State: ASSAM

Agriculture Contingency Plan for District: DHEMAJI

1.0 District Agriculture profile*					
1.1	**Agro-Climatic/Ecological Zone**				
	Agro Ecological Sub Region (ICAR)	Bengal and Assam Plain, hot humid (moist) to humid (inclusion of perhumid) ecoregion.			
	Agro-Climatic Zone (Planning Commission)	Eastern Himalayan Division, Zone II			
	Agro Climatic Zone (NARP)	North Bank Plains Zone, Assam			
	List all the districts falling under the NARP Zone* (*>50% area falling in the zone)	Darrang, Sonitpur, North Lakhimpur and Dhemaji district			
	Geographic coordinates of district headquarters head quarters	**Latitude**	**Longitude**	**Altitude**	
		27.3 to 28°N.	94-95.2°E	89.75 m	
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	RARS, Lakhimpur, Dist.-Lakhimpur, Assam			
	Mention the KVK located in the district with full address	Krishi Vigyan Kendra, Dhemaji, Silapathar-787059, Assam			
	Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro-advisories in the Zone	AGROMET ADVISORY, Assam Agricultural University, BN College of Agriculture, Biswanath Chariali, Sonitpur-784176			
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):	2264.45	105	1st week of June	Last week of September

	NE Monsoon(Oct-Dec):	233.46	21		
	Winter (Jan-March)	85.37	17	-	-
	Summer (April-May)	733.05	40	-	-
	Annual	3316.33		-	-

1.3	**Land use pattern of the district** (latest statistics)	Geographical area	Cultivable area	Forest area	Land under non-agricultural use	Permanent pastures	Cultivable wasteland	Land under Misc. tree crops and groves	Barren and uncultivable land	Current fallows	Other fallows
	Area ('000 ha)	**301.3**	**237.112**	**10.324**	**35.7**	**2.96**	**41.6**	**3.5**	**11.6**	**50.5**	

1. 4	**Major Soils (common names like red sandy loam deep soils (etc.,)***	**Area ('000 ha)****	**Percent (%) of total geographical area**
	1.Clay	27.3	9.06
	2. Clay loam	60.9	20.2
	3. Alluvial	13.3	4.6
	4. Sandy Loam	137.5	46.2
	5. Sandy	62.1	20.6
	Others (specify):		

*

1.5	**Agricultural land use**	Area ('000 ha)	Cropping intensity %
	Net sown area	92.57	142
	Area sown more than once	21.1	
	Gross cropped area	113.67	

1.6	**Irrigation**	Area ('000 ha)

	Net irrigated area	2.86		
	Gross irrigated area	3.247		
	Rainfed area	127.3		
	Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
	Canals			
	Tanks	12	0.098	
	Open wells			
	Bore wells	350		
	Lift irrigation schemes			
	Micro-irrigation			
	Other sources (please specify)			
	Total Irrigated Area	6.107	6.177	
	Pump sets	2920		
	No. of Tractors	56		
	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	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	Kharif: 48.0 Rabi: 32.0
		DAP	-
		Potash	Kharif: 15.0 Rabi: 16.0
		SSP	Kharif: 19.0 Rabi: 16.0

		Other straight fertilizers (specify) Other complex fertilizers (specify)	
2	Chemical Pesticides*	Insecticides Fungicides Weedicides Others (specify)	3380 lit and 6400 kg

1.7 Area under major field crops & horticulture

1.7	Major field crops cultivated	Area ('000 ha)							
		Kharif			*Rabi*				
		Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	Summer	Grand total
	Paddy	1.1	65.45	66.55	1.64	4.16	5.8	5.14	72.35
	Oilseeds					16.85	16.85		16.85
	Potato				0.2	5.0	5.2		5.2
	Blackgram		0.72						0.72
	Maize		0.35	0.35					0.35

	Horticulture crops - Fruits	Area ('000 ha)		
		Total		
	Banana	1.005		
	Jackfruit	0.653		

	Mango	0.440		
	Assam lemon	0.565		
	Pineapple	0.207		
	Horticulture crops - Vegetables	**Total**		
	Rabi vegetables	5.03		
	Kharif vegetables	1.405		
	Ginger	0.407		
	Garlic	0.367		
	Turmeric	0.472		
	Coriander	0.367		
	Medicinal and Aromatic crops			
	Plantation crops			
	Black pepper	0.072		
	Rubber	0.002		
	Other spices	0.028		
	Eg., industrial pulpwood crops etc.			
	Fodder crops	**Total**		
	Grazing land, reserve areas etc			

	Reserve forests	42.01		
	Availability of unconventional feeds/by products eg., breweries waste, food processing, fermented feeds bamboo shoots, fish etc			
	Sericulture etc	1.4		
	Others (specify)			

1.8	**Livestock**	**Male ('000)**	**Female ('000)**	**Total ('000)**
	Indigenous cattle			464.7
	Improved / Crossbred cattle			.833
	Buffaloes (local low yielding)			14.82
	Improved Buffaloes			
	Goat			117.45
	Sheep			.12
	Pig			134.07
	Mithun			-
	Yak			-
	Others (Horse, mule, donkey etc., specify)			-
	Commercial dairy farms (Number)			-
1.9	**Poultry**	**No. of farms**	**Total No. of birds ('000)**	
	Commercial		444.29	
	Backyard		170.15	
1.10	**Fisheries** (Data source: Chief Planning Officer)			
	A. Capture			

	i) Marine (Data Source: Fisheries Department)	**No. of fishermen**	**Boats**		**Nets**		**Storage facilities (Ice plants etc.)**
			Mechanized	Non-mechanized	Mechanized (Trawl nets, Gill nets)	Non-mechanized (Shore Seines, Stake & trap nets)	
	ii) Inland (Data Source: Fisheries Department)	**No. Farmer owned ponds**		**No. of Reservoirs**		**No. of village tanks**	
		424 ha		**-**		**2136 ha**	
	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)			12454		0.042	3.769
	Others						

1.11 Production and Productivity of major crops (Average of last 3 years: 2006-07, 2007-08, 2008-09)

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)										
	Paddy	93.4	1612	5.916	996.00	3.57	997	102.886	1201	
	Oilseeds (mustard/Toria)			8.347	594.00			8.347	594.00	
	Potato			26.37	5864.00			26.37	5864.00	

