 2-3 days after recession of ponded water. Care should be taken that cracks do not appear in the field. Divert some area from paddy to pulses and oil seeds in medium land. Keep constant visit in the field to check any cracks & crevices and take immediate measures by repairing/ mud plastering. Number of seedlings per hill be increased to 7-8 with closer spacing of 10 cm x 10 cm. Use aged seedlings of suitable varieties for delayed planting condition e.,g., Prafulla (75 d), Gitesh (60 d), Manoharsali (50 d) etc. Apply whole of the fertilizers at the time of sowing/transplanting unlike normal condition. Topdress additional dose of 2-3 kg MOP per bigha in case of acute drought.	Supply of seeds through National Calamity relief fund, National disaster management fund. Procurement of certified seeds from ASC Ltd. & RARS, AAU. Supply of Wate pumps, STW, LLP under RKVY.

		***Sali* rice - Oil seeds/pulses (medium land)** **For *Sali* rice Same as cropping system-1.** **Rapeseed:** TS-36, TS-38, TS-29, M-27.**Linseed**: T-397 & local. **Sesamum**: Madhavi, Gouri, Vinayak, Punjab tall No.1, RT-1.**Pulses**: **Rajmah** (Local, Uday, PDR-14), **Pea** (Azad P-1, T-163, Boneville, Local), **Black gram** (Local, T-9, T-27, KU-309).	No change in crop/cropping system	**For *Sali* rice Same as cropping system-1.** Early sowing of rapeseed. Soil & moisture conservation measures (Organic mulches + more FYM).Timely land preparation & sowing. Seed soaking for toria. Weeding & breaking of soil mulch by finger weeder. Ridge & furrow cultivation of Rajmah. Grow short duration pulses (Black gram, Rajmah, Pea etc.). Utilization of waters for irrigation from nearby *beels*, ponds, rivers, natural depressions etc. Soil compaction wherever possible. Use of black polythene mulch if possible.	Same as Cropping system-1. Supply of Finger weeder under RKVY. Supply of Water pumps, STW, LLP under RKVY.

		***Sali* rice-Winter vegetables(medium land)** **For *Sali* rice Same as cropping system-1.** **Winter Vegetables**: **Cabbage**: Drum head, Pride of India, Golden acre. **Cauliflower**: Snowball-16, Pusa snowball, Pusa Deepali (Early).**Tomato**: Arka Alok, Suraksha (Hybrid), Pusa ruby, local.**Brinjal**: JC-1, Pusa purple round, Pusa purple long, Pusa Kranti, Longai (Local). **Chilli**: Pusa Jwala, Krishna, local. **Coriander**: UP 41, Pusa 860, local selection. **Spinach**: All green, Pusa Jyoti, local. **Dolichus bean**: Pusa early profile, HD-18, local. **Potato**: Kufri chandramukhi, Kufri Jyoti, Kufri sindhuri.**Pumpkin**: Local. **Amaranthas**: Local. **Cow pea**: Pusa Barsati, local.	No change in crop/cropping system	**For *Sali* rice Same as cropping system-1.** Grow important early winter vegetables. Timely land preparation & sowing. Soil & Moisture conservation measures (Organic mulches + more FYM).Ridge & furrow cultivation. Utilization of waters for irrigation from nearby *beels*, ponds, rivers, natural depressions etc	Same as Cropping system-1. Supply of Water pumps, STW, LLP under RKVY.
		***Sali* rice-*Boro* rice(low land)** **For *Sali* rice Same as cropping system-1.** ***Boro* rice:** Kanaklata, Chandrama Local (Rataboro, Kalaboro), Bishnu Prasad,IR-68.	No change in crop/cropping system	**For *Sali* rice Same as cropping system-1.** Timely land preparation, sowing & Transplanting. Rain water harvesting by 30 cm high bunding. Utilization of waters for irrigation from nearby *beels*, ponds, rivers, natural depressions etc. Preferably short duration HYV may be sown.	Same as Cropping system-1.

		***Sali* rice-*ahu* rice(low & medium land)** **For *Sali* rice Same as cropping system-1.** ***Ahu* rice** (Transplanted): Luit, Disang, Krishna, Gopinath, Jaya, Cauvery, IR-36, IR-50, Ratna, Culture-1, Soket-4. ***Ahu* rice** (Direct seeded): Koimurali. Luit.	No change in crop/cropping system	Timely land preparation, sowing & transplanting. Integrated weed management. Rain water harvesting by 30 cm high bunding. Utilization of waters for irrigation from nearby *beels*, ponds, rivers, natural depressions etc.Use of Drum seeder.	Same as Cropping system-1. Supply of Water pumps, Drum seeder, STW, LLP under RKVY.
		***Fallow* - *Boro* rice(Typical low land)** **For *Boro* rice Same as cropping system-4.**	No change in crop/cropping system	**For *Boro* rice Same as cropping system-4.**	Same as Cropping system-1.

		***Summer* vegetables - Winter vegetables (River bank, up land & medium land)** **Summer Vegetables**: **Okra** (Prabhani Kranti, Pusa Sawani, Arka anamika, local).**Cucumber** (Chinese green, Pusa sanyog, Poinsette, AAUC-1, AAUC-2, AAUC-3, AAUC-4, local).**Ridge gourd** (Pusa Nasdar, AAUJ-2, AAUJ-3, local).**Bitter gourd** (For spring season-Pusa Do Mausmi, Long green, local, Extra long. For summer-Monsoon monarch, Long green monsoon, Coimbatore long).**Bottle gourd**: Pusa summer prolific long, Pusa summer prolific round, local. **Snake gourd**: Long green, Long white, Extra long, local. **Winter Vegetables**: Same as Cropping System-3.	No change in crop/cropping system	Timely sowing & planting. Pitcher pot irrigation (conventional drip irrigation).Ensure stand establishment. Soil & Moisture conservation measures (Organic mulches + more FYM).Ridge & furrow cultivation. Utilization of waters for irrigation from nearby *beels*, ponds, rivers, natural depressions etc. Use of black polythene mulch if possible. **For Winter Vegetables**: Same as Cropping System-3.	Same as Cropping system-1.Supply of Water pumps, STW, LLP under RKVY.

