STATE: ASSAM
Agriculture Contingency Plan for District: BARPETA

1.0 District Agriculture Profile				
1.1	Agro-Climatic/ Ecological Zone			
	Agro Ecological Sub Region (ICAR)	Assam And Bengal Plain, Hot Subhumid To Humid (Inclusion Of Perhumid) Eco-Region (15.2)		
	Agro- Climatic Region (Planning Commission)	Eastern Himalayan Region (II)		
	Agro-Climatic Zone (NARP)*	Lower Brahmaputra Valley Zone (AS-4)		
	List all the districts falling under NARP Zone	Kamrup, Nalbari, Baksa, Barpeta, Chirang, Bongaigaon, Kokrajhar, Dhubri, Goalpara		
	Geographic coordinates of district	Latitude	Longitude	Altitude
		26° N to 26°49'30'' N	90°30' to 91°16'E	53 m above msl
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Regional Agricultural Research Station, Gossaigaon, Kokrajhar Horticultural Research Station, Kahikuchi, Kamrup, Coconut Research Station, Kharua, Baksa		
	Mention the KVK located in the district	KVK, Barpeta, Assam Agricultural University, Howly, PIN: 781316		

1.2	Rainfall	Average (mm)	No. of rainy Days	Normal Onset	Normal Cessation
	SW monsoon (June-Sep)	1792	-	1st week of June	4th week of September
	NE monsoon (Oct-Dec)	15	-	2nd week of October	2nd week of November
	Winter (Jan-March)	6	-	-	-
	Summer (April-May)	474	-	-	-
	Annual	2287	-	-	-

1.3	Land use pattern of the district	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)	324.5	180.5	86.735	19.994	12.939	1.608	3.530	14.151	8.033	2.275

1.4	Major Soils	Area ('000 ha)	Percent (%) of total
	Alluvial Soils	207.421	63.92
	Sandy loam soils	92.255	24.83
	Sandy Soils	36.506	11.25

1.5	Agricultural Land Use	Area ('000 ha)	Cropping Intensity (%)
	Net sown area	180.569	175
	Area sown more than once	102.041	
	Gross cropped area	282.610	

1.6	**Irrigation**	**Area ('000 ha)**		**Percent (%)**	
	Net irrigated area	142.781		24.00 (incl. STW area)	
	Gross irrigated area	8.35		2.95	
	Rainfed Area	-		-	
	Sources of Irrigation	**Number**		**Area ('000 ha)**	**% area**
	Canals	-		-	-
	Tanks	-		-	-
	Open wells (STW)	-		31.607	73.74
	Bore wells (DTW)	-		0.199	0.46
	Lift irrigation	-		5.488	12.8
	Other sources Minor irrigation	-		5.569	12.99
	Total	-		42.863	100.00
	Pump sets	-			
	Micro-irrigation	-			
	Groundwater availability and use	No. of blocks	% area	Quality of water	
	Over exploited				
	Critical				
	Semi-critical				
	Safe	12	100	Groundwater is rich in Iron. Life saving irrigation is suggested except in Bhabanipur block Hydrocarbon found above the acceptable level in Gobardhana Block.	
	Waste water availability and use	-	-	-	

* over-exploited: ground water utilization> 100%; critical: 90-100%; semi-critical: 70-90%; safe: < 70%

1.7 Area under major field crops & horticulture etc.:

1.7	**Field crops**	**Kharif (ha)**		**Rabi (ha)**		**Summer (ha)**		**Total (ha)**
		Irrigated	**Rainfed**	**Irrigated**	**Rainfed**	**Irrigated**	**Rain fed**	
	Rice							11,4291
	Sesame							797
	Wheat							8788
	Rape and Mustard							18508
	Niger							837
	Linseed							2033
	Jute							6294
	Sugarcane							324

- Directorate of Economics and Survey, Govt of Assam (2006-2007)