	Blackgram	0.404	670					0.404	670	
	Maize	0.209	524					0.209	524	
Major Horticultural crops (Crops to be identified based on total acreage)										
	Banana							15.784	15653	
	Jackfruit							4.052	6370	
	Mango							3.444	7786	
	Assam lemon							2.406	5886	
	Pineapple							2.913	13958	

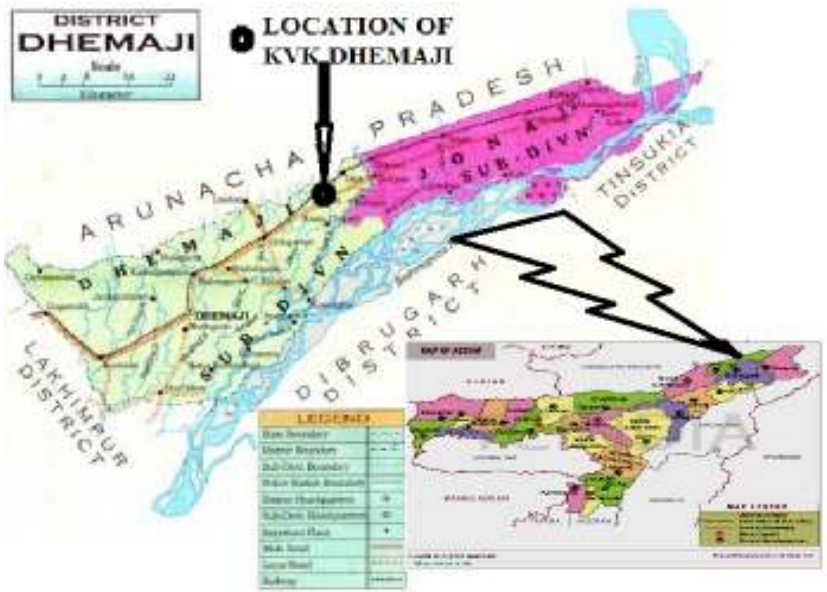
1.12	**Sowing window for 5 major field crops** (start and end of normal sowing period)	Paddy	Potato	Blackgram	Oilseeds (Mustard/Toria)	Maize
	Kharif- Rainfed	June-July		1^{st}-15^{th} Sept		
	Kharif-Irrigated					
	Rabi- Rainfed	November	15 Oct-15 Nov		15 Oct-15 Nov	
	Rabi-Irrigated					
	Summer-Irrigated					
	Summer-Rainfed	March-April				March

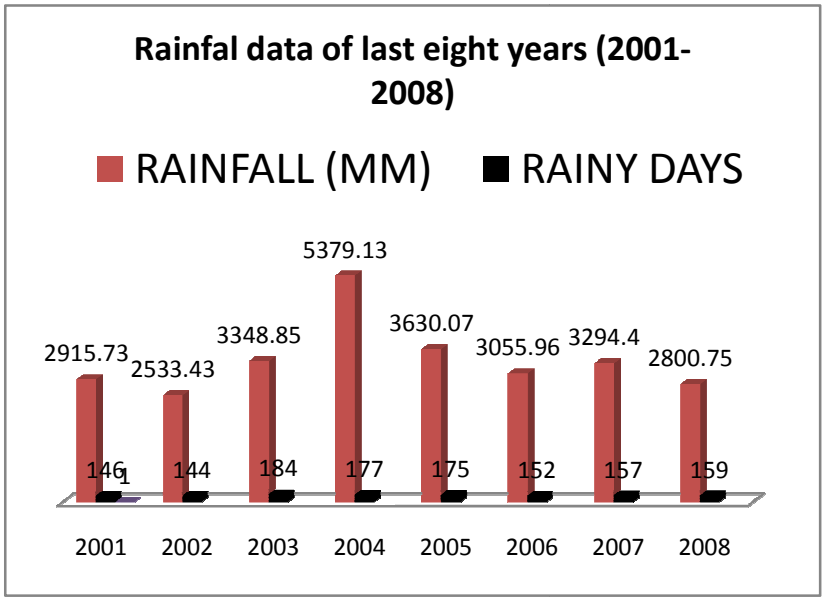
1.13	**What is the major contingency the district is prone to?** (Tick mark)	**Regular***	**Occasional**	**None**
	Drought		✓	
	Flood	✓		

