State: **ASSAM**

Agriculture Contingency Plan for District: **DIBRUGARH**

1.0 District Agriculture profile					
1.1	**Agro-Climatic/Ecological Zone**				
	Agro Ecological Sub Region (ICAR)	Zone 2 Humid Bengal- Assam Basin			
	Agro-Climatic Zone (Planning Commission)	Zone 2 (Eastern Himalayan Division)			
	Agro Climatic Zone (NARP)	Zone 2 Upper Brahmaputra Valley Zone			
	List all the districts or part thereof falling under the NARP Zone	Tinsukia Dibrugarh Sibsagar Jorhat Golaghat			
	Geographic coordinates of district headquarters	**Latitude**	**Longitude**	**Altitude**	
		27^{o} 5' 38" N to 27^{o} 42' 30" N	94^{o} 33' 46" E to 95^{o} 29'8" E	99 m to 200m	
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	RARS: Titabor, Assam Agricultural University			
	Mention the KVK located in the district	KVK, Dibrugarh, AAU, Romai, P. Box No. 24, P.O. Lahoal, 786 010			
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):	1717.5		2^{nd} week of June	Last week of Sep
	NE Monsoon (Oct- Dec):	322.5		1^{st} week of Oct	Last week of Dec
	Winter (Jan- Feb)	92.3			
	Summer (March-May)	639.4			
	Annual	2771.7	135		

**Source: *Statistical Handbook, Assam 2007*

1.3	Land Use pattern of the district (latest statistics)	Geographical area	Forest area	Land under non-agricultural use	Permanent pestures	Cultivable wasteland	Land under Misc. tree crops and groves	Barren and uncultivable land	Current fallows	Other fallows
	Area (Lakh ha)	3.33036	0.28442	1.18650	0.06084	0.07084	0.23708		0.08377	0.13378

1. 4	Major Soils (common names like red sandy loam deep soils (etc.,)*	Area (ha)	Percent (%) of total
1	Clay	29232	8.78
2	Clay loam	255062	76.59
3	Sandy Soil	25315	7.60
4	Sandy loams	23427	7.03

1.5	Agricultural land use	Area (ha)	Cropping intensity %
	Net sown area	1,27,313	148
	Area sown more than once	61379	
	Gross cropped area	1,88,692	

1.6	**Irrigation****	**Area (ha)**		
	Net irrigated area	12,420		
	Gross irrigated area	13,956		
	Rainfed area	1, 15, 088		
	Sources of Irrigation	**Number**	**Area (ha)**	**% of total irrigated area**
	Canals			
	Tanks	77		
	Open wells			
	Bore wells	5558	6768	
	Lift irrigation schemes	97	250	
	Micro-irrigation			
	Other sources (please specify)	63	118	
	Total Irrigated Area		12,420	
	Pump sets			
	No. of Tractors	137		
	Groundwater availability and use*	**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%**				

** Source: CDAP, Dibruagrh

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

Source: District Agril Officer, Dibrugarh

1.7a	Major field crops cultivated	Area (ha)							
		Kharif			*Rabi*			Summer	Grand total
		Irrigated	Rainfed	Total	Irrigated	Rainfed	Total		
1	Winter paddy	-	-	74,124	-	-	-	-	74,124
2	Autumn paddy (Some portion of Autumn paddy area is going to be replaced by Summer paddy)	-	-		-	-	3258		3258
3	Summer paddy								80
4	Arahar	-	-	185	-	-			185
5	Black gram	-	-	435	-	-			435
6	Black gram	-	-		-	-	1160		1160
7	Green gram	-	-	42					
8	Green gram					-	115		
9	Pea	-	-		-	-	1450		1450
10	Rapeseed and Mustard	-	-		-	-	8873		8873
Others (specify)	Potato						2540		

1.7b	Horticulture crops – Fruits	Total	Irrigated	Rainfed (ha)
1	Banana	1813		
2	Assam lemon	419		
3	Arecanut	2975		
4	Orange	238		
5	Pineapple	208		
6	Papaya	244		
Others (specify)				

1.7c	Horticulture crops - Vegetables	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Kharif Vegetable	2088		
2	Rabi vegetables	3824		
3	Potato	2540		
4	Chilli	252		
5	Ginger	248		
6	Turmeric	350		
Others (specify)				
1.7d	**Medicinal and Aromatic crops**	**Total area (ha)**	**Irrigated area (ha)**	**Rainfed area (ha)**
1.7e	**Plantation crops**	**Total area (ha)**	**Irrigated area (ha)**	**Rainfed area (ha)**
1	Black pepper	195		
1.7f	**Fodder crops**	**Total area (ha)**	**Irrigated area (ha)**	**Rainfed area (ha)**
Others (Specify)	Tea (Small tea gardens)	19,000		
1.7g	**Grazing land**			
1.7h	**Sericulture etc**			
1.7i	**Others (specify)**			