	Horticulture crops- Fruits	**Total Area (ha)**
	Banana	6380
	Pineapple	356
	Orange	235
	Papaya	380
	Assam lemon	556
	Guava	347
	Litchi	215
	Jackfruit	170
	Mango	145
	Horticulture crops- Vegetables	**Total Area (ha))**
	Kharif vegetables	7450
	Rabi vegetables	12000
	Potato	8200
	Medicinal and Aromatic crops	**-**
	Plantation crops	**-**
	Arecanut	7190
	Coconut	1215
	Spices	1180
	Fodder crops	
	Total fodder crop area	
	Grazing Land	12939

* If break-up data (irrigated, rain fed) is not available, give total area)

1.8	**Livestock**			**Number ('000)**
	Cattle			357.067
	Buffaloes (total)			25.538
	Commercial Dairy farm			-
	Goat			134.434
	Sheep			18.685
	Others (Camel, Pig, Yak etc.)			35.235
1.9	Poultry			529.572
	Commercial			
	Backyard			
1.10	**Inland Fisheries**	**Area (ha)**	**Yield (t/ha)**	**Production (tones)**
	Brackish water			

	Fresh water	15710.54	-	13791 (2009-10)

1.11 **Production and Productivity of major crops**

1.11	Name of crop (Average of last 3 years)	*Kharif*		*Rabi*		Summer		Total (Average)	
		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 identified based on total acreage)								
	Rice	120.478	1637	45.485	1007	127.620	4831	97.861	2492
	Wheat			12.212	1263			12.212	1263
	Maize			38.667	1055			38.667	1055
	Rapeseed and Mustard			14.911	660			14.911	660
	Niger			0.483	540			0.483	540
	Linseed			1.158	544			1.158	544
	Sesame	0.312	575					0.312	575
	Blackgram	2.080	498					2.080	498
	Greengram					0.341	500	0.341	500
	Lentil			1.708	539			1.708	539
	Pea			1.851	804			1.851	804
	Jute	29.027	4856					29.027	4856
	Name of crop (Average of last 3 years)	*Kharif*		*Rabi*		Summer		Total(Average)	
	Vegetables	73.617	13067	297.434	23106			185.5	18086
	Potato			103.125	10330			103.125	10330
	Plantation crops								
	Coconut	92.340	76 nuts/ palm					92.340	76 nuts/ palm
	Arecanut	575.200	160 nuts/ palm					575.200	160 nuts/ palm
	Spices			10.233	3010			10.233	3010

1.12	**Sowing window for 5 major crops**	**Rice**	**Blackgram**	**Sesame**	**Jute**	**Toria**
	Kharif- Rain fed	June to July	3rd week of August to	1st week of August	March to April	

			3rd week of September			
	Kharif- Irrigated	-	-	-	-	-
	Rabi- Rain fed					3rd week of October to 3rd week of November
	Rabi- Irrigated	November to December				