Condition			Suggested Contingency measures		
Early season drought (Normal onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	**Abundant & erratic rainfall shallow dark grey to brown soils (low land) & Deep dark grey to brown soils(Up & Medium land)**	***Sali* rice (Mono crop-Low & medium land)** ***Sali* rice:** Ranjit, Bahadur, Pankaj, Kushal, Moniram.**Glutinous rice:**Gandhi Biroin (local).**Scented rice :**Badshabhog.	1. Thinning and gap filling the existing crop 2.Resowing with short duration variety,seeds should be treated with 4 % MOP for 24 hours & dry in shade for 24 hours. 3. Mat Nursery technique to meet the shortage of seedlings.	1. Top dressing of N as it rains, P & K as top dressing in line sowing crop , Apply P upto 3 weeks after seeding & K up to flowering. 2. Large Scale utilization of organic mulches & FYM. 3. Rain water harvesting by 30 cm high bunding. 4. Weeding & breaking of soil mulch by finger weeder.	Supply of seeds through National Calamity relief fund, National disaster management fund. Procurement of certified seeds from ASC Ltd. & RARS, AAU. Supply of Water pumps, STW,finger weeder LLP under RKVY/Govt Scheme.

		***Sali* rice - Oil seeds/pulses (medium land)** **Cropping System:1 For *Sali* rice Same as cropping system-1.** **Rapeseed:** TS-36, TS-38, TS-29, M-27.**Linseed**: T-397 & local. **Sesamum**: Madhavi, Gouri, Vinayak, Punjab tall No.1, RT-1.**Pulses**: **Rajmah** (Local, Uday, PDR-14), **Pea** (Azad P-1, T-163, Boneville, Local), **Black gram** (Local, T-9, T-27, KU-309).	1. Thinning and gap filling the existing crop 2. Resowing with short duration variety, For Sali rice seeds should be treated with 4 % MOP for 24 hours & dry in shade for 24 hours, For toria the seeds should be soaked. 3. For Sali rice the Mat Nursery technique to meet the shortage of seedlings. 4. Timely land preparation & sowing for oilseed & pulses.	1. For Sali rice Top dressing of N as it rains, P & K as top dressing in line sowing crop, Apply P upto 3 weeks after seeding & K up to flowering. 4. Large Scale utilization of organic mulches & FYM. 5. For Sali rice, rain water harvesting by 30 cm high bunding. 6. Weeding & breaking of soil mulch by finger weeder. 7. Ridge & furrow cultivation of Rajmah.	Supply of seeds through National Calamity relief fund, National disaster management fund. Procurement of certified seeds from ASC Ltd. & RARS, AAU. Supply of Water pumps, STW,finger weeder LLP under RKVY/Govt Scheme.

		***Sali* rice-Winter vegetables(medium land) For *Sali* rice Same as cropping system-1.** **Winter Vegetables**: **Cabbage**: Drum head, Pride of India, Golden acre. **Cauliflower**: Snowball-16, Pusa snowball, Pusa Deepali (Early).**Tomato**: Arka Alok, Suraksha (Hybrid), Pusa ruby, local.**Brinjal**: JC-1, Pusa purple round, Pusa purple long, Pusa Kranti, Longai (Local). **Chilli**: Pusa Jwala, Krishna, local. **Coriander**: UP 41, Pusa 860, local selection. **Spinach**: All green, Pusa Jyoti, local. **Dolichus bean**: Pusa early profile, HD-18, local. **Potato**: Kufri chandramukhi, Kufri Jyoti, Kufri sindhuri.**Pumpkin**: Local. **Amaranthas**: Local. **Cow pea**: Pusa Barsati, local.	**1. Same as cropping system-1 for Sali Rice.** **2.** Timely land preparation & sowing for vegetables.	**Same as cropping system-1 for Sali Rice**	**Same as cropping system-1 for Sali Rice**
		***Sali* rice-*Boro* rice(low land) For *Sali* rice Same as cropping system-1.** ***Boro* rice:** Kanaklata, Chandrama Local (Rataboro, Kalaboro), Bishnu Prasad,IR-68.	**Same as cropping system-1 for Sali Rice**	**Same as cropping system-1 for Sali Rice**	**Same as cropping system-1 for Sali Rice**

		***Sali* rice-*ahu* rice(low & medium land) For *Sali* rice Same as cropping system-1.** ***Ahu* rice** (Transplanted): Luit, Disang, Krishna, Gopinath, Jaya, Cauvery, IR-36, IR-50, Ratna, Culture-1, Soket-4. ***Ahu* rice** (Direct seeded): Koimurali. Luit.	**Same as cropping system-1**	**Same as cropping system-1**	**Same as cropping system-1**
		***Fallow - Boro* rice(Typical low land) *Boro* rice:** Kanaklata, Chandrama Local (Rataboro, Kalaboro), Bishnu Prasad,IR-68.	Not applicable	Not applicable	Not applicable
		***Summer* vegetables - Winter vegetables (River bank, up land & medium land). Summer vegetables: Okra** (Prabhani Kranti, Pusa Sawani, Arka anamika, local).**Cucumber** (Chinese green, Pusa sanyog, Poinsette, AAUC-1, AAUC-2, AAUC-3, AAUC-4, local).**Ridge gourd** (Pusa Nasdar, AAUJ-2, AAUJ-3, local).**Bitter gourd** (For spring season-Pusa Do Mausmi, Long green, local, Extra long. For summer-Monsoon monarch, Long green monsoon, Coimbatore long).**Bottle gourd**: Pusa summer prolific long, Pusa summer prolific round, local.**Snake gourd**: Long green, Long white, Extra long, local. **Winter Vegetables**: Same as Cropping System-3.	1. Thinning and gap filling the existing crop. 2. Resowing with short duration variety.	1. Large Scale utilization of organic mulches & FYM. 2. Rain water harvesting. 3. Weeding & breaking of soil mulch by finger weeder. 4. Ridge & furrow cultivation. 5.Apply N as top dress as it rains, P & K also as top dress if not applied as basal in line seeded crop. 6. P should be applied up to 3 weeks after seeding & K upto flowering.	Supply of seeds through National Calamity relief fund, National disaster management fund. Procurement of certified seeds from ASC Ltd. & RARS, AAU. Supply of Water pumps, STW,finger weeder LLP under RKVY/Govt Scheme.