1.8	**Livestock (in number)** **Source: Statistical Handbook of Assam, 2009**	**Male**	**Female**	**Total**
	Non descriptive Cattle (local low yielding)			395162
	Crossbred cattle			23035
	Non descriptive Buffaloes (local low yielding)			29136
	Graded Buffaloes			
	Goat			131651
	Sheep			
	Others			
	Commercial dairy farms (Number)			
1.9	**Poultry**	**No. of farms**	**Total No. of birds ('000)**	
	Commercial			
	Backyard			
	Duck		209226	
	Fowl		468270	

1.10	Fisheries (Data source: District Fisheries Development Officer, Dibruagrh)						
	A. Capture						
	i) Marine	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						
	B. Culture						

		Water Spread Area (ha)	**Yield (t/ha)**	**Production (** T)
	Pond & Tanks	723.3	3.49924	2531
	Beels	1065	0.099531	106
	Community Tank	91.4	1.794311	164
	Low lying areas	239.7	0.100125	24
	Rivers	19500	0.2	3900

1.11 Production and Productivity of major crops (Average of last 3years: 2007-08, 2008-09 and 2009-10)

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)										
	Rice							141.4	1800.18	
	Rapeseed and Mustard			5.4	600			5.4	600	
	Pea			0.72	400			0.72	400	
	Blackgram	0.319	500					0.319	500	
	Potato			15.36	6000			15.36	6000	
Major Horticultural crops (Crops to be identified based on total acreage)										
	Banana							35.91	13800	
	Assam lemon							2.06	5133	
	Areca nut							9.16	2996	
	Kharif Vegetable	22.627	7404					22.627	7404	
	Rabi vegetable			39.477	10350			39.477	10350	
	Tea							Not available.		

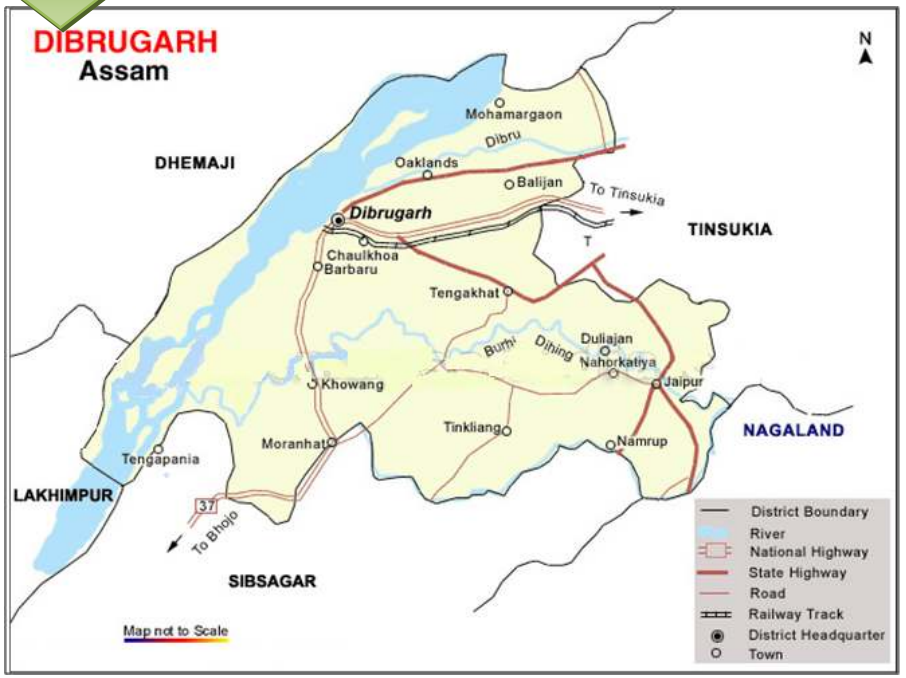
1.12	Sowing window for 5 major field crops (start and end of normal sowing period)	Crop 1 : Rice	Crop 2: Rapeseed & Mustard	Crop 3: Pea	Crop 4: Potato	Crop 5: Blackgram
	Kharif- Rainfed	15th May to end of June				15 th Aug to 1 week of Oct
	Kharif-Irrigated					
	Rabi- Rainfed		Oct to 1st week of Dec		Oct to Nov	
	Rabi-Irrigated			Oct –Nov.		