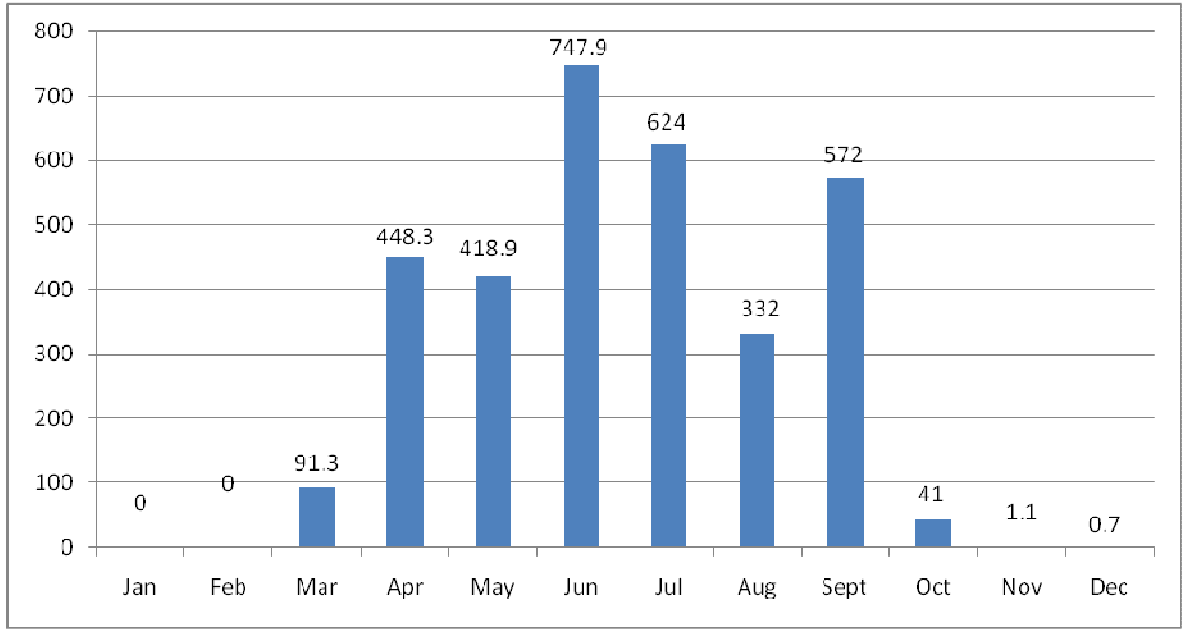
1.13	**What is the major contingency the district is prone to? (Tick mark)**	**Regular**	**Occassional**	**None**
	Drought		√ (Feb-March and Oct Nov)	
	Flood		√ (August September)	
	Cyclone			√
	Hail Storm		√ (March-April)	
	Heat wave			√
	Cold wave		√ (Jan-Feb)	
	Frost			√
	Sea water inundation			√
	Pests and diseases			
	Autumn Rice	Stem borer, Rat, Blast disease Thrips,Brown spot	False smut	
	Winter Rice	Stem Borer, leaf folder, Rice bug , Rat Blast, Sheath blight, Bacterial leaf blight, Leaf and plant hopper, Thrips, Brown spot, Case worm	Hispa, Swarming caterpillar, False smut	
	Summer Rice	Stem borer, leaf folder, Rat, Blast, Sheath blight, Leaf and plant hopper, Leaf and plant hopper, Thrips, Brown spot, Case worm		
	Wheat	Rat, Aphid, Stem borer	Loose smut	
	Maize	Stem borer		
	Rape and mustard	Aphid, Saw fly		
	Blackgram	Yellow Mosaic Virus, Leaf spot, Aphid, Jassid, Pod borer, Blight		
	Lentil	Wilt, Wet rot		
	Pea	Wilt, Rust, Powdery mildew		

	Jute	Root rot and stem rot, Hairy caterpillar		
	Potato	Late blight, Leaf roll virus	Red ant (Oct-Nov)	
	Brinjal	Bacterial wilt, Fruit borer		
	Cole crops	Damping off		
	Banana		Scarring beetle, Pseudo stem borer, Panama wilt	
	Coconut		Rhinoceros beetle	
	Citrus		Trunk borer, Shoot borer	

1.14	**Include Digital maps of the district for**	Location map of district with in State as Annexure 1	Enclosed: Yes
		Mean annual rainfall as Annexure II	
		Soil map as Annexure III	

ANNEXTURE –I : MAP OF BARPETA DISTRICT

ANNEXTURE –II



Mean annual rainfall

Source: *Statistical Handbook Assam 2011*

2.0 Strategies for weather related contingencies
2.1 Drought
2.1.1 Rain fed situation

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Crop/ cropping system**	**Change in crop/ cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delay by 2 weeks 3rd week of June	Upland	*Kharif* Blackgram/ Sesame/ Greengram/ Cowpea/ Fodder crops like Hybrid Napier, Teosinte, Maize	No change	Normal sowing of Sesame, Greengram, Blackgram and fodder crop can be done	1.Seed drills under RKVY 2.Supply of seeds through NFSM
		Snake gourd/ Okra/ Water melon/Bottle gourd/ Bitter gourd	Water melon/Bottle gourd/ bitter gourd	Increase the spacing, Thinning and mulching	
	Medium land	Sali rice/ Sesame/ Kharif Blackgram/ Greengram/ fodder crops/ Sali rice-Potato/ Sali rice-Rabi vegetables/ Sali rice-Toria	No change Rice varieties like Bahadur, Ranjit Kushal, Moniram Mahsuri etc. can be choose	Normal sowing of the Sali rice varieties as well as other crop can be done	