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[c]**	**Soil nutrient & moisture conservation measues[d]**	**Remarks on Implementation[e]**
At vegetative stage	**Abundant & erratic rainfall shallow dark grey to brown soils (low land) & Deep dark grey to brown soils(Up & Medium land)**	***Sali* rice (Mono crop-Low & medium land)** ***Sali* rice:** Ranjit, Bahadur, Pankaj, Kushal, Moniram.**Glutinous rice:**Gandhi Biroin (local).**Scented rice :**Badshabhog.	1. Re-sowing with short duration variety, seeds should be treated with 4 % MOP for 24 hours & dry in shade for 24 hours. 2. Mat Nursery technique to meet the shortage of seedlings. 3. Life saving irrigation. 4. Direct seeding of short duration late variety (Luit, Disang etc.) 5. Timely weed control measures (IWM).	1. Top dressing of N as it rains, P & K as top dressing in line sowing crop, Apply P upto 3 weeks after seeding & K up to flowering. 2. Large Scale utilization of organic mulches & FYM. 3. Rain water harvesting by 30 cm high bunding. 4. Weeding & breaking of soil mulch by finger weeder. 5. Top dress additional quantities of MOP @ 5 kg/bigha & incorporate it. 6. Spray 2% KET solution on leaves. 7. Top dressing of Urea may be delayed upto heading stage.	Supply of seeds through National Calamity relief fund National disaster management fund. Procurement of certified seeds from ASC Ltd. & RARS, AAU. Supply of Water pumps, STW,finger weeder LLP under RKVY/Govt Scheme.

		***Sali* rice - Oil seeds/pulses (medium land)** **Cropping System:1 For *Sali* rice Same as cropping system-1.** **Rapeseed:** TS-36, TS-38, TS-29, M-27.**Linseed**: T-397 & local. **Sesamum**: Madhavi, Gouri, Vinayak, Punjab tall No.1, RT-1.**Pulses**: **Rajmah** (Local, Uday, PDR-14), **Pea** (Azad P-1, T-163, Boneville, Local), **Black gram** (Local, T-9, T-27, KU-309).	1. Resowing with short duration variety, For Sali rice seeds should be treated with 4 % MOP for 24 hours & dry in shade for 24 hours, For toria the seeds should be soaked. 2. For Sali rice the Mat Nursery technique to meet the shortage of seedlings. 3. Life saving irrigation. 4. Direct seeding of short duration late Sali rice variety (Luit, Disang etc.) 5. Timely weed control measures (IWM). 6. Divert some area from paddy to pulses & oilseeds.	1. For Sali rice Top dressing of N as it rains, P & K as top dressing in line showing crop, Apply P upto 3 weeks after seeding & K up to flowering. 4. Large Scale utilization of organic mulches & FYM. 5. For Sali rice, rain water harvesting by 30 cm high bunding. 6. Weeding & breaking of soil mulch by finger weeder. 7. Ridge & furrow cultivation of Rajmah. 8. For Sali rice: Top dress additional quantities of MOP @ 5 kg/bigha & incorporate it, Spray 2% KET solution on leaves, top dressing of Urea may be delayed upto heading stage.	Supply of seeds through National Calamity relief fund National disaster management fund. Procurement of certified seeds from ASC Ltd. & RARS, AAU. Supply of Water pumps, STW,finger weeder LLP under RKVY/Govt Scheme.

		***Sali* rice-Winter vegetables (medium land) For *Sali* rice Same as cropping system-1.** **Winter Vegetables**: **Cabbage**: Drum head, Pride of India, Golden acre. **Cauliflower**: Snowball-16, Pusa snowball, Pusa Deepali (Early).**Tomato**: Arka Alok, Suraksha (Hybrid), Pusa ruby, local.**Brinjal**: JC-1, Pusa purple round, Pusa purple long, Pusa Kranti, Longai (Local). **Chilli**: Pusa Jwala, Krishna, local. **Coriander**: UP 41, Pusa 860, local selection. **Spinach**: All green, Pusa Jyoti, local. **Dolichus bean**: Pusa early profile, HD-18, local. **Potato**: Kufri chandramukhi, Kufri Jyoti, Kufri sindhuri.**Pumpkin**: Local. **Amaranthas**: Local. **Cow pea**: Pusa Barsati, local.	**1. Same as cropping system-1 for Sali Rice.** 2. Divert some area from paddy to early winter vegetables.	**1. Same as cropping system-1 for Sali Rice.** **2.** Ridge & furrow cultivation of vegetables.	**Same as cropping system-1 for Sali Rice.**
		***Sali* rice-*Boro* rice(low land) For *Sali* rice Same as cropping system-1.** ***Boro* rice:** Kanaklata, Chandrama Local (Rataboro, Kalaboro), Bishnu Prasad,IR-68.	**Same as cropping system-1 for Sali Rice**	**Same as cropping system-1 for Sali Rice**	**Same as cropping system-1 for Sali Rice**

		***Sali* rice-*ahu* rice(low & medium land) For *Sali* rice Same as cropping system-1.** ***Ahu* rice** (Transplanted): Luit, Disang, Krishna, Gopinath, Jaya, Cauvery, IR-36, IR-50, Ratna, Culture-1, Soket-4. ***Ahu* rice** (Direct seeded): Koimurali. Luit.	**Same as cropping system-1**	**Same as cropping system-1**	**Same as cropping system-1**
		***Fallow - Boro* rice(Typical low land) *Boro* rice:** Kanaklata, Chandrama Local (Rataboro, Kalaboro), Bishnu Prasad,IR-68.	Not applicable	Not applicable	Not applicable
		***Summer* vegetables - Winter vegetables (River bank, up land & medium land). Summer vegetables: Okra** (Prabhani Kranti, Pusa Sawani, Arka anamika, local).**Cucumber** (Chinese green, Pusa sanyog, Poinsette, AAUC-1, AAUC-2, AAUC-3, AAUC-4, local).**Ridge gourd** (Pusa Nasdar, AAUJ-2, AAUJ-3, local).**Bitter gourd** (For spring season-Pusa Do Mausmi, Long green, local, Extra long. For summer-Monsoon monarch, Long green monsoon, Coimbatore long).**Bottle gourd**: Pusa summer prolific long, Pusa summer prolific round, local.**Snake gourd**: Long green, Long white, Extra long, local. **Winter Vegetables**: Same as Cropping System-3.	1. Thinning and gap filling the existing crop. 2. Resowing with short duration variety. 3. Divert some area to early winter vegetables. 4. Timely weed control measures (IWM).	1. Large Scale utilization of organic mulches & FYM. 2. Rain water harvesting. 3. Weeding & breaking of soil mulch by finger weeder. 4. Ridge & furrow cultivation. 5.Apply N as top dress as it rains, P & K also as top dress if not applied as basal in line seeded crop. 6. P should be applied up to 3 weeks after seeding & K upto flowering.	Supply of seeds through National Calamity relief fund National disaster management fund. Procurement of certified seeds from ASC Ltd. & RARS, AAU. Supply of Water pumps, STW,finger weeder LLP under RKVY/Govt Scheme.