	Cyclone			✓

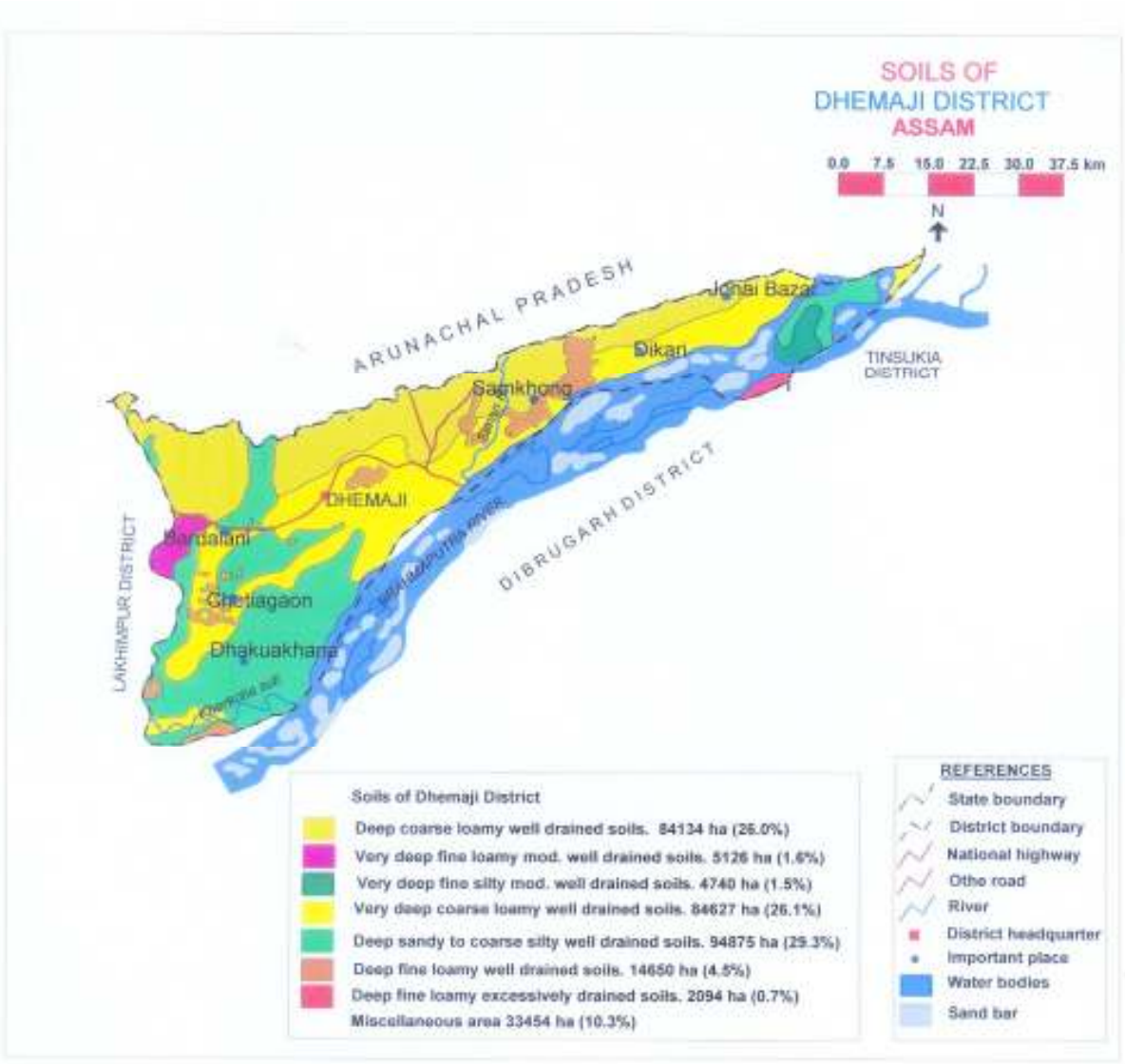
*When contingency occurs in six out of 10 years

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





Soil map **Annexure-III**



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)	**Medium to high rainfall, alluvial loamy soil, Medium land**	Sali rice variety like Ranjit, Bahadur and Local cultivars Cropping system: Rice mono crop	Does not require to change the crops and cropping system	• Dry sowing of seed with 15-20% higher seed rate • Preparation of seedbed just after rain. • Recommended practices of Sali rice cultivation. • Bund the field with mud plastering to keep rain water.	• Supply of seeds through National Calamity relief fund, National disaster management fund, • Procurement of certified seeds from Assam Seed Corporation Limited and RARS, • finger weeder, • LLP under RKVY/ Govt scheme, • Purchase of low cost drip irrigation set from NRega scheme.
	Medium to high rainfall, alluvial sandy loam to sandy soil, Medium land	Sali rice variety like Ranjit, Bahadur and Local cultivars Cropping system: Rice mono crop	-do-	-do-	-do-
	Medium to high rainfall, alluvial sandy loam soil, upland	Summer and kharif vegetable like brinjal and Cucurbits Cropping system: Summer/ Kharif	-do-	• Light ploughing to conserve soil moisture followed by weeding • Application of sufficient amount of organic manures	-do-

		vegetables +Rabi vegetables/ Toria		• Thinning to maintain optimum plant population • Mulching with waste materials	
		Spice crop like Ginger and Turmeric and Sugarcane Cropping system: Ginger or Turmeric or sugarcane as mono crop	-do-	• Light ploughing to conserve soil moisture followed by weeding • Application of sufficient amount of organic manures • Thinning to maintain optimum plant population • Mulching with waste materials	-do-
	Medium to high rainfall, alluvial loamy medium low land	Ahu rice local cultivars Toria (local), Potato Cropping system: Ahu Rice Rice + Toria/ Potato/ Rabi vegetables	-do-	• Light hoeing • Application of sufficient amount of organic manures • Thinning to maintain optimum plant population	-do-
		Deep water rice local cultivars, Toria (local), Potato Cropping system: Deep water rice mono crop	-do-	• Application of sufficient amount of organic manures • Thinning to maintain optimum plant population	
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]**
	Medium to high	Sali rice variety like	Does not require to	• Dry sowing of seed	• Supply of seeds through

Delay by 4 weeks (July 1st week)	**rainfall, alluvial loamy soil, Medium land**	Ranjit, Bahadur and Local cultivars Cropping system: Rice mono crop	change the crops and cropping system as the normal sowing is up to July	with 15-20% higher seed rate • Preparation of seedbed just after rain. • Apply sufficient amount of organic manure • Split the fertilizer dose recommended • Bund the field with mud plastering to keep rain water.	National Calamity relief fund, National disaster management fund, • Procurement of certified seeds from Assam Seed Corporation Limited and RARS, • Finger weeder, • LLP under RKVY/ Govt scheme, • Purchase of low cost drip irrigation set from NREGA scheme.
	Medium to high rainfall, alluvial sandy loam to sandy soil, Medium land	Sali rice variety like Ranjit, Bahadur and Local cultivars Cropping system: Rice mono crop	-do	-do-	-do-
	Medium to high rainfall, alluvial sandy loam soil, upland	Summer and kharif vegetable like brinjal and Cucurbits. Cropping system: Summer/ Kharif vegetables +Rabi vegetables/ Toria	Does not require to change the crops and cropping system	• Light ploughing to conserve soil moisture followed by weeding • Application of sufficient amount of organic manures • Thinning to maintain optimum plant population • Mulching with waste materials	-do-
		Spice crop like Ginger and Turmeric and Sugarcane Cropping system: Ginger or Turmeric or Sugarcane as	Does not require to change the crops and cropping system	• Light ploughing to conserve soil moisture followed by weeding • Application of sufficient amount of organic manures	-do-

		mono crop		• Thinning to maintain optimum plant population • Mulching with waste materials	
	Medium to high rainfall, alluvial loamy medium low land	Ahu rice local cultivars Toria (local), Pea, Potato and rabi vegetables Cropping system: Ahu Rice Rice + Toria/Pea/ Potato/ Rabi vegetables	Does not require to change the crops and cropping system	• Split the urea dose recommended for top dressing • Thinning and weeding • Bund the field with mud plastering to keep rain water • Plant protection measures and need based pesticides application	-do-
		Deep water rice local cultivars, Cropping system: Deep water rice mono crop	Does not require to change the crops and cropping system	-do-	-do-