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Crop/ cropping system**	**Change in crop/ cropping system**	**Agronomic measures**	**Remarks on Implementation**

Delay by 4 weeks 1st week of July	Upland	Sesame/Kharif Black gram/Greengram/ Teosinte/ Dinanath	Teosinte/ Dinanath	Black gram and green gram can be sown up to mid September. Thinning to maintain plant population.	1.Seed drills under RKVY 2.Supply of seeds through NFSM
		Snake gourd/ Watermelon/Bottle gourd/Okra	Watermelon/ Bottle gourd/ Okra/ Bitter gourd	Mulching practices, All are grown up to July	
	Medium land	Sali rice/ Sesame/ Kharif Blackgram/ Greengram	Change of Sali rice variety like Satyaranjan, Basundhara, IR-36, Joya can be sown.	For the Sali varieties, sowing can be done up to mid or last part of July	

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Crop/ cropping system**	**Change in crop/ cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delay by 6 weeks 3rd week of July	Upland	Sesame/Kharif black gram/ Greengram	Sesame	Application of organic mannure Application of potassic fertilizers Normal sowing of sesame can be done Increase the seed rate Mulching with waste material	1.Seed drills under RKVY 2.Supply of seeds through NFSM
		Snake gourd/ Watermelon/ Bottle gourd/ Okra	Dolichos bean/ Watermelon/Bottle gourd/ Okra	Supplemental irrigation, mulching, ridging	
	Medium land	Sali rice/Sesame/ Kharif Blackgram/ Greengram Sali rice-Boro rice	Sali rice variety like Jaya, IR-36 and also medium duration variety Satyaranjan and Basundhara Late Sali variety like Monahar Sali, Andrew Sali, Salpona, Prasadbhog etc can be chosen		

			Boro rice like Eri-9, Eri-28, Eri-30, Joymoti, Kanaklata can be chosen		

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Crop/ cropping system**	**Change in crop/ cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delay by 8 weeks 1st week of August	Upland	Sesame/ Kharif Greengram/ Blackgram	Sesame	Normal sowing of sesame can be done, Apply sufficient organic matter and green manure, Increase the seed rate Maintain optimum plant population	1.Seed drills under RKVY 2.Supply of seeds through NFSM
		Okra/Snakegourd/Water melon/ Bitter gourd/ Bottlegourd	Dolichos bean	Mulching with waste material, Supplemental irrgation	
	Medium land	Sali ice/ Sesame/Kharif Greengram/ Blackgram Boro rice-Jute (as seed crop)	Rice Rabi Crop planning: Toria variety TS-36, TS-38 Potato variety Kufri Jyoti, Kufri Pokhraj can be selected Boro Rice (Joymati, Kanaklata, IRRI-8, IRRI-28, IRRI-29) Jute variety Tarun or Nabin	1. Direct seeding of germinated seeds of short duration rice varieties such as Luit, Kapili and Disang in puddle field. 2. Transplanting of aged seedlings of long duration rice varieties suitable for delayed planting such as Prafulla and Gitesh.	-
		Okra/Snakegourd/Watermelon/ Bottlegourd/ Bitter gourd	No change	Supplemental irrigation	-

Condition			**Suggested Contingency measures**		
Early season drought (Normal onset)	**Major Farming situation**	**Crop/ cropping system**	**Crop management**	**Soil nutrient and moisture conservation measures**	**Remarks on Implementation**

Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/ crop stand etc.	Upland	Sesame/Kharif Blackgram/ Green gram / Kharif fodder crop	Light irrigation if available after weeding and Thinning	Water harvesting, Thinning operation, Mulching practices, Organic matter application and fertilization	1.Seed drills under RKVY 2.Supply of seeds through NFSM
		Snake gourd/ Bottle gourd/ Bitter gourd, okra/Guava	-	Irrigation,Moisture conservation by mulching, ridging	
	Medium land	Sali rice/Sesame, Kharif Blackgram/ and Greengram	Sprinkle water in the nursery bed of rice, Application of potash in the bed, Normal sowing of Sesame and pulse crops can be done	Weeding, Thinning, Mulching, Balanced fertilization, Application of sufficient amount of organic manures	

Condition			**Suggested Contingency measures**		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	**Major Farming situation**	**Crop/ cropping system**	**Crop management**	**Soil nutrient and moisture conservation measures**	**Remarks on Implementation**
At vegetative stage	Upland	Sesame/ Kharif Blackgram/ Greengram/ Fodder crop	Thinning, Light irrigation if available	Weeding, Mulching, Application of sufficient amount of organic manures before sowing and balanced fertilization	1.Seed drills under RKVY 2.Supply of seeds through NFSM
		Snake gourd/ Bottle gourd/ Okra/Guava	Wider spacing	Weeding, Supplemental irrigation Application of sufficient amount of organic manures at the time of land preparation. Mulching at the root zone	
	Medium land	Sali rice/ Sesame/ Kharif Blackgram	Proper Bunding in rice field, Spraying Potassic fertilizer, Avoid top- dressing of urea in rice field Thinning	Weeding, mulching	

Condition			Suggested Contingency measures		
Mid season drought (long dry spell, period)	**Major Farming situation**	**Crop/ cropping system**	**Crop management**	**Soil nutrient and moisture conservation measures**	**Remarks on Implementation**
At reproductive stage	Upland	Sesame/ Kharif Black gram/ Green gram	-	Mulching with crop residues	1.Seed drills under RKVY 2.Supply of seeds through NFSM
		Snake gourd/ Bottle gourd/Bitter gourd/Okra	-	Ridging, mulching	
	Medium land	Sali Rice/Sesame/ Kharif Blackgram/ Greengram	Proper bunding in rice fields, Spray of anti- transpirants	Mulching with crop residues	

Condition			Suggested Contingency measures			
Terminal drought	**Major Farming situation**	**Crop/ cropping system**	**Change in crop/ cropping system**	**Crop Management**	**Rabi crop planning**	**Remarks on Implementation**
	Upland	Blackgram/ Greengram/	No change	Timely sowing can be done with one light pre-sowing irrigation	1.Toria and Niger can be sown up to Mid November 2. Buckwheat can be sown up to first December 3. Lentil and Buckwheat can be grown in moisture stress situation also.	1.Seed drills under RKVY 2.Supply of seeds through NFSM
		Brinjal/Onion/Garlic	-	-	Timely sowing of rabi crops, providing one pre-sowing irrigation	
	Medium land	Sali rice/Blackgram/ Greengram-Toria/ Niger Sali rice- Boro rice Sali rice-Rabi vegetables	-	Boro rice is cultivated with Irrigation facility	1.Toria and Niger can be sown up to Mid November 2. Buckwheat can be sown up to first December 3. Boro rice seed is sown in nursery in November/December	

2.1.2 Irrigated situation

Condition			Suggested Contingency measures		
	Major Farming situation	**Crop/ cropping system**	**Change in crop/ cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delayed/ limited release of water in canals due to low rainfall	Not applicable				

Condition			Suggested Contingency measures		
	Major Farming situation	**Crop/ cropping system**	**Change in crop/ cropping system**	**Agronomic measures**	**Remarks on Implementation**
Non release of water in canals under delayed onset of monsoon in catchments	Not applicable				