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measrues[d]**	**Remarks on Implementation[e]**
At flowering/ fruiting stage	**Abundant & erratic rainfall shallow dark grey to brown soils (low land) & Deep dark grey to brown soils(Up & Medium land)**	***Sali* rice (Mono crop-Low & medium land)** ***Sali* rice:** Ranjit, Bahadur, Pankaj, Kushal, Moniram.**Glutinous rice:**Gandhi Biroin (local).**Scented rice :**Badshabhog.	1. Life saving irrigation. 2. Direct seeding of short duration late variety (Luit, Disang etc.) 3. Timely weed control measures (IWM) & weed mulching	1. Apply K up to flowering. 2. Large Scale utilization of organic mulches & FYM. 3. Rain water harvesting by 30 cm high bunding. 4. Weeding & breaking of soil mulch by finger weeder. 5. Top dress additional quantities of MOP @ 5 kg/bigha & incorporate it. 6. Spray 2% KET solution on leaves. 7. Top dressing of Urea may be delayed upto heading stage.	Supply of seeds through National Calamity relief fund, National disaster management fund. Procurement of certified seeds from ASC Ltd. & RARS, AAU. Supply of Water pumps, STW,finger weeder LLP under RKVY/Govt Scheme.

		***Sali* rice - Oil seeds/pulses (medium land)** **For *Sali* rice Same as cropping system-1.** **Rapeseed:** TS-36, TS-38, TS-29, M-27.**Linseed**: T-397 & local. **Sesamum**: Madhavi, Gouri, Vinayak, Punjab tall No.1, RT-1.**Pulses**: **Rajmah** (Local, Uday, PDR-14), **Pea** (Azad P-1, T-163, Boneville, Local), **Black gram** (Local, T-9, T-27, KU-309).	1.For toria the seeds should be soaked. 2. Life saving irrigation. 3. Direct seeding of short duration late Sali rice variety (Luit, Disang etc.) 5. Timely weed control measures (IWM) & weed mulching. 6. Divert some area from paddy to pulses & oilseeds.	1.Apply K up to flowering. 2. Large Scale utilization of organic mulches & FYM. 3. For Sali rice, rain water harvesting by 30 cm high bunding. 4. Weeding & breaking of soil mulch by finger weeder. 5. Ridge & furrow cultivation of Rajmah. 6. For Sali rice: Top dress additional quantities of MOP @ 5 kg/bigha & incorporate it, Spray 2% KET solution on leaves, top dressing of Urea may be delayed upto heading stage.	Supply of seeds through National Calamity relief fund, National disaster management fund. Procurement of certified seeds from ASC Ltd. & RARS, AAU. Supply of Water pumps, STW,finger weeder LLP under RKVY/Govt Scheme.

		***Sali* rice-Winter vegetables (medium land) For *Sali* rice Same as cropping system-1.** **Winter Vegetables**: **Cabbage**: Drum head, Pride of India, Golden acre. **Cauliflower**: Snowball-16, Pusa snowball, Pusa Deepali (Early).**Tomato**: Arka Alok, Suraksha (Hybrid), Pusa ruby, local.**Brinjal**: JC-1, Pusa purple round, Pusa purple long, Pusa Kranti, Longai (Local). **Chilli**: Pusa Jwala, Krishna, local. **Coriander**: UP 41, Pusa 860, local selection. **Spinach**: All green, Pusa Jyoti, local. **Dolichus bean**: Pusa early profile, HD-18, local. **Potato**: Kufri chandramukhi, Kufri Jyoti, Kufri sindhuri.**Pumpkin**: Local. **Amaranthas**: Local. **Cow pea**: Pusa Barsati, local.	**1. Same as cropping system-1 for Sali Rice.** 2. Divert some area from paddy to early winter vegetables.	**1. Same as cropping system-1 for Sali Rice.** **2.** Ridge & furrow cultivation of vegetables.	**Same as cropping system-1 for Sali Rice.**
		***Sali* rice-*Boro* rice(low land) For *Sali* rice Same as cropping system-1.** ***Boro* rice:** Kanaklata, Chandrama Local (Rataboro, Kalaboro), Bishnu Prasad,IR-68.	**Same as cropping system-1 for Sali Rice**	**Same as cropping system-1 for Sali Rice**	**Same as cropping system-1 for Sali Rice**

		***Sali* rice-*ahu* rice(low & medium land) For *Sali* rice Same as cropping system-1.** ***Ahu* rice** (Transplanted): Luit, Disang, Krishna, Gopinath, Jaya, Cauvery, IR-36, IR-50, Ratna, Culture-1, Soket-4. ***Ahu* rice** (Direct seeded): Koimurali. Luit.	**1. Same as cropping system-1.** **2. Divert some area for early *ahu* rice.** 3. Timely land preparation and sowing of *ahu* rice.	**Same as cropping system-1**	**Same as cropping system-1**
		***Fallow* - *Boro* rice(Typical low land) *Boro* rice:** Kanaklata, Chandrama Local (Rataboro, Kalaboro), Bishnu Prasad,IR-68.	Not applicable	Not applicable	Not applicable
		***Summer* vegetables - Winter vegetables (River bank, up land & medium land). Summer vegetables: Okra** (Prabhani Kranti, Pusa Sawani, Arka anamika, local).**Cucumber** (Chinese green, Pusa sanyog, Poinsette, AAUC-1, AAUC-2, AAUC-3, AAUC-4, local).**Ridge gourd** (Pusa Nasdar, AAUJ-2, AAUJ-3, local).**Bitter gourd** (For spring season-Pusa Do Mausmi, Long green, local, Extra long. For summer-Monsoon monarch, Long green monsoon, Coimbatore long).**Bottle gourd**: Pusa summer prolific long, Pusa summer prolific round, local.**Snake gourd**: Long green, Long white, Extra long, local. **Winter Vegetables**: Same as Cropping System-3.	1. Thinning and gap filling the existing crop. 2. Resowing with short duration variety. 3. Divert some area for early winter vegetables. 4. Timely weed control measures (IWM) & weed mulching.	1. Large Scale utilization of organic mulches & FYM. 2. Rain water harvesting. 3. Weeding & breaking of soil mulch by finger weeder. 4. Ridge & furrow cultivation. 5.Apply N as top dress as it rains, P & K also as top dress if not applied as basal in line seeded crop. 6. P should be applied up to 3 weeks after seeding & K upto flowering.	Supply of seeds through National Calamity relief fund, National disaster management fund. Procurement of certified seeds from ASC Ltd. & RARS, AAU. Supply of Water pumps, STW,finger weeder LLP under RKVY/Govt Scheme.