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

6 out of 10 years = Regular

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

Annexure – 1: LOCATION MAP OF Dibrugarh DISTRICT IN ASSAM



Annexure – 2: MEAN ANNUAL RAINFALL OF Dibrugarh

Fig. Distribution of rainfall over months in 2008-09

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]	**Crop/cropping system**[b]	**Change in crop/cropping system**[c]	**Agronomic measures**[d]	**Remarks on implementation**[e]
Delay by 2 weeks (Specify month) June 3rd week **(REFER TO THE MATRIX TABLE)**	**1. High rainfall medium low land alluvial soil**	**Cropping system 1** Rice-Rice a) Autumn rice+ winter rice Autumn rice- Lachit, Luit,local Winter rice- Ranjit, Bahadur, Kushal, and local	Rice based cropping system Continued up to July 15th	Weed management to minimize the competition with the main crop *viz.,* rice for nutrients, space and sunlight.	1. Supply of seeds through KSSC 2. Supply of seeds through NFSM 3. Supply of pump set through NFSM, AACP,RKVY
		Cropping system 2 Rice + Toria a) Autumn rice + Toria b) Winter rice + Toria **Autumn rice-** Lachit, Luit,and local **Winter rice-** Ranjit, Bahadur, Kushal, and local **Rapeseed**- TS-36, M-27, local	Winter rice Satyaranjan, Basundhara (medium duration)	i. Weed management, ii. Supply of minimum irrigation, Thinning	
		Cropping system 3 Rice- Potato/pea a) Winter rice + Potato	Winter rice - Lakhimi, Satyaranjan, Basundhara	Weed management, Supply of minimum irrigation,	

		b) Winter rice + Pea Winter rice- Ranjit, Bahadur, and local Potato- Kufri Chandramukhi, K. Jyoti, K. Sindhuri, K. Megha Pea – Boneville, Rachna, HUP-2, Pant-14			
	2. High rainfall low land alluvial soil	**Cropping system 1** Rice Ranjit, Bahadur, and local	Rice Rice based cropping system Continued up to July 15th		
	3. High rainfall upland alluvial soil	**Cropping system 1** Kharif veg- Rabi veg	Kharif veg- Rabi veg	Weed management, Supply of minimum irrigation,	
		Cropping system 2 Kharif pulse – Toria – Summer Vegetables a) Blackgram + Toria b) Blackgram + Toria + Summer vegetables **Blackgram-** Pant U 19, T-9, Local cultivars **Toria-** TS-36, M-27, TS-38 and local **Summer vegetables** – Okra, Cucumber, Pumpkin, Ridge gourd etc.		Weed management, Supply of minimum irrigation	

Condition			Suggested contingency measures		
Early season drought (delayed onset)	**Major farming situation[a]**	**Crop/cropping system[b]**	**Change in crop/cropping system[c]**	**Agronomic measures[d]**	**Remarks on implementation[e]**
Delay by 4 weeks (Specify month) July 1st week	**1. High rainfall medium low land alluvial soil**	**Cropping system 1** Rice-Rice a) Autumn rice+winter rice **Autumn rice**- Lachit, Luit, local **Winter rice-** Ranjit, Bahadur, and local	Rice based cropping system Continued up to July 15th	Weed management	1. Supply of seeds through KSSC 2. Supply of seeds through NFSM 3. Supply of pump set through NFSM, AACP,RKVY
		Cropping system 2 Rice + Rapeseed & Mustard a) Autumn rice + Toria b) Winter rice + Toria **Autumn rice-** Lachit, Luit and local **Winter rice-** Ranjit, Bahadur, and local **Toria-** TS-36, M-27 and local	**Winter rice** - Lakhimi, Satyaranjan, Basundhara	i. Weed management, ii. Supply of minimum irrigation, i. Thining of toria	
		Cropping system 3 Rice- Potato/pea a) Winter rice + Potato b) Winter rice + Pea **Winter rice-** Ranjit, Bahadur, and local **Potato-** Kufri Chandramukhi, K. Jyoti, K. Sindhuri, K. Megha **Pea –** Boneville, Rachna,	**Winter rice** - Lakhimi, Satyaranjan, Basundhara	i. Weed management, ii. Supply of minimum irrigation i. Seed hardening-(18 hrs. soaking in water followed by 24 hrs. shade drying	