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 (July 3rd week)	**Medium to high rainfall, alluvial loamy soil, Medium land**	Sali rice variety like Ranjit, Bahadur and Local cultivars Cropping system: Rice mono crop	Does not require to change cropping sequence but to change rice variety Semi dwarf varieties-IR 36, Pankaj, Lakhimi, Jaya, Tall varieties- Manohar Sali Medium varieties : Basundhara, Satyaranjan	• Follow light ploughing for moisture conservation. • Raising community nurseries by dry sowing with 20-25 % high seed rate • Increase seed rate • Bund the field with mud plastering to keep rain water	• Supply of seeds through National Calamity relief fund, National disaster management fund, • Procurement of certified seeds from Assam Seed Corporation Limited and RARS, • Finger weeder, • LLP under RKVY/

			Gitesh and Prafulla And available local cultivars like Salpona		Govt scheme, • Purchase of low cost drip irrigation set from NREGA scheme.
	Medium to high rainfall, alluvial sandy loam to sandy soil, Medium land	Sali rice variety like Ranjit, Bahadur and Local cultivars Cropping system: Rice mono crop	Does not require to change cropping sequence but to change rice variety Semi dwarf varieties-IR 36, Pankaj, Jaya Tall varieties- Manohar Sali Medium varieties : Basundhara, Satyaranjan And available local cultivars like Salpona	-do-	-do-
	Medium to high rainfall, alluvial sandy loam soil, upland	Summer and kharif vegetable like brinjal, okra and Cucurbits. Cropping system: Summer/ Kharif vegetables +Rabi vegetables/ Toria	Does not require to change the crops and cropping system	• Light ploughing to conserve soil moisture • Weeding • Application of sufficient amount of organic manures • Thinning to maintain optimum plant population • Mulching with waste materials	-do-
		Spice crop like Ginger and Turmeric and Sugarcane Cropping system: Ginger or Turmeric or	Does not require to change the crops and cropping system	• Weeding • Application of sufficient amount of	-do-

		Sugarcane as mono crop		organic manures • Thinning to maintain optimum plant population • Mulching with waste materials	
	Medium to high rainfall, alluvial loamy medium low land	Ahu rice local cultivars Toria (local), Potato Cropping system: Ahu Rice Rice + Toria/ Potato/ Rabi vegetables	Does not require to change the crops and cropping system	• Weeding • Bund the field with mud plastering to keep rain water • Plant protection measures and need based pesticides application	-
		Deep water rice local cultivars, Cropping system: Deep water rice mono crop	Does not require to change the crops and cropping system	-do-	-

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 (August 1st week)	**Medium to high rainfall, alluvial loamy soil, Medium land**	Sali rice variety like Ranjit, Bahadur and Local cultivars Cropping system: Rice mono crop	Does not require to change cropping sequence but to change rice variety Short duration Sali rice variety like Luit, Kalong and Disang And available local cultivars like Salpona, Mala and Baas	• Follow light ploughing for moisture conservation. • Raising community nurseries by dry sowing with 20-25 % high seed rate • Increase seed rate • Follow the mat nursery technology	Supply of seeds through National Calamity relief fund, National disaster management fund, Procurement of certified seeds from Assam Seed Corporation Limited and RARS,finger weeder, LLP under

				• Split the fertilizer dose • Application of Organic manure • Increase Potassium fertilizer dose	RKVY/ Govt scheme, Purchase of low cost drip irrigation set from NREGA scheme.
	Medium to high rainfall, alluvial sandy loam to sandy soil, Medium land	Sali rice variety like Ranjit, Bahadur and Local cultivars Cropping system: Rice mono crop	Does not require to change cropping sequence but to change rice variety Short duration Sali rice variety like Luit and Kalong And available local cultivars like Salpona, Mala and Bass	• Follow light ploughing for moisture conservation. • Follow the mat nursery technology • Split the fertilizer dose • Application of Organic manure • Direct seeded Sali rice • Increase seed rate	-do-
	Medium to high rainfall, alluvial sandy loam soil, upland	Summer and kharif vegetable like brinjal, ladies finger, Yam, and Cucurbits. Cropping system: Summer/ Kharif vegetables +Rabi vegetables/ Toria	Does not require to change the crops and cropping system	• Light ploughing to conserve soil moisture • Weeding • Application of sufficient amount of organic manures • Thinning to maintain optimum plant population • Mulching with waste materials	-do-
		Spice crop like Ginger and Turmeric and Sugarcane Cropping system: Ginger or Turmeric or	Does not require to change the crops and cropping system	• Light ploughing to conserve soil moisture followed by weeding	-do-

		Sugarcane as mono crop		• Application of sufficient amount of organic manures • Thinning to maintain optimam plant population • Mulching with waste materials	
	Medium to high rainfall, alluvial loamy medium low land	Ahu rice local cultivars Toria (local), Potato Cropping system: Ahu Rice Rice + Toria/ Potato/ Rabi vegetables	Does not require to change the crops and cropping system	• Weeding • Bund the field with mud plastering to keep rain water • Plant protection measures and need based pesticides application	-
		Deep water rice local cultivars, Cropping system: Deep water rice mono crop	Does not require to change the crops and cropping system	• Weeding • Plant protection measures and need based pesticides application	