Condition			Suggested Contingency measures		
Terminal drought (**Early withdrawal of monsoon**)	**Major Farming situation**[a]	**Normal Crop/cropping system**[b]	**Crop management**[c]	**Rabi Crop planning**[d]	**Remarks on Implementation**[e]
	Abundant & erratic rainfall shallow dark grey to brown soils (low land) & Deep dark grey to brown soils(Up & Medium land)	***Sali* rice (Mono crop-Low & medium land)** ***Sali* rice:** Ranjit, Bahadur, Pankaj, Kushal, Moniram.**Glutinous rice:**Gandhi Biroin (local).**Scented rice :**Badshabhog.	1. Life saving irrigation. 2. Harvest at physiological maturity stage	Winter vegetables, Pulses, early *ahu* rice	Supply of seeds through National Calamity relief fund, National disaster management fund. Procurement of certified seeds from ASC Ltd. & RARS, AAU. Supply of Water pumps, STW, finger weeder LLP under RKVY/Govt Scheme
		***Sali* rice - Oil seeds/pulses (medium land)** **Cropping System:1 For *Sali* rice Same as cropping system-1.** **Rapeseed:** TS-36, TS-38, TS-29, M-27.**Linseed**: T-397 & local. **Sesamum**: Madhavi, Gouri, Vinayak, Punjab tall No.1, RT-1.**Pulses**: **Rajmah** (Local, Uday, PDR-14), **Pea** (Azad P-1, T-163, Boneville, Local), **Black gram** (Local, T-9, T-27, KU-309).	1. Life saving irrigation. 2. Divert some area from paddy to pulses & oilseeds. 3. Ridge & furrow cultivation of Rajmah. 4. Harvest at physiological maturity stage (Sali rice)	Oilseed & pulses	Supply of seeds through National Calamity relief fund, National disaster management fund. Procurement of certified seeds from ASC Ltd. & RARS, AAU. Supply of Water pumps, STW, finger weeder LLP under RKVY/Govt Scheme

		***Sali* rice-Winter vegetables (medium land) For *Sali* rice Same as cropping system-1. Winter Vegetables**: **Cabbage**: Drum head, Pride of India, Golden acre. **Cauliflower**: Snowball-16, Pusa snowball, Pusa Deepali (Early).**Tomato**: Arka Alok, Suraksha (Hybrid), Pusa ruby, local.**Brinjal**: JC-1, Pusa purple round, Pusa purple long, Pusa Kranti, Longai (Local). **Chilli**: Pusa Jwala, Krishna, local. **Coriander**: UP 41, Pusa 860, local selection. **Spinach**: All green, Pusa Jyoti, local. **Dolichus bean**: Pusa early profile, HD-18, local. **Potato**: Kufri chandramukhi, Kufri Jyoti, Kufri sindhuri.**Pumpkin**: Local. **Amaranthas**: Local. **Cow pea**: Pusa Barsati, local.	1. Life saving irrigation. 2. Divert some area from paddy to winter vegetables. 3. Ridge & furrow cultivation. 4. Harvest at physiological maturity stage (Sali rice)	Winter vegetables	Supply of seeds through National Calamity relief fund, National disaster management fund. Procurement of certified seeds from ASC Ltd. & RARS, AAU. Supply of Water pumps, STW, finger weeder LLP under RKVY/Govt Scheme

		***Sali* rice-*Boro* rice(low land) For *Sali* rice Same as cropping system-1.** ***Boro* rice:** Kanaklata, Chandrama Local (Rataboro, Kalaboro), Bishnu Prasad,IR-68	**1. Same as cropping system-1 for Sali Rice.** **2. Timely land preparation & sowing of boro rice.**	*Boro* rice	**Same as cropping system-1**
		***Sali* rice-*ahu* rice(low & medium land) For *Sali* rice Same as cropping system-1.** ***Ahu* rice** (Transplanted): Luit, Disang, Krishna, Gopinath, Jaya, Cauvery, IR-36, IR-50, Ratna, Culture-1, Soket-4. ***Ahu* rice** (Direct seeded): Koimurali. Luit.	**1. Same as cropping system-1.** **2. Divert some area for early *ahu* rice.** 3. Timely land preparation and sowing of *ahu* rice.	*Ahu* rice	**Same as cropping system-1**
		***Fallow* - *Boro* rice(Typical low land) *Boro* rice:** Kanaklata, Chandrama Local (Rataboro, Kalaboro), Bishnu Prasad,IR-68.	Not applicable	Not applicable	Not applicable

		Summer **vegetables - Winter vegetables (River bank, up land & medium land). Summer vegetables: Okra** (Prabhani Kranti, Pusa Sawani, Arka anamika, local).**Cucumber** (Chinese green, Pusa sanyog, Poinsette, AAUC-1, AAUC-2, AAUC-3, AAUC-4, local).**Ridge gourd** (Pusa Nasdar, AAUJ-2, AAUJ-3, local).**Bitter gourd** (For spring season-Pusa Do Mausmi, Long green, local, Extra long. For summer-Monsoon monarch, Long green monsoon, Coimbatore long).**Bottle gourd**: Pusa summer prolific long, Pusa summer prolific round, local.**Snake gourd**: Long green, Long white, Extra long, local. **Winter Vegetables**: Same as Cropping System-3.	1. Divert some area for early winter vegetables. 2. Large Scale utilization of organic mulches & FYM. 3. Weeding & breaking of soil mulch by finger weeder. 4. Divert some area for early winter vegetables**.** 5. Harvest at physiological maturity stage. 6. Life saving irrigation. 7. Timely land preparation and sowing of early winter vegetables.	Early winter vegetables, normal winter vegetables	Supply of seeds through National Calamity relief fund, National disaster management fund. Procurement of certified seeds from ASC Ltd. & RARS, AAU. Supply of Water pumps, STW, finger weeder LLP under RKVY/Govt Scheme.