		HUP-2, Pant-14			
	2. High rainfall low land alluvial soil	**Cropping system 1** Rice Ranjit, and local	Rice Rice based cropping system Continued up to July 15th		
	3. High rainfall upland alluvial soil	**Cropping system 1** Kharif veg- Rabi veg	Kharif veg- Rabi veg	i. Weed management, ii. Supply of minimum irrigation,	
		Cropping system 2 Kharif pulse – Toria – Summer Vegetables a) Blackgram + Toria b) Blackgram + Toria + Summer vegetables **Blackgram-** Pant U 19, T-9, Rangdoi mah **Toria-** TS-36,M-27 and local **Summer vegetables –** Okra, Cucumber, Pumpkin, Ridge gourd etc.		i. Weed management, ii.Supply of minimum irrigation	
		Cropping system 3 Ginger/turmeric			

Condition			**Suggested contingency measures**		
Early season drought (delayed onset)	**Major farming situation[a]**	**Crop/cropping system[b]**	**Change in crop/cropping system[c]**	**Agronomic measures[d]**	**Remarks on implementation[e]**
Delay by 6 weeks (Specify	**1. High rainfall medium low land alluvial soil**	**Cropping system 1** Rice-Rice b) Summer rice+winter rice	Winter rice - Satyaranjan, Basundhara	Weed management	1. Supply of seeds through KSSC 2. Supply of seeds through NFSM 3. Supply of pump set

month) **July 3rd week**		**Summer rice**- Lachit, Luit, local **Winter rice-** Ranjit, Bahadur, and local			through NFSM, AACP,RKVY
		Cropping system 2 Rice + Rapeseed & Mustard c) Autumn rice + Toria d) Winter rice + Toria **Autumn rice-** Lachit, Luit and local **Winter rice-** Ranjit, Bahadur, and local **Toria-** TS-36, M-27 and local	Winter rice - Lakhimi, Satyaranjan, Basundhara	i. Weed management, ii. Supply of minimum irrigation, Thinning	
		Cropping system 3 Rice- Potato/pea c) Winter rice + Potato d) Winter rice + Pea **Winter rice-** Ranjit, Bahadur, and local **Potato-** Kufri Chandramukhi, K. Jyoti, K. Sindhuri, K. Megha **Pea –** Boneville, Rachna, HUP-2, Pant-14	Winter rice - Lakhimi, Satyaranjan, Basundhara	i. Weed management, ii. Supply of minimum irrigation,	
	2. High rainfall low land alluvial soil	**Cropping system 1** Rice Ranjit, and local	Rice		
	3. High rainfall upland alluvial soil	**Cropping system 1** Kharif veg- Rabi veg	Kharif veg- Rabi veg	i. Weed management, ii. Supply of minimum irrigation,	
		Cropping system 2 Kharif pulse – Toria – Summer Vegetables c) Blackgram + Toria d) Blackgram + Toria +		i. Weed management, ii. Supply of life saving irrigation	

		Summer vegetables **Blackgram-** Pant U 19, T-9, Rangdoi mah **Toria-** TS-36,M-27 and local **Summer vegetables –** Okra, Cucumber, Pumpkin, Ridge gourd etc.			
		Cropping system 3 Ginger/turmeric			

Condition			**Suggested contingency measures**		
Early season drought **(delayed onset)**	**Major farming situation**[a]	**Crop/cropping system**[b]	**Change in crop/cropping system**[c]	**Agronomic measures**[d]	**Remarks on implementation**[e]
Delay by 8 weeks (Specify month) August 1st week	**1. High rainfall medium low land alluvial soil**	**Cropping system 1** Rice-Rice a) Summer rice+winter rice **Summer rice-** Lachit, Luit, local *etc.* **Winter rice-** Ranjit, Bahadur, Kushal, Moniram, Rangelee	**Winter rice** - Pankaj, Kushal, Lakhimi, Tranplanting with 60 days old seedling upto the end of August with Monoharsali, Prafulla, Gitesh Direct seeding with Luit, Kapilee etc.	Community nursery development for supply of seedlings. i. Weed management ii. Staggered planting, iii. Closer spacing	1. Supply of seeds through KSSC 2. Supply of seeds through NFSM 3. Supply of pump set through NFSM, AACP,RKVY
		Cropping system 2 Rice + Rapeseed & Mustard a) Autumn rice + Toria b) Winter rice + Toria **Autumn rice-** Govind, IR-50, Lachit, Luit	**Winter rice -** Luit, Kapilee, Disang,	**Rice**- i. Weed management, ii. Supply of Life saving irrigation,	