Condition			**Suggested Contingency measures**		
Early season drought **(Normal onset)**	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measues[d]**	**Remarks on Implementation[e]**
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	1) **Medium to high rainfall, alluvial loamy soil, Medium land**	Sali rice variety like Ranjit, Bahadur and Local cultivars Cropping system: Rice mono crop	• Resow the crop if the mortality is more than 50 %. • Promote Community based nursery • Lime, potash , Phosphorus	• Top dress additional quantities of MOP@5 kg/bigha and incorporate with . • Spray 2 % MOP solution on leaves. • Strengthen the field and contour bunds for in-	Supply of seeds through National Calamity relief fund, National disaster management fund, Procurement of

			application as basal prior to transplanting	situ moisture conservation	certified seeds from Assam Seed Corporation Limited and RARS,finger weeder, LLP under RKVY/ Govt scheme, Purchase of low cost drip irrigation set from NREGA scheme.
	2) **Medium to high rainfall, alluvial sandy loam to sandy soil, Medium land**	Sali rice variety like Ranjit, Bahadur and Local cultivars Cropping system: Rice mono crop	• Resow the crop if the mortality is more than 50 %. • Promote Community based nursery • Lime, potash , Phosphorus application as basal prior to transplanting	• Top dress additional quantities of MOP@5 kg/bigha and incorporate with . • Spray 2 % MOP solution on leaves. • Strengthen the field and contour bunds for in-situ moisture conservation	**-do-**
	3) **Medium to high rainfall, alluvial sandy loam soil, upland**	Summer and kharif vegetable like brinjal and Cucurbits. Cropping system: Summer/ Kharif vegetables +Rabi vegetables/ Toria	• Resow the crop if the mortality is more than 50 %. • Lime, potash , Phosphorus application as basal prior to transplanting • Gap filling if necessary • Splitting of tillers to supplement shortage of seedling	• Top dress additional quantities of MOP@5 kg/bigha and incorporate with . • Spray 2 % MOP solution on leaves. • Top dressing of urea may be delayed upto heading if drought prevails at the stage of top dressing	**-do-**

		Crop like Ginger, Turmeric and Sugarcane Cropping system: Ginger or Turmeric or Sugarcane as mono crop	• Resow the crop if the mortality is more than 50 %. • Lime, potash , Phosphorus application as basal prior to transplanting • Gap filling if necessary • Splitting of tillers to supplement shortage of seedling	• Top dress additional quantities of MOP@5 kg/bigha and incorporate with. • Spray 2 % MOP solution on leaves. • Top dressing of urea may be delayed upto heading if drought prevails at the stage of top dressing	**-do-**
	4) Medium to high rainfall, alluvial loamy medium low land	Ahu rice local cultivars Toria (local), Potato Cropping system: Ahu Rice Rice + Toria/ Potato/ Rabi vegetables	• Weeding • Plant protection measures and need based pesticides application	• Bund the field with mud plastering to keep rain water	**-do-**
		Deep water rice local cultivars, Cropping system: Deep water rice mono crop	-do-	-do-	**-do-**

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]**
	1) **Medium to high rainfall, alluvial loamy soil, Medium land**	Sali rice variety like Ranjit, Bahadur and Local cultivars Cropping system: Rice mono crop	• Life saving irrigation followed by foliar application of nutrients 2% urea or 2% DAP or 1% KNO3 • Follow plant protection measures	• Top dress additional quantities of MOP@5 kg/bigha and incorporate with . • Spray 2 % MOP solution on leaves if and when drought appears. • Top dressing of urea	Supply of seeds through National Calamity relief fund, National disaster management fund, Procurement of certified seeds

At vegetative stage				may be delayed upto heading • Strengthen the field and contour bunds for in-situ moisture conservation	from Assam Seed Corporation Limited and RARS,finger weeder, LLP under RKVY/ Govt scheme, Purchase of low cost drip irrigation set from NREGA scheme
	2) **Medium to high rainfall, alluvial sandy loam to sandy soil, Medium land**	Sali rice variety like Ranjit, Bahadur and Local cultivars Cropping system: Rice mono crop	-do-	-do	**-do-**
	3) **Medium to high rainfall, alluvial sandy loam soil, upland**	Summer and kharif vegetable like brinjal and Cucurbits. Cropping system: Summer/ Kharif vegetables +Rabi vegetables/ Toria	• Life saving irrigation • Foliar application of nutrients 2% urea or 2% DAP or 1% KNO3 • Follow plant protection measures	• Top dress additional quantities of MOP@5 kg/bigha and incorporate with . • Spray 2 % MOP solution on leaves • Mulching should be practice in between crop rows using locally available mulch material. • Provide protective irrigation through harvested rain water	**-do-**

		Crop like Ginger, Turmeric and Sugarcane Cropping system: Ginger or Turmeric or Sugarcane as mono crop	-do-	• Top dress additional quantities of MOP@5 kg/bigha and incorporate with . • Spray 2 % MOP solution on leaves • Mulching should be practice in between crop rows using locally available mulch material. • Provide protective irrigation through harvested rain water • Apply additional amount organic manure • Weed out the field	-do-
	4) Medium to high rainfall, alluvial loamy medium low land	Ahu rice local cultivars Toria (local), Potato Cropping system: Ahu Rice Rice + Toria/ Potato/ Rabi vegetables	• Weeding • Plant protection measures and need based pesticides application	• Bund the field with mud plastering to keep rain water	-do-
		Deep water rice local cultivars, Cropping system: Deep water rice mono crop	-do-	-do-	
			Suggested Contingency measures		
	Major Farming situation[a]	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measues[d]**	**Remarks on Implementation[e]**
	1) **Medium to high rainfall, alluvial loamy**	Sali rice variety like Ranjit, Bahadur and Local cultivars	• Life saving irrigation • Follow plant protection measures	• Strengthen the field and contour bunds for in-situ moisture	

At flowering/ fruiting stage	**soil, Medium land**	Cropping system: Rice mono crop	• Spray of anti-transpirants • Need based plant protection measures	conservation	
	2) **Medium to high rainfall, alluvial sandy loam to sandy soil, Medium land**	Sali rice variety like Ranjit, Bahadur and Local cultivars Cropping system: Rice mono crop	-do-	-do	
	3) **Medium to high rainfall, alluvial sandy loam soil, upland**	Summer and kharif vegetable like brinjal and Cucurbits. Cropping system: Summer/ Kharif vegetables +Rabi vegetables/ Toria	• Life saving irrigation • Foliar application of nutrients 2% MOP • Follow plant protection measures • Spray of anti-transpirants	• Mulching should be practice in between crop rows using locally available mulch material. • Provide protective irrigation through harvested rain water	
		Crop like Ginger, Turmeric and Sugarcane Cropping system: Ginger or Turmeric or Sugarcane as mono crop	-do-	• Mulching should be practice in between crop rows using locally available mulch material. • Provide protective irrigation through harvested rain water • Apply additional amount organic manure • Weed out the field	
	4) Medium to high rainfall, alluvial loamy medium low land	Ahu rice local cultivars Toria (local), Potato, Pea Cropping system: Ahu Rice Rice + Toria/ Pea/ Potato/ Rabi vegetables	• Weeding • Plant protection measures and need based pesticides application	• Bund the field with mud plastering to keep rain water	