2.1.2 Drought - Irrigated situation : Not Applicable

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	**1) Farming Situation** Low land tube well Irrigated Canal red soils	**Cropping System:1** Paddy (sub merged condition)			

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]
Limited release of water in canals due to low rainfall	**1) Farming Situation**	**Cropping System:1**			

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]
Non release of water in canals under delayed onset of monsoon in catchment	**1) Farming Situation**	**Cropping System:1**			

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]
Lack of inflows	**1) Farming Situation**	**Cropping System:1**			

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]
into tanks due to insufficient /delayed onset of monsoon		Cropping System:2			

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]
Insufficient groundwater recharge due to low rainfall	1) Farming Situation Tube well red soil	Cropping System:1			

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

Condition	Suggested contingency measure			
Continuous high rainfall in a short span leading to water logging	Vegetative stage[k]	Flowering stage[l]	Crop maturity stage[m]	Post harvest[n]
Paddy	Provide drainage Gap filling in damaged patches if seedlings are available Top dressing of urea after the recess of rains	Provide drainage Provide necessary control measures against outbreak of caseworm, gundi bug and stem borer.	Drain out Harvesting at physiological maturity stage	Shift to safer place Dry in shade in a well ventilated space and turn frequently.
Rajmah	Provide drainage Re-sowing of short duration late	Provide drainage	Drain out Harvesting at physiological	Shift to safe place. Dry in shade and turn frequently

	variety.		maturity stage and Harvest of rajmah for vegetable purpose Use as fodder	
Potato	Provide drainage Take protective measures against late blight of potato.	Provide drainage Take protective measures against late blight of potato.	Drain out excess water Harvest at physiological maturity stage	Dry in shade. Safe storage against storage pests and diseases
Toria	Provide drainage Re-sowing of short duration late variety	Provide drainage Take protective measures against aphids.	Drain out excess water Harvest at physiological maturity stage Use as leafy vegetables	Dry in shade. Safe storage against storage pests and diseases
Pea	Provide drainage Resowing of short duration late variety.	Provide drainage	Drain out excess water Harvest for vegetable purpose Use as animal fodder	Dry in shade and turn frequently. Safe storage against storage pest and disease
Horticulture				
Summer vegetables	Provide drainage Re-sowing of short duration late variety Need based protective measures against pests and diseases.	Provide drainage	Drain out Harvesting at physiological maturity stage Use as fodder	Segregation of infested vegetables & destruction Use as fodder
Winter vegetables	Provide drainage Re-sowing of short duration late variety Need based protective measures against pests and diseases.	Provide drainage Need based protective measures against pests and diseases.	Drain out Harvesting at physiological maturity stage Use as animal feed	Segregation of infested vegetables & destruction Use as animal feed
Chilli	Provide drainage	Provide	Drain out	Segregation of infested vegetables

	Re-sowing of short duration late variety Need based protective measures against pests and diseases.	drainage Need based protective measures against pests and diseases.	Harvesting at physiological maturity stage Harvest for processing	& destruction Dry in well ventilated space.
Heavy rainfall with high speed winds in a short span[2]	NA			
Outbreak of pests and diseases due to unseasonal rains				
Paddy	Application of chlorpyriphos or Monocrotophos against hispa, stem borer and case worm	Application of chlorpyriphos or Monocrotophos against case worm		Safe storage against storage pest and diseases
Rajmah	Application of dimethoate or malathion against aphids, jassids & beetles.	Application of dimethoate or malathion against aphids, jassids & beetles.		Safe storage against storage pest and diseases
Potato	Application of metaxyl alternating with mancozeb for late blight of potato Application of MOC to reduce infestation of red & white ants.	Application of metaxyl alternating with mancozeb for late blight of potato		Safe storage against storage pest and diseases
Toria	Application of chlorpyriphos against insect-pests	Application of chlorpyriphos against insect-pests		Safe storage against storage pest and diseases
Pea	Application of dichlorovos 100 EC or malathion 50 EC against pod borer, leaf miner and aphids.	Application of dichlorovos 100 EC or malathion 50		Safe storage against storage pest and diseases

	Spray wettable sulphur or tridemorph or dinocap for powder mildew.	EC against pod borer, leaf miner and aphids. Spray wettable sulphur or tridemorph or dinocap for powder mildew.		
Horticulture				
Summer vegetables	Spray malathion 50 EC against fruit fly, malathion 5% dust for cut worm, and 1% Bordeaux mixture against downy mildew and Bavistin 0.1% against powdery mildew.	Spray malathion 50 EC against fruit fly, malathion 5% dust for cut worm, and 1% Bordeaux mixture against downy mildew and Bavistin 0.1% against powdery mildew.	Use as fodder	Segregation of infested vegetables & destruction Use as fodder
Winter vegetables	Spray malathion 50 EC against caterpillar and fruit and shoot borer, malathion 5% dust for cut worm. Application of metaxyl alternating with mancozeb against late blight o tomato	Spray malathion 50 EC against caterpillar, malathion 5% dust for cut worm, Application of metaxyl alternating with mancozeb against late blight o tomato		Segregation of infested vegetables & destruction Use as animal feed
Chilli		Spray captan 50 WP against fruit or anthracnose disease		Segregation of infested vegetables & destruction