		Winter rice- Ranjit, Bahadur, Kushal, Moniram, **Toria-** TS-36, M-27		Thinning of toria	
		Cropping system 3 Rice- Potato a) Winter rice + Potato b) Winter rice + Pea **Winter rice**- Ranjit, Bahadur, Kushal, Moniram **Potato**- Kufri Chandramukhi, K. Jyoti, K. Sindhuri, K. Megha **Pea** – Boneville, Rachna, HUP-2, Pant-14	**Winter rice -** Luit, Kapilee, Disang,,	**Rice-** i. Weed management, ii. Supply of Life saving irrigation, ,	
	2. High rainfall low land alluvial soil	Rice Ranjit, Bahadur, Pankaj,local	Pankaj, Kushal, Lakhimi, Tranplanting with 60 days old seedling upto the end of August with Monoharsali, Prafulla, Gitsh Direct sowing of sprouted seeds of Luit, Kapilee	i. Selection of drought tolerant varieties ii. Staggered planting, iii. Closer spacing iv) more seedlings/hill	
	3. High rainfall upland alluvial soil	**Cropping system 1** Kharif veg- Rabi veg	Oilseed crops like sesame-Rabi veg.	i.Weed management, ii.Supply of Life saving irrigation,	
		Cropping system 2 Kharif pulse – Toria – Summer Vegetables a) Blackgram + Toria b) Blackgram +Summer vegetables **Blackgram**- Pant U 19, T-9, local **Toria**- TS-36, M-27 **Summer vegetables** – Okra,		i. Weed management, ii. Supply of Life saving irrigation,	

		Cucumber, Pumpkin, Ridge gourd etc.			
		Cropping system 3 Ginger/turmeric		i) Irrigation supply ii)Weed management	

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**	**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]**
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]**

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 into tanks due to insufficient /delayed onset of monsoon	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]
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[s]**
Rice	Proper drainage,	Proper drainage,	Proper drainage, Use of chemicals to check sprouting/enhance maturity. Early harvesting at physiological maturity.	Shift the produce to dry and safe place.
Potato	Proper drainage,	Proper drainage,	Drain out excess water if possible, Early harvesting	Shift the produce to dry and safe place.
Mustrad	Proper drainage,	Proper drainage,	Drain out excess water if possible, Early harvesting	Shift the produce to dry and safe place.
Blackgram	Proper drainage,	Proper drainage,	Drain out excess water if possible, Early harvesting	Shift the produce to dry and safe place.
Pea	Proper drainage,	Proper drainage,	Drain out excess water if possible, Early harvesting	Shift the produce to dry and safe place.
Horticulture				
Banana	Proper drainage,	Proper drainage,	Proper drainage,	Shift the produce to dry and safe place.
Assam lemon	Proper drainage,	Proper drainage,	Proper drainage,	Shift the produce to dry and safe place.
Areca nut	Proper drainage,	Proper drainage,	Proper drainage,	Shift the produce to dry and safe place.
Kharif Vegetable	Proper drainage/Proper nutrient management	Proper drainage,	Proper drainage, Early harvesting	Shift the produce to dry and safe place. Immediate marketing
Rabi vegetable	Proper drainage/Proper nutrient management	Proper drainage,	Proper drainage, Early harvesting	Shift the produce to dry and safe place. Immediate marketing
Tea	Proper drainage			Shift the produce to dry and safe place. Immediate disposal of

				green leaf
Heavy rainfall with high speed winds in a short span[2]				
Rice	Proper drainage,	Proper drainage,	Proper drainage, Use of chemicals to check sprouting/enhance maturity. Early harvesting at physiological maturity.	Shift the produce to dry and safe place.
Potato	Proper drainage,	Proper drainage,	Drain out excess water if possible, Early harvesting	Shift the produce to dry and safe place.
Mustrad	Proper drainage,	Proper drainage,	Drain out excess water if possible, Early harvesting	Shift the produce to dry and safe place.
Blackgram	Proper drainage,	Proper drainage,	Drain out excess water if possible, Early harvesting	Shift the produce to dry and safe place.
Pea	Proper drainage,	Proper drainage,	Drain out excess water if possible, Early harvesting	Shift the produce to dry and safe place.
Horticulture				
Banana	Proper drainage,	Proper drainage,	Proper drainage,	Shift the produce to dry and safe place.
Assam lemon	Proper drainage,	Proper drainage,	Proper drainage,	Shift the produce to dry and safe place.
Areca nut	Proper drainage,	Proper drainage,	Proper drainage,	Shift the produce to dry and safe place.
Kharif Vegetable	Proper drainage/Proper nutrient management	Proper drainage,	Proper drainage, Early harvesting	Shift the produce to dry and safe place. Immediate marketing
Rabi vegetable	Proper drainage/Proper nutrient management	Proper drainage,	Proper drainage, Early harvesting	Shift the produce to dry and safe place. Immediate marketing
Tea	Proper drainage, spraying of fungicide.			Shift the produce to dry and safe place. Immediate disposal of green leaf
Outbreak of pests and diseases due to unseasonal rains				
Rice	Plant protection measures , proper water management for case worm	Plant protection measures	Plant protection measures	Proper drying and efficient storage
Potato	Plant protection measures	Plant protection measures specially	Plant protection measures	Proper drying and efficient storage