		Deep water rice local cultivars, Cropping system: Deep water rice mono crop	-do-	• -do-	

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]**
	1) **Medium to high rainfall, alluvial loamy soil, Medium land**	Sali rice variety like Ranjit, Bahadur and Local cultivars Cropping system: Rice mono crop	• Life saving irrigation • Spray of anti-transpirants • Need based plant protection measures	• Preparation for cultivation of Black gram and Green • Preparation of cultivation of Pea and Potato	
	2) **Medium to high rainfall, alluvial sandy loam to sandy soil, Medium land**	Sali rice variety like Ranjit, Bahadur and Local cultivars Cropping system: Rice mono crop	-do-	• Preparation for cultivation of Toria • Preparation for cultivation of Pea and Potato • Preparation for cultivation of Rabi vegetables	
	3) **Medium to high rainfall, alluvial sandy loam soil, upland**	Summer and kharif vegetable like brinjal and Cucurbits. Cropping system: Summer/ Kharif vegetables +Rabi vegetables/ Toria	• Life saving irrigation • Foliar application of nutrients 2% MOP • Follow plant protection measures • Spray of anti-transpirants	-do-	
		Crop like Ginger, Turmeric	• Mulching using locally available	-	

		and Sugarcane Cropping system: Ginger or Turmeric or Sugarcane as mono crop	mulch material. • Provide protective irrigation through harvested rain water • Apply additional amount organic manure • Weed out the field		
	4) Medium to high rainfall, alluvial loamy medium low land	Ahu rice local cultivars Toria (local), Potato, Pea Cropping system: Ahu Rice Rice + Toria/ Potato/ Rabi vegetables	• Weeding • Plant protection measures and need based pesticides application	• Preparation for cultivation of Black gram and Green • Preparation of cultivation of Pea and Potato	
		Deep water rice local cultivars, Cropping system: Deep water rice mono crop	-do-	-	

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 **tankfed medium deep black soils**	Cropping system 1:			
Limited release of water in canals due to low rainfall					
Non release of water in canals under delayed					

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]**
onset of monsoon in catchment					
Lack of inflows into tanks due to insufficient /delayed onset of monsoon					
Insufficiency of surface water for irrigation					
Insufficient groundwater recharge due to low rainfall					

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]**
Sali Paddy	Provide drainage	Provide drainage	Drain out excess water Harvest at physiological maturity stage	Dry in shade in a well ventilated space
Ahu (Direct seeded) paddy	Dain out the excess water	-Do-	-do-	Shifted to dry place

Green gram	Provide drainage	Provide drainage	-do-	Shift the produce to half covered threshing floor and other safer places for post harvest operations and cover the crop to protect from moisture absorption
Sugarcane	-do-	-do-	-do-	-do-
Blackgram	-do-	-do-	-do-	-do-
Sesamum	-do-	-do-	-do-	-do-
Ginger and Turmeric	Provide drainage and follow protective plant protection measure	Provide drainage and follow protective plant protection measure	Provide drainage and follow protective plant protection measure and harvest as soon as possible	Sifted to dry shed
Horticulture				
Cucurbitaceous vegetables	Seedling in raised beds, provide drainage	Vines should be staked along elevated frames	Provide drainage of excess water, harvesting at tender stage	Provide drainage, harvesting at tender stage
Solanaceous / cruciferous crops	Seedling in raised beds, provide drainage	Provide drainage	Provide drainage of excess water, harvesting at tender stage	Provide drainage, harvesting at tender stage
Banana/Papaya	Raise seedlings in sunken bed method	Provide drainage, earthing up of root zone	Harvested at green stage for table purpose	Store for ripening in godowns for marketing
Heavy rainfall with high speed winds in a short span[2]				
Paddy	Drainage if water logging persists.	Drainage if water logging persists .	Lodged panicles may be harvested at Physiological maturity stage	Shift to safer place. Dry in

	Small seedlings withstand the problem.			shade or make arrangement for air drying
Sesamum	Drainage if water logging Persists.	Provide drainage	Lodged pods may be harvested at physiological maturity stage.	Shifting to a safer place. Dry in shade in well ventilated space.
Horticulture -NA				
Outbreak of pests and diseases due to unseasonal rains				
Paddy	Plant protection measures like spray Tricyclazole against Blast, Chloropyriphos against stem borer, Monocrotophos against swarming Caterpillar	Plant protection measures like spray Tricyclazole against blast, Chloropyriphos against stem borer, Monocrotophos against swarming caterpillar and leaf folder.	Malathion spray against gundhi bug	Sundrying /disinfection of gunny bags with malathion or heat treatment to manage stored grain pest.
Greengram Blackgram	Spraying of Dimethoate @ 2 ml/ lit of water to control YMV, spraying of copper oxychloride @ 0.3% at an interval of 7-10days to control leaf spot	Spraying of dimethoate or Endosulfan @ 2 ml/ lit of water to control YMV. Spraying of copper oxychloride @ 0.3% at an interval of 7-10days to control leaf spot	Spraying of Carbendazin @ 0.05% To control powdery mildew.	Properly drying seeds should be mixed thoroughly with black pepper seed powder @ 3gm/kg of seed, against bruchid infestation during storage Treated seeds should be kept in