2.3 Floods : Not applicable

Condition	**Suggested contingency measure[o]**			
Transient water logging/ partial inundation[1]	**Seedling / nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Paddy	Drainage of the Nursery bed, If not possible go for re -sowing	Drainage of excess water. Apply 50% N + 50% K_2O as top dressing during the tillering stage. In partially damaged field. gap filling may be done by redistributing the tillers. Wet seeding of sprouted seeds (@75-80 kg/ha) of Kmj 1-19-1, Kmj 1-17-2, Dhirendra, Mitrasali, Andrewsali and Monoharsali. If transplanting is not possible before mid September, then early varieties such as Sonamukhi, Luit, Culture 1, Chandmoni may be grown as direct seeded rice. Closure planting to check late tillers in case of late planting. Management of pests & diseases	Drainage of excess water. If flood comes during reproductive stage, emphasis should be given on forthcoming rabi crops. Utilization of residual soil moisture and use of recharged soil profile for growing pulses and oilseeds Growing of vegetables after receding flood water and adoption of integrated farming system to obtain more income and to compensate the loss during kharif.	Drainage of excess water. If flood comes during reproductive stage, , emphasis should be given on forthcoming rabi crops Supply of seeds and other agro-inputs of *rabi* crops at subsidized rate, provision of bank loan etc. Wet seeding of short duration Utilization of residual soil moisture and use of recharged soil profile for growing pulses and oilseeds Growing of boro rice after receding flood water
Rajmah	NA			

Potato	NA			
Toria	NA			
Pea	NA			
Horticulture	NA			
Continuous submergence for more than 2 days[2]				
Paddy	Drainage of the Nursery bed, If not possible go for re -sowing	Drainage of excess water. In partially damaged field. gap filling may be done by redistributing the tillers. Management of pests & diseases	Drainage of excess water. Growing of vegetables after receding flood water and adoption of integrated farming system to obtain more income and to compensate the loss during kharif.	Drainage of excess water. If flood comes during reproductive stage, , emphasis should be given on forthcoming rabi crops Supply of seeds and other agro-inputs of *rabi* crops at subsidized rate, provision of bank loan etc. Wet seeding of short duration Utilization of residual soil moisture and use of recharged soil profile for growing pulses and oilseeds Growing of boro rice after receding flood water
Rajmah	Resowing	Provide drainage Resowing of late varieties Use as fodder	Harvest for vegetable purpose Use as fodder	Harvest and dry in shade as soon as possible Safe storage against storage pest and diseases
Potato	Resowing	Provide drainage Resowing of late varieties	Provide drainage	Harvest and dry in shade as soon as possible Safe storage against storage pest and diseases
Toria	Resowing	Provide drainage	Provide drainage	Harvest and dry in shade as

		Resowing of late varieties	Use as fodder	soon as possible Safe storage against storage pest and diseases
Pea	Resowing	Provide drainage Resowing of late varieties	Provide drainage Use as fodder	Harvest and dry in shade as soon as possible Safe storage against storage pest and diseases
Horticulture				
Summer vegetables	Resowing	Provide drainage Resowing of late varieties	Provide drainage Use as animal feed	Harvest and dry in shade as soon as possible Safe storage against storage pest and diseases
Winter Vegetable	NA			
Chilli	NA			
Sea water intrusion[3]	NA			

2.4 Extreme events: Heat wave / Cold wave/Frost/ Hailstorm /Cyclone : Not experienced

Extreme event type	**Suggested contingency measure**[r]			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Heat Wave[p]	NA			
Cold wave[q]	NA			
Frost	NA			
Hailstorm	NA			
Cyclone	NA			

2.5 Contingent strategies for Livestock, Poultry & Fisheries

2.5.1 Livestock

	Suggested contingency measures		
	Before the event[s]	**During the event**	**After the event**
Drought			
Feed and fodder availability	Insurance Encourage perennial fodder on bunds and waste land on community basis & near rivers Establishing fodder banks, encouraging fodder crops in irrigated area. On boundaries of agricultural field trees or shrubs like Sesbania, Subabul, Neem etc should be planted. Use excess fodder as silage/hay. Training & awareness camp among extension personnel for needful at time of exigencies	Utilizing fodder from perennial trees and Fodder bank reserves Utilizing fodder stored in silos Transporting excess fodder from adjoining districts Use of feed mixtures Utilizing the existing crops which fail due to drought Use of unconventional livestock feed such as banana plant, Crop residues such as water hyacinth and other like tree pods and seeds etc. Improving poor quality roughages by ammonia treatment, urea treatment, urea molasses mineral block etc and feeding them.	Availing Insurance Culling unproductive livestock
Drinking water	Preserving water in the tank for drinking purpose with proper sanitation. Excavation of ponds & Bore wells. Training & awareness camp among extension personnel	Using preserved water in the tanks for drinking Wherever ground water resources are available priority for drinking purpose Animals not to be exposed to sun and they	

		should be commonly stall fed.	
Health and disease management	Veterinary preparedness with medicines and vaccines Training & awareness camp among extension personnel	Conducting mass animal Health Camps and treating the affected ones in Campaign Supplementation of vitamins and mineral mixtures.	Culling sick animals
Floods			
Feed and fodder availability	Insurance Encourage perennial fodder on bunds and waste land on community basis & near rivers Establishing fodder banks, encouraging fodder crops in irrigated area. On boundaries of agricultural field trees or shrubs like Sesbania, Subabul, Neem etc should be planted. Establish fodder bank with dry straw &dry feed at least for 2 weeks. Training & awareness camp among extension personnel for needful at time of exigencies.	Priorities wise feeding like suckling animals followed by nursing mothers, producing and working animals, sick and old animals, adult stovers that got soaked during floods need not be thrown away out right. They can be fed to animals as long as rotting or fungal growth has not set in. Partial drying chuffing and sprinkling available concentrate mixture can improve intake and utility.	Provision of supplementary feeding (concentrate / Roughage) with vitamin & minerals.
Drinking water	Preserve safe drinking water in community tanks which is not prone to seepage of rain or flood water, Arrange chlorine tablets for sanitization of water and bleaching powder for disinfection of habitats & shelter places , Training & awareness camp among extension personnel	Drinking water is made available to the animals in any kind of clean container available with the farmer.	Provision of clean drinking water.
Health and disease management	Prior construction of shelter places in elevated points, Vaccination of livestock Keep the emergency service kit (first Aid Requisites) along with surgical kit if available. Consult the veterinary doctors in emergency.	There should be one veterinarian with 3 to 4 village to work with the help of local volunteers. The team should be well equipped with contingent items like bandages, tourniquet ropes, drugs including painkillers, antiseptics, antibiotics, anti-venom and anti-shock drugs	Prompt and appropriate attention to injuries by providing necessary medicines to the livestock owners. Vaccination campaign against common endemic diseases of the areas (like H.S. B.Q, Anthrax etc.)