		against Blight		
Mustrad	Plant protection measures	Plant protection measures	Plant protection measures	Proper drying and efficient storage
Blackgram	Plant protection measures	Plant protection measures	Plant protection measures	Proper drying and efficient storage
Pea	Plant protection measures	Plant protection measures	Plant protection measures	Proper drying and efficient storage
Horticulture				
Banana	Need based plant protection measures	Need based plant protection measures	Need based plant protection measures	
Assam lemon	Need based plant protection measures	Need based plant protection measures	Need based plant protection measures	
Areca nut	Need based plant protection measures	Need based plant protection measures	Need based plant protection measures	
Kharif Vegetable	Need based plant protection measures	Need based plant protection measures	Need based plant protection measures	
Rabi vegetable	Need based plant protection measures	Need based plant protection measures	Need based plant protection measures	
Tea	Need based plant protection measures			

2.3 Floods :

Condition	**Suggested contingency measure[o]**			
Transient water logging/ partial inundation[1]	**Seedling / nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Rice	Drainage of the Nursery bed, If not possible go for re -sowing	Drainage of excess water. Apply 1/3rd N + 50% K2O as top dressing during the tillering stage. In partially damaged field, gap	Drainage of excess water. If flood comes during reproductive stage, emphasis should be given on rabi crops.	Drainage of excess water. If flood comes at harvesting stage, more emphasis should be given to low volume high value rabi crops and Autumn paddy

		filling may be done . Wet seeding of sprouted seeds (@75-80 kg/ha) of short to medium duration varieties like Disang, Luit, (100 days) Kapili, Kalong (120 days) 50-60 days old seedlings capable of providing good yield like Gitesh should be selected Management of pests & diseases as per need	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.	Supply of seeds and other agro-inputs of *rabi* crops at subsidized rate, provision of bank loan etc. Utilization of residual soil moisture and use of recharged soil profile for growing pulses and oilseeds. Growing of cucurbits after receding flood water
Potato	Drain out excess water, Delayed planting	Drain out water if possible	Drain out water if possible	Shift the produce to the safe and dry place
Mustrad	Drain out excess water, Delayed planting	Drain out water if possible	Drain out water if possible	Shift the produce to the safe and dry place
Blackgram	Drain out excess water, Delayed planting	Drain out water if possible	Drain out water if possible	Shift the produce to the safe and dry place
Pea	Drain out excess water, Delayed planting	Drain out water if possible	Drain out water if possible	Shift the produce to the safe and dry place
Horticulture	Drain out excess water, Delayed planting	Drain out water if possible	Drain out water if possible	Shift the produce to the safe and dry place
Banana	Drain out excess water, Delayed planting	Drain out water if possible	Drain out water if possible	Shift the produce to the safe and dry place
Assam lemon	Drain out excess water, Delayed planting	Drain out water if possible	Drain out water if possible	Shift the produce to the safe and dry place
Areca nut	Drain out excess water, Delayed planting	Drain out water if possible	Drain out water if possible	Shift the produce to the safe and dry place
Kharif Vegetable	Drain out excess water, Delayed planting	Drain out water if possible	Drain out water if possible	Shift the produce to the safe and dry place
Rabi vegetable	Drain out excess water,	Drain out water if possible	Drain out water if possible	Shift the produce to the safe