2.1.2 Irrigated situation

Condition			Suggested Contingency measures		
Lack of inflows into tanks due to insufficient/ delayed onset of monsoon	**Major Farming situation**	**Crop/ cropping system**	**Change in crop/ cropping system**	**Agronomic measures**	**Remarks on Implementation**
	Medium land	Sali rice/ Boro rice/Toria/ Potato/ Jute/ Wheat/Lentil/ Pea/ Niger/ Buckwheat **Cropping system:** Sali rice-Boro rice	Niger/Buckwheat/Toria/Lentil **Cropping system:** Sali rice-Toria Sali rice-Niger Sali rice-Lentil	Organic manure application, Thinning, Weeding,	1.Seed drills under RKVY 2.Supply of seeds through NFSM
		Water melon, Bittergourd, Bottle gourd	No change	Organic matter incorporation, Supplemental irrigation	

Condition			Suggested Contingency measures

Insufficient ground water recharge due to low rainfall	Major Farming situation	Crop/ cropping system	Change in crop/ cropping system	Agronomic measures	Remarks on Implementation
	Medium land	Sali rice/Boro rice/ Jute/Toria/Wheat/Lentil/ Pea/Potato/ Blackgram **Cropping system:** Sali rice- Boro rice Sali rice- rabi crops	Niger/Buckwheat/Toria/Lentil Linseed **Cropping system:** Kharif oilseed- rabi crops Jute- rabi crops	SRI in Boro rice, Micro irrigation, Life saving irrigation, Thinning and weeding	1.Seed drills under RKVY 2.Supply of seeds through NFSM

2.2 Unusual rains (untimely, un seasonal etc.) (For both rainfed and irrigated situations)

Condition	Suggested contingency measures			
Continuous high rainfall in a short span leading to water logging	Vegetative stage	Flowering stage	Crop maturity stage	Post harvest
Rice	Top dress with urea when water level recedes		Cut bunds if possible	1.Drying of seed up to optimum moisture level before storage 2. Seed treatment against storage pest
Sesame	Make provision for Surface drainage	Make provision for Surface drainage	Make provision for Surface drainage	
Blackgram	Make provision for Surface drainage	Make provision for Surface drainage	Make provision for Surface drainage	
Horticulture				
Okra	Surface Drainage	Hormone application (prevent flower drop)	Surface Drainage	Keep the produce at dry place
Water melon	Surface Drainage	Surface Drainage, spray nutrient and chemical to prevent flower drop	Surface Drainage	Keep the produce at dry place, Cold storage
Bottle gourd	Surface drainage	Hormone application (prevent flower drop)	Surface Drainage	Harvest before rain, Keep the produce at drier place, Cold storage
Papaya, Guava, Litchi, Bitter gourd, Blackberry	Surface drainage, Earthing up	Surface drainage, Earthing up	Early harvest if possible, Surface Drainage	Post harvest treatment, Cold storage
Tomato	Surface drainage	Surface drainage	Early Harvest if possible, Surface Drainage	Cold storage
Heavy rainfall with high speed winds in a short span				

Rice	Water submergence Sali variety should be selected		Cut bunds for drainage	Harvest the crop before rain if possible, Dry the seeds up to optimum moisture level, Seed treatment
Sesame/Blackgram	Provide drainage	Provide drainage	Provide drainage	
Horticulture				
Water melon	Make provision for furrow for drainage,	Nutrient and spray chemical to prevent flower drop	Provide drainage	Keep the produce at dry place, Cold storage
Okra	Provide drainage	Nutrient and spray chemical to prevent flower drop	Provide drainage	Remove excess moisture from fruit, Harvest before rain, Keep the produce at dry place
Tomato	Provide drainage	Provide drainage	Provide drainage	Cold storage
Bottle gourd	Provide drainage	Nutrient and spray chemical to prevent flower drop	Provide drainage	Cold storage
Assam lemon, Banana , Bitter gourd , Litchi, Guava	Provide drainage, Earthing up	Provide drainage, Nutrient and spray chemical to prevent flower drop	Provide drainage	Cold storage, Keep in Polythene bags
Outbreak of pests and diseases due to unseasonal rains				