	The necessary animal treatment facilities (contingent items) should be made available in the village level.	etc. Keep the animals loose in paddock (sheltered or unsheltered) Releasing animals from the unnatural and harmful position or situation, binding broken limbs, administering painkillers, anti-poison and anti-shock drugs, Performing euthanasia on hopelessly injured and suffering animals with the consent of their owners.	must be taken up urgently. Necessary steps should be taken for the control of non-specific digestive and respiratory infections in consultation of local veterinary personals. Improving shed hygiene especially in the farmers household through cleaning and disinfection
Cyclone	NA		
Heat wave and cold wave	NA		

2.5.2 Poultry

	Suggested contingency measures			**Convergence/linkages with ongoing programs, if any**
	Before the event[a]	**During the event**	**After the event**	
Drought				
Shortage of feed ingredients	Insurance. Ensure procurement of feed ingredients sufficiently ahead of incidence Establish feed serve bank	Utilizing from feed serve banks	Availing insurance Strengthening feed Reserve Banks	
Drinking water	Check water source for ensuring sufficient potable water during	Attempt will be made to provide sanitized drinking	Availability of water will be ensured by digging of bore well	

	draught	water		
Health and disease management	Procurement of vaccines and medicines and antistress agent. Feeding antibiotics Procurement of litter materials	Campaign and Mass Vaccination Continue feeding of antistress agent	Culling affected birds	
Floods				
Shortage of feed ingredients	Ensure procurement of feed ingredients / compound feed sufficiently ahead as feed supply to the farm because road connectivity may be hampered due to submergence/land slide	Supply the compound feed to the poultry farm under submerged area	Supply will continue till the situation is improved	
Drinking water	Protect the water sources from submergence	Attempt will be made to provide sanitized drinking water	Water sources will sanitized with bleaching powder or any water sanitizer	
Health and disease management	Procurement of vaccines and medicines. Feeding antibiotics Procurement of litter materials	Continue feeding antibiotics Prevent entrance of flood water to the shed Replace wet litter Proper disposal of dead birds if any	Disinfection of the farm premises. Feeding antibiotics And deworming. Replace wet litter Disinfection of sheds. Proper disposal of dead birds if any	
Cyclone	NA			
Heat wave and cold wave	NA			

2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event[a]	**During the event**	**After the event**
1) Drought			
A. Capture			
Marine	NA		
Inland			
(i) Shallow water depth due to insufficient rains/inflow	Supplementary water harvest structures like pond and tanks have to be developed. Renovation and maintenance of existing water harvest structures Control of water seepage measures should be taken well in advance Growing of horticultural crops on bund to provide shade and to reduce evaporation loss.	Restrict lifting of water for irrigation purpose. Partial harvest of the stock, market the produce to reduce the density of population in ponds. Training to the farmers, extension functionaries and NGOs.	Excavate the ponds to increase the depth. Try to release water into the pond if it rains in off-season
(ii) Changes in water quality	Prepare to release water into the habitat	Mixing of water from the water harvest structure like ponds and tanks into the fish habitat.	Monitoring the water quality and health of aquatic organisms
B. Aquaculture			
(i) Shallow water in ponds due to insufficient rains/inflow	Reduce the stocking density of fishes by harvesting the marketable sized fishes. At one side of the pond, depth	Application of feed & FYM should be restricted Netting over pond surface can be made in those areas where attack	After drought one partial harvesting should be done to check the fish health. Lime should be applied at proper

	should be made more by digging so that during drought fishes can take shelter in this deeper portion of the pond.	of predatory bird is dominant. Frequent netting activities should be restricted. $KMnO_4$ can be applied @ 2-4 ppm	dose. Restock the pond with fingerlings if available.
(ii) Impact of salt load build up in ponds / change in water quality	Growth of *Azolla pinnata* should be encouraged to check eutrophication and excessive evaporation. Lime should be applied according to pH of water	Don't make any disturbances in the pond from outside like netting, application of feed, FYM etc. Activities like bathing, washing domestic animals should be stopped.	After drought check water quality and fish health. When fish health & water quality becomes normal start feeding and fertilizing activities.
(iii) Any other			
2) Floods			
A. Capture			
B. Aquaculture			
(i) Inundation with flood water	Construction of humane shelter. Storage of sand filled bags for emergency use. Broken dykes of pond should be repaired. Height of the pond dyke should be increased above the flood level. Bamboo screen or nylon nets should be made ready for sudden rise in flood level. Inlets and outlets of the ponds should be checked for working condition.	Bamboo screen or nylon nets should be placed round the pond dyke. Stop application of feed, fertilizer and lime. If flood level starts decreasing apply $KMnO_4$ @ 2-4 ppm. Timely broadcast and telecast and other types of announcement warning about the danger level with respect to water level. Evacuation of people to flood	Lime should be applied at proper dose. Repeated netting should be done to check fish health & entry of any unwanted & predatory fishes. Apply $KMnO_4$ @ 2-4 ppm. Relief operation will continue. Settlement of insurance. Financial support to other people.

	Preparedness for relief Insurance coverage provision for life and property	shelter areas. Relief operation.	
(ii) Water contamination and changes in water quality	Take appropriate measures to check seepage into pond e.g. raising bunds to prevent entry of water. Reduce the stocking density of fishes by harvesting the marketable sized fishes. Stop application of feed, fertilizer & manure.	Stop feeding Stop application of manure	Examine water quality & then go for liming, manuring & feeding Application of Alum. Application of $KMnO_4$
(iii) Health and diseases	Lime should be applied at proper dose Apply $KMnO_4$ @ 2-4 ppm frequently Stock medicines, vaccines etc for preventive measures	Stop feeding, manuring & netting activities Prevent influx of diseased fish from outside source, Disinfect water by lime , $KMnO_4$	Application of lime , $KMnO_4$ and CIFAX. Assessment of the health status of fish by netting and accordingly control measure should be taken. Control on transport of brooders and seeds.
(iv) Loss of stock and inputs (feed, chemicals etc)	Insurance coverage provision for life and property		Relief operation
(v) Infrastructure damage (pumps, aerators, huts etc)	Insurance coverage provision for life and property		Relief operation
(vi) Any other			
3. Cyclone / Tsunami	NA		
4. Heat wave and cold wave	NA		