	Delayed planting			and dry place
Tea	Drain out excess water, Foliar application of NPK			
Continuous submergence for more than 2 days[2]				
Rice	Drain out excess water, Replanting, Prophylactic measures against pest and Diseases	Drain out excess water, Replanting, Direct seeding after receding of water .	Drain out water if possible	Shift the produce to the safe and dry place
Potato	Drain out excess water, Delayed planting	Replanting	Drain out water if possible	Shift the produce to the safe and dry place
Mustrad	Drain out excess water, Delayed planting		Drain out water if possible	Shift the produce to the safe and dry place
Blackgram	Drain out excess water, Delayed planting	Drain excess water		Shift the produce to the safe and dry place
Pea	Drain excess water	Drain excess water	Drain excess water	Shift the produce to the safe and dry place
Horticulture				
Banana				
Assam lemon				
Areca nut				
Kharif Vegetable	Drain out excess water, Replanting, Prophylactic measures against pest and Diseases	Drain out excess water, Replanting, Prophylactic measures against pest and Diseases	Drain out excess water, Replanting, Prophylactic measures against pest and Diseases	Shift the produce to the safe and dry place
Rabi vegetable				
Tea	Drain out excess water, Foliar application of NPK			
Sea water intrusion[3]	Not applicable			

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

Extreme event type	Suggested contingency measure[r]			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**

Heat Wave[p]				
Cold wave[q]				
Frost				
Hailstorm				
Cyclone				

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	Emphasis on household backyard perennial fodder crop and its proper storage. Community basis Wasteland perennial fodder cultivation on Development of Fodder banks Storage of ready made Silage or following its making. Storage of straw Storage of additional feed supplements.	Use of stored fodder. Use of stored silage and straw. Straw may be supplied following urea treatment. Transporting excess fodder from adjoining districts if possible. Use of feed supplements	Mandatory health check-up. Culling unproductive livestock after health checkup
Drinking water	Preserving rain water in the tank for drinking purpose. Rain and roof water harvesting.	Using preserved water in the tanks for drinking. Provide artificial shadow. Feeding under confinement that will help in reducing evaporative loss. Manage mental feeding rather than productive feeding.	Mandatory health check-up. Culling unproductive livestock.
Health and disease management	Veterinary preparedness with medicines and vaccines. Preparedness of mobile veterinary services	Providing mobile veterinary services.	Mandatory health check-up. Culling unproductive

	to be offered during emergency period for critical and emergency care. Vaccination and deworming schedule.		livestock.
Floods			
Feed and fodder availability	Encourage perennial fodder on bunds and waste land on community basis Preservation of fodder . Stock of raw material for concentrate and feed supplements.	Utilizing stored fodder from perennial trees and Fodder bank reserves Transporting excess fodder from adjoining districts if possible. Use of stored feed supplements.	Mandatory health check-up. Culling unproductive livestock.
Drinking water	Preserving water in the tank for drinking purpose. Rain and roof water harvesting.	Supply of stored clean/treated drinking water.	Replacement of the old stock of drinking water with fresh clean water.
Health and disease management	Provision of community shelter to be provided during the event. Preparedness for critical and emergency care during the event including installation of mobile veterinary services. Vaccination and deworming schedule to be followed.	Shifting of animals to community shelter. Conducting mass animal Health Camps and treating the affected once in Campaign. Emergency care by mobile veterinary unit.	Mandatory health check-up of livestock with modern diagnostic aids. Culling unproductive livestock if necessary. Eco-friendly disposal of carcasses.

Cyclone	Not applicable		
Feed and fodder availability			
Drinking water			
Health and disease management			
Heat wave and Cold wave	Not applicable		
Shelter/Environment management			

Health and disease management			

[s] based on fore warming wherever applicable

2.5.2 Poultry

	Suggested contingency measures		
	Before the event [s]	**During the event**	**After the event**
Drought			
Shortage of feed ingredients	Storage of additional ration or feed ingredients and feed supplements.	Use of stored feed ingredients and supplements. Manage mental feeding rather than productive feeding.	Mandatory health check-up. Culling unproductive birds. Proper disposal of dead birds.
Drinking water	Preserving water in the tank for drinking purpose. Rain and roof water harvesting.	Using preserved water in the tanks for drinking. Provide artificial shadow. Feeding under confinement that will help in reducing evaporative loss.	Mandatory health check-up. Culling diseased birds. Replacement of the old stock of drinking water with fresh clean water.
Health and disease management	Veterinary preparedness with medicines and vaccines. Preparedness of mobile veterinary services to be offered during emergency period for critical and emergency care. Vaccination and deworming schedule.	Providing mobile veterinary services for emergency care.	Mandatory health check-up. Culling unproductive livestock. Eco-friendly disposal of carcasses.
Floods			
Shortage of feed ingredient	Stocking of essential feed ingredients	Utilization of stock feed. Providing mobile veterinary services for emergency care. Disposal at proper /	Disposal of birds at prematurity stage if necessary.