				polybags with outer covering of gunny bags
Sesamum	Spray Dichlorphos 100EC @ 0.5 ml/lit Or Monocrotophos 40EC @ 1ml/lit to control shoot webber	Spray Dichlorvos 100EC @ 0.5 ml/lit Or Monocrotophos 40EC @ 1ml/lit to control shoot webber	Spraying of Carbendazin @ 0.05% to control powdery mildew	Proper sun drying of seeds
Horticulture				
Cucurbitaceous vegetables	Spray 0.1% Bordeaux mixture or 0.1%Bavistin to control Downey mildew and Powdery mildew	Spray Malathion 50EC @ 2ml per litre of water along with jaggery to control fruit fly, aphids etc.	Spray 0.1% Bordeaux mixture or 0.1%Bavistin to control Downey mildew and Powdery mildew	Destruction of infested fruits
Solanaceous	Spray 0.25 solution of Mencozeb 75WP(2g/lit) to control late blight Soil drenching with100ppm Streptomycin to control Bacterial wilt Apply Malathion 50 EC @1.5 ml/lit to control shoot borer Soil drenching with captaf 0.3 % to control Fungal wilt	Apply Malathion 50 EC @1.5 ml/lit to control fruit and shoot borer Application of malathion 5 % dust before planting to control cut worm soil drenching with100ppm Streptomycin to control Bacterial wilt Spray 0.25 solution of Mencozeb 75WP(2g/lit) to control late blight	Apply Malathion 50 EC @1.5 ml/lit to control fruit and shoot borer soil drenching with100ppm Streptomycin to control Bacterial wilt Spray 0.25 solution of Mencozeb 75WP(2g/lit) to control late blight	Destruction of infested fruits
Cruciferous crops	Spary Malathion 50 EC .15 %@ 1.5 ml/lit to control caterpillars Application of malathion 5 % dust before planting to control cut worm Soil drenching with 200 ppm (1-.2 g/lit) of Streptomycin after planting to control Black rot	Spary Malathion 50 EC .15 %@ 1.5 ml/lit to control caterpillars Soil drenching with 200 ppm (1-.2 g/lit) of Streptomycin after planting to control Black rot		Destruction of infested fruits

Banana	Spray 0.1 % Malathion 50 EC to control Pseudostem borer Spray Rogor or Dimacron @ 1 ml/lit to control Bunchy top disease. Soil drenching with 1.0 % Bordeaux mixture for Panama wilt in banana.	Spray 0.1 % Malathion 50 EC on the bunches to control fruit scaring beetle in Banana. Spray Rogor or Dimacron @ 1 ml/lit to control Bunchy top disease. Soil drenching with 1.0 % Bordeaux mixture for Panama wilt in banana.	Spray 0.1 % Malathion 50 EC on the bunches to control Fruit scaring beetle in Banana.	Destruction of infected plants
Papaya	Against mosaic and leaf curl -Rogue out affected plants -Spray Malathion or Rogor 0.1 %to control the aphid vector Against collar rot and fruit rot -Maintain good drainage -Spray 1% Bordeaux mixture in the collar region	Against mosaic and leaf curl -Rogue out affected plants -Spray Malathion or Rogor 0.1 %to control the aphid vector Against collar rot and fruit rot -Maintain good drainage -Spray 1% Bordeaux mixture in the collar region	Against mosaic and leaf curl -Rogue out affected plants -Spray Malathion or Rogor 0.1 %to control the aphid vector Against collar rot and fruit rot -Maintain good drainage -Spray 1% Bordeaux mixture in the collar region	Destruction of infected plants and fruits.

2.3 Floods

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 1/3rd N + 50% K2O as top dressing during the tillering stage.	Drainage of excess water. If flood comes during reproductive stage, emphasis should be given on	Drainage of excess water. If flood comes at harvesting stage, more emphasis should be given to low volume high value

		In partially damaged field, gap filling may be done by redistributing the tillers. 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	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.	rabi crops and Autumn paddy 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
Horticulture /Plantation crops	NA			
Continuous submergence for more than 2 days[2]				
Paddy	Submergence tolerance varieties like Jalashree ,Jalkuwari and swarna sub-1 may be grown	Submergence tolerance varieties like Jalashree ,Jalkuwari and swarna sub-1 may be grown	Drainage of excess water. If flood comes during reproductive stage, emphasis should be given on 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	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 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

			income and to compensate the loss during kharif.	oilseeds. Growing of cucurbits after receding flood water
Horticulture / Plantation crops	NA			
Sea water intrusion[3]	NA			

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

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				
Sand deposition or heavy siltation				
Specify crop/horticulture/plantation				
Paddy field	Resowing of nursery, promote community based nursery raising, Direct sowing of suitable varieties like luit, Disang etc.	Direct sowing of Sali rice varieties like Luit, Disang etc. Splitting of tillers to overcome shortage of seedlings,promote Mat nursery.	If crop is completely damaged prepare land for rabi vegetables	Harvest crop at physiological maturity.
Horticultural crop	Replant the crop	Replant the crop	Replant the crop	Harvest crop at physiological maturity

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	Livestock insurance, Encourage fodder cultivation in village grazing land and near rivers, on boundaries of agricultural field trees like subabul, neem etc. should be planted. Excess fodder may be stored as hay/ silage, training and awareness camp among extension personnel for needful at the time of exigencies.	Utilizing fodder from perennial trees and fodder bank reserves. Transporting additional fodder from adjoining districts. Utilizing the excess crop, which fail to grow adequately due to failure of monsoon for feeding of animals. Use of unconventional livestock feeds such as sugar cane top, banana stem, banana leaves, water hyacinth and other tree pods and seeds etc. improving poor quality roughages by ammonia treatment, urea treatment, urea molasses mineral block etc and feeding them.	Avail crop insurance, supplementary feeding of remaining livestock and the replacement stock
Drinking water	Preserve water in community tanks, ponds etc with sanitization, wells or dug wells may be constructed in advance, training and awareness camp among extension personnel.	Water sources from Temples and Mosques may be used in case of shortfall of existing potable water.	Plan accordingly for next year
Health and disease management	Veterinary preparedness with vaccines and medicines, training and awareness camp among extension personnel.	Conducting animal health camps and treating the affected animals. Supplementation of vitamin and mineral mixture.	Culling of unproductive livestock. Proper disposal of dead animals.