2.3 Floods

Condition	**Suggested contingency measures**			
Transient water logging/ partial inundation	**Seedling/ nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Rice	Submergence tolerant variety of rice should be select , No problem			
Sesame/Blackgram	Provide drainage	Provide drainage	Provide drainage	
Horticulture				
Kharif vegetable (Okra, water melon, Snake gourd etc.)	Immediately drain the field otherwise crop will damage			
Assam lemon, Banana, other fruit crops	Make furrows or trenches for drainage, Earthing up	Earthing up	Provide drainage	

Pineapple	Make furrows or trenches for drainage	Provide drainage	Provide drainage	Keep the produce at dry place
Continuous submergence for more than 2 days				
Rice	Submergence tolerant variety of rice should be select			
Sesame/Blackgram			Provide better aeration in the root zone of the crop if survive	
Seawater inundation	Not applicable			

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

Extreme event type	**Suggested contingency measures**			
	Seedling/ nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Heat Wave	Not applicable			
Cold wave	Not applicable			
Frost	Not applicable			
Hailstorm				
Boro rice	Selection of lodging resistant varieties	Potash application at 25 and 45 DAT		
Horticulture				
Banana	Provision of nursery shed	Propping	Propping and bunch bagging	
Pumpkin			Bagging of fruits	
Mango			Covering of tree by net	
Litchi			Covering of tree by net	
Cyclone	Not Applicable			

2.5 Contingent strategies for Livestock, Poultry & Fisheries

2.5.1 Livestock

	Suggested contingency measures		
	Before the event	**During the event**	**After the event**
Drought			
Feed and fodder availability	Making availability of feed concentrate	1. Feeding of feed concentrate and	Cultivation of drought tolerant fodder

	and cultivation of green grasses like Napier, Para, Guinea, Setaria, Congo Signal etc.	green grasses along with vitamins and mineral supplements 2. If grass is not available then supply the leaves of edible tree like Kansan, Subabul, jackfruit etc. 3. Preparation of urea treated straw	crops viz.Congo , Feeding of concentrated feed and green grasses along with vitamins and mineral supplements
Drinking water	Creation of alternate water bodies for Supply of adequate pure and clean drinking water	Ensure Supply of adequate pure and clean drinking water from existing and alternate source of water bodies	Development of water shed based farming system
Health and disease management	Seasonal vaccination against dreaded viral & bacterial diseases like FMD, HS. BQ. SF. ET etc	1.Health chech up, 2. Feeding with vitamin and mineral supplements, 3.Safe and speedy disposal of dead animal	Feeding with vitamin and mineral supplements, De-worming and vaccination against
Floods			
Feed and fodder availability	Making availability of feed concentrate and cultivation of green grasses like Napier, Para, Gunie, Seteria, Congo Signal etc.in the line of fodder bank	1. Feeding of feed concentrate and green grasses along with vitamins and mineral supplements 2. If grass is not available then supply the leaves of edible tree like Kansan, Subabul jack fruirt etc. 3. Preparation of urea treated straw 4.Safe and speedy disposal of dead animal	Feeding of concentrated feed and green grasses along with vitamins and mineral supplements
Drinking water	Creation of adequate pure and clean drinking water bodies	Supply of adequate pure and clean drinking water from existing as well as other sources like river	Supply of adequate pure and clean drinking water
Health and disease management	Seasonal vaccination against dreaded viral & bacterial diseases like FMD, HS. BQ. SF. ET etc	Feeding with vitamin and mineral supplements	Health check up and treatments, Feeding with vitamin and mineral supplements
Cyclone	Not applicable		
Heat wave and cold wave	Not applicable		

based on forewarning wherever available

2.5.2 Poultry

	Suggested contingency measures		
	Before the event	**During the event**	**After the event**
Drought			
Feed and fodder availability	1.Storing of available of concentrate	Making availability of concentrate feed,	Making availability of concentrate feed