		prematurity stage if necessary.	
Drinking water	Provision for clean drinking water	Supply of disinfected drinking water	Replacement of the old stock of drinking water with fresh clean water. Supply of disinfected drinking water.
Health and disease management	Emergency Veterinary preparedness with medicines vaccination to birds	Treatment of the diseased birds. Awareness Campaign to public not to use diseased birds for consumption.	Mandatory health check-up of birds for any kind of diseases with modern diagnostic aids. Culling diseased birds if necessary. Eco-friendly disposal of carcasses.
Cyclone	Not applicable		
Shortage of feed in gradient			
Drinking water			
Health and disease management			
Heat wave and Cold wave	Not applicable		
Shelter/Environment management			
Health and disease management			

[s] based on fore warming wherever applicable

2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event[a]	**During the event**	**After the event**
1) Drought			
A. Capture			

Marine			
Inland	Arrangement of water pump	Supply of water	If situation is not controllable, the settlement of insurance and finance support may be provided
B. Aquaculture			
(i) Shallow water in ponds due to insufficient rains/inflow	Arrangement of water pump	Supply of water by pumping	
(ii) Impact of salt load build up in ponds / change in water quality			
(iii) Any other			
2) Floods			
A. Capture	Repair and maintenance of bunds upto the danger level.	Regular check up of the bunds	If situation is not controllable, the settlement of insurance and finance support may be provided
Marine			
(i) Loss of stock	1. Construction of humane shelter. 2. Storage of sand filled bags for emergency use. 3. Repair and maintenance of bunds. 4. Preparedness for relief & rescue 5. Insurance coverage provision for life and property	**1.** Timely broadcast and telecast and other types of announcement warning about the danger level with respect to water level**.** 2. Evacuation of people to flood shelter areas. 3. Relief operation.	1. Relief operation will continue. 2. Care of health of affected people 3. Settlement of insurance. 4. Financial support to other people.
(ii) Changes in water quality	Take appropriate measures to check seepage into pond e.g. Raising bunds to prevent entry of water	Check the water quality & take appropriate action	1. Application of lime. 2. Application of Alum**.** 3. Application of $KMnO_4$
(iii) Health and diseases	Stock preventive medicines, vaccines	Prevent influx of diseased fish from outside source, Check	1. Application of lime and $KMnO_4$. 2. Assessment of the health status of

		through nets Administer medicines through random catch Disinfect water by lime , KMnO4	fish and accordingly control measure should be taken. 3. Control on transport of brooders and seeds.
(iii) No.of houses damaged			
(iv) Loss of stock			
(v) Changes in water quality	Water parameters should be regularized by application of proper inputs.	Regular maintenance should be done	If necessary dewatering may be done may be done to refill pump water.
(vi) Health and diseases			
B. Aquaculture			
(i) Inundation with flood water	Strengthening of pond dyke	Use of boundary net	Repairing of damage dyke
(ii) Water contamination and changes in water quality	Regular liming	Close monitoring	Liming as prophylactic treatment
(iii) Health and diseases	Regular liming	Close monitoring	Health check up by netting and application of chemicals as required
(iv) Loss of stock and inputs (feed, chemicals etc)	Keep ready additional stock	Close monitoring	Introduce new fingerlings. Damage feed and chemical should be discarded.
(v) Infrastructure damage (pumps, aerators, huts etc)			
(vi) Any other			
3. Cyclone / Tsunami			
A. Capture			
Marine			
(i) Average compensation paid due to loss of fishermen lives			
(ii) Avg. no. of boats / nets/damaged			
(iii) Avg. no. of houses damaged			
Inland			
B. Aquaculture			

(i) Overflow / flooding of ponds	Collect necessary mesh size nets	Covering the embankment of its surrounding areas	Take fish health care
(ii) Changes in water quality (fresh water / brackish water ratio)			
(iii) Health and diseases	Apply medicines for preventive measures	Apply CIFAX	Check health status of fish
(iv) Loss of stock and inputs (feed, chemicals etc)			
(v) Infrastructure damage (pumps, aerators, shelters/huts etc)			
(vi) Any other			
4. Heat wave and cold wave			
A. Capture			
Marine			
Inland			
B. Aquaculture			
(i) Changes in pond environment (water quality)			
(ii) Health and Disease management			
(iii) Any other			

[a] based on forewarning wherever available