Floods			
Feed and fodder availability	Livestock insurance, Encourage fodder cultivation in village grazing lands &near rivers**,** On boundaries of agricultural field trees or shrubs like Sesbania, Subabul, Neem etc should be planted, Excess fodder should be stored as hay/silage, Establish fodder bank with dry straw &dry feed for at least 15 days , Training & awareness camp among extension personnel for needful at time of exigencies.	Priorities animals as suckling animals, suckling animals along with their nursing mothers, producing and working animals, sick and old animals, adult open and non-producing animals as the feed and water may be in short supply. Procured feeds and fodders should be fed to all animals on the order of priority of animals. Straws and stoves 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 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) ready always containing Cotton wool, Bandages, Surgical gauze,	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	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.) must be taken up urgently. Necessary steps

	old cotton sheets, Rubber tubing (for tourniquet), Surgical scissors – Curved and made of stainless steel, Forceps, Splints or Split bamboos (for fractures), Clinical thermometers, Potassium permanganate, Acriflvin, Dettol, Savlon, Tannic acid powder (for poisons) and Jelly (for burns) Antibiotic eye drops, Epsom salts, copper sulphate, Treacle, oil of turpentine (for bloat), Obstetric ropes, chains and hooks, Tincture of iodine, tincture of Benzoin Co.(for wounds), Cotton rope, halters (for restraint) & the like.	items like bandages, tourniquet ropes, drugs including painkillers, antiseptics, antibiotics, anti-venom and anti-shock drugs 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	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	NOT APPLICABLE		
Heat wave and cold wave	NOT APPLICABLE		
Snowfall			
Earthquake			
Landslides			

[s] based on forewarning wherever available

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 of poultry farms. Ensure procurement of feed ingredients ahead. Establish feed bank	Feed utilization from feed bank. Feed supplementation to be made to the farms	Avail insurance. Supply the feed ingredients or compound feed to the farmers.	
Drinking water	Check water source for ensuring sufficient potable water during drought.	Attempt will be made to provide sanitized drinking water	Availability of water will be ensured by digging of bore well	
Health and disease management	Procurement of vaccines and medicines and anti- stressed agents. Feeding antibiotics	Administration of vaccines. Conducting health camps. Continue feeding ani-stressed agent	Culling of affected birds.	
Floods				
Shortage of feed ingredients	Ensure procurement of feed ingredients / compound feed sufficient ahead as feed supply to the farm will hamper due to submergence of the connecting roads	Supply the compound feed to the poultry farm under submerged area	Supply will continued till the situation is under control	
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	Continue feeding antibiotics	Disinfection of the farm premises.	

	medicines. Feeding antibiotics Procurement of litter materials	Prevent entrance of flood water to the shed Replace wet litter Proper disposal of dead birds if any	Feeding antibiotics And deworming. Replace wet litter Disinfection of sheds. Proper disposal of dead birds if any	
Cyclone	NA			
Shortage of feed ingredients				
Drinking water				
Health and disease management				
Heat wave and cold wave	NA			
Shelter/environment management				
Health and disease management				
Snowfall				
Earthquake, Landslides etc				

[a] based on forewarning wherever available

2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event[a]	**During the event**	**After the event**
1) Drought			
A. Capture			
B. Aquaculture			
(i) Shallow water in ponds due to insufficient rains / inflow	a) Reduce the stocking density of fishes by harvesting the marketable sized fishes.	a) Application of feed and FYM should be restricted b) Aeration should be done	a) After drought one partial harvesting should be done to check the fish health if any symptom of diseases is seen

	b) At one side of the pond depth should be made more by digging so that during drought fishes can take shelter in this deeper portion of the pond. c) If possible provision should be made for purifying water in to the pond from other sources or ground water. d) If water body is very small, air breathing fishes like *magur* culture should be encouraged rather than IMC. e) If possible provision for mechanical aerator should be made	either manually or mechanically at least two times in a day(morning and evening) c) Netting over pond surfaces can be made in this areas where attack of predatory birds is dominant. d) Frequent netting activities should be restricted. e) Lime should be applied at proper dose. f) $KMnO_4$ can also be applied @ 2-4 ppm.	measure should be taken immediately. b) Lime should be applied at proper dose c) Restock the pond with fingerlings if possible. d) If the water quality and fish health is good enough than start feeding.
(ii) Impact of salt load build up in ponds / change in water quality	a) BGrowth of Azolla pinnata should be encouraged to check eutrophication and excess evaporation. b) LLime should be applied according to ₚH of water.	a) Donot makes any disturbances in the pond from outside like netting application of feed, FYM etc. b) Activities like bathing, washing domestic animals should be stopped.	a) After drought check water quality and fish health. b) When fish health and water quality becomes normal start feeding and fertilizing activities.
(iii) Any other			
2) Floods			
A. Capture			
Marine			

Inland			
(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 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 KmnO4
(iii) Health and diseases	Stock preventive medicines, vaccines	Prevent influx of diseased fish from outside source, Check through nets Administer medicines through random catch Disinfect water by lime , KMnO4	1. Application of lime and KmnO4. 2. Assessment of the health status of fish and accordingly control measure should be taken. 3. Control on transport of brooders and seeds.
B. Aquaculture			
(i)Inundation with flood water	a) Broken dykes of pond should be repaired. b) Height of pond dyke should be increased above the flood level. c) Bamboo screen or nylon net should be made ready for sudden rise in flood level. d) Inlet and outlet of the pond should be checked for working condition. e) Marketable sized fishes should be harvested.	a) Bamboo screen or nylon net should be placed around the pond dyke. b) Stop application of feed, fertilizer and lime. c) If flood level starts decreasing apply $KMnO_4$ @ 2-4 ppm.	a) Lime should be applied at proper dose. b) Repeated netting should be done to check fish health and entry of any unwanted predatory fishes. c) Apply $KMnO_4$ @ 2-4 ppm.
(ii) Water contamination and changes in water quality	a) Reduce the stocking density of fishes by harvesting the markertable sized fishes.	a) Stop feeding b) Stop application of manure	a) Examine water quality and than go for liming manuring and feeding.

	b) Stop application of feed, fertilizer and manure. c) Lime should be applied at proper dose.		
(iii) Health and diseases	a) Lime should be applied at proper dose. b) Apply $KMnO_4$ @ 2-4 ppm frequently.	a) Stop feeding, manuring and netting activities	a) Check fish health by netting b) Lime should be applied at proper dose. c) Apply CIFAX
(iv) Loss of stock and inputs (feed, chemicals etc)			
(v) Infrastructure damage (pumps, aerators, huts etc)			
(vi) Any other			
3. Cyclone / Tsunami	NA		
A. Capture			
Marine			
Inland			
B. Aquaculture			
(i) Overflow / flooding of ponds			
(ii) Changes in water quality (fresh water / brackish water ratio)			
(iii) Health and diseases			
(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	NA		
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