	feeds 2.Raising low input requiring crops like buckwheat and millet sufficiently	non-conventional feeds and kitchen waste	kitchen waste, vitamin and minerals
Drinking water	Supply of adequate pure and clean drinking water	Supply of adequate pure and clean drinking water	Development of watershed based farming system, Ensure supply of adequate pure and clean drinking water
Health and disease management	Timely vaccination	Feeding of proper ration	In addition to routine vaccination, special vaccination is to be followed. Feeding with vitamin and mineral supplement
Floods			
Feed and fodder availability	Making availability of concentrate feed and silage	Making availability of concentrate feed, silage and kitchen waste	Making availability of concentrate feed, silage and kitchen waste, vitamin and minerals
Drinking water	Supply of adequate pure and clean drinking water	Supply of adequate pure and clean drinking water	Supply of adequate pure and clean drinking water
Health and disease management	Timely vaccination	Feeding of proper ration	In addition to routine vaccination, special vaccination is to be followed. Feeding with vitamin and mineral supplement
Cyclone	Not Applicable		
Heat wave and cold wave	Not Applicable		

based on forewarning wherever available

2.5.3 Fisheries

	Suggested contingency measures		
	Before the event	**During the event**	**After the event**
Drought			
Shallow water in ponds due to insufficient rains/ inflows	Provision of shallow tube well or other facilities at the site or nearby	1. Supply of water to the pond as per requirement 2. If there is no provision, reduce the stock (thinning-out) i.e. partial harvesting as quickly as possible and provide less food 3. Provision of mosquito- nets over the ponds, if possible, to prevent predation by birds & other animals 4. Monitoring of fish health on daily	1. If partial harvesting is carried out, stock bigger size fish seed to the pond for remaining period 2. Application of lime and bleaching powder for prophylactic measures. 3. Supply of sufficient food for the fishes to grow.

		basis.	
Impact of heat and salt load built up in ponds/ change in water quality	Regular monitoring of water quality to observe any deviation from normal range	1. Disturbing the surface area of pond by split bamboo or banana tree trunk to increase dissolved oxygen level. 2. Supply of fresh water from nearby source. Thinning out of stock to reduce mortality rate. 3. Monitoring of fish health on daily basis	1. Potassium permanganate to be added as prophylactic measures to the pond water.
Floods			
Inundation with flood waters	1. If there is scope, raise the embankment of the pond to prevent escape of fish 2. Provide mosquito nets tied with bamboo posts to all the sides of ponds 3. If bamboo is available, split bamboo fencing in the form of bana in and around the pond 3. Storage of sufficient of feed for fish at godown.	1. Provide excess food particularly mustard oil cake or country liquor (ITK) to keep the fish in and around the pond	1. Repeated netting to remove wild fishes and weeds if any. 2. Application of lime as prophylactic measures 3. Application of Potassium permanganate to the pond 4. Repair of embankment if devastated.
Water contamination and changes in BOD	1. Regular monitoring of water quality. 2. Application of lime, cowdung, inorganic fertilizers, stocking of seed, supply of feed and other inputs as per optimum required level. 3. Avoid use of excess of any input	1. Based of quality of water, correction measures to be carried out. 2. Biotic factors like Plankton production is to be assessed carefully. 3. For correction of BOD, application of lime and control measures for organic deposition is to be carried out.	1. If possible one third of pond water is to be replenished with fresh uncontaminated water from the nearby source. 2. Based on health status of fish prophylactic or diseases curing medicine is to be applied
Health and disease management	1. Regular monitoring of water quality and fish health by sample netting 2. Proper stocking of fish seed and application of all other inputs at regular intervals and within prescribed limits. E.g. lime, application of manure, fertilizers, fish seeds etc.	1. Remove the diseased fish if any. 2. Thinning out the population 3. Application of lime, bleaching powder if necessary 4. Application of CIFAX, Sokrena WS as per requirement 5. Application of banana ash or *Kalakhar* (traditional banana based alkali) (ITK) to the pond	
Cyclone	Not Applicable		

Heat wave and cold wave	Not Applicable

[a] based on forewarning wherever available