Agriculture Contingency Plan
District: Sepahijala

Krishi Vigyan Kendra

(ICAR Research Complex for NEH Region)

West Tripura

State: TRIPURA

Agriculture Contingency Plan for District: Sepahijala

1.0 District Agriculture profile				
1.1	**Agro-Climatic/Ecological Zone**			
	Agro Ecological Sub Region (ICAR)	Humid Eastern Himalayan Region (17.2)		
	Agro-Climatic Region (Planning Commission)	Eastern Himalaya Region (II)		
	Agro Climatic Zone (NARP)	Humid subtropical climate		
	List all the districts or part thereof falling under the NARP Zone	Sepahijala District		
	Geographic coordinates of district	Latitude	Longitude	Altitude
		22^0 56` and $24^0$32' N	91^0 0' and 92^0 20'E	16 m (52f)
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	ICAR Research Complex for N.E.H. Region, Tripura Centre Lembucherra, West Tripura, Tripura.		
	Mention the KVK located in the district	KVK, Sepahijala (CAU, Lembucherra)		
	Name & address of the nearest Agromet field unit (AMFU, IMD) for agro-advisories in the zone	ICAR Research Complex for N.E.H. Region, Tripura Centre Lembucherra, West Tripura, Tripura.		
1.2	**Rainfall**	**Average (mm)**	**Normal Onset (specify week and month)**	**Normal Cessation (specify week and month)**

	SW monsoon (June-September):	1377.9	2nd week of June	4th week of Sept
	NE Monsoon (October-December):	210.4	2nd week of October	First week of November
	Winter (Jan-February)	28.8	-	-
	Summer (March-May)	557.5	15th April	30th May
	Annual	2174.6	-	-

Source: Draft C-DAP of Dept. of Agriculture and Allied Departments, Govt. of Tripura

1.3	**Land use pattern of the district** (latest statistics)	Geographical 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 (ha)	103080	30996	24292	14	300	950	Data not available	137	132

Source: Office of the Deputy Director, Dept. of Agriculture, Sepahijala District (2013-14)

1. 4	**Major Soils (common names like shallow red soils etc.)**	**Area ('000 ha)**	**Percent (%) of total**
	1. Red Soil	NA	-
	2. Alluvial Soil	NA	-
	3. Sandy Soil	NA	-
	4. Sandy Loam	NA	-
	5. Clay Loam	NA	-
	Others (specify):	--	-
1.5	**Agricultural land use**	**Area ('000 ha)**	**Cropping intensity %**
	Net sown area	46259	218%
	Area sown more than once	55020	
	Gross cropped area	101279	

Source: Agriculture Department, Govt. of Tripura

1.6	**Irrigation**	**Area ('000 ha)**		
	Net cultivated Area	44855		
	Net irrigated area	12889		
	Gross cultivated area	93399		
	Gross irrigated area	11239		
	Rainfed area			
	Sources of Irrigation	**Number**	**Area ('000 ha)**	**% of total irrigated area**
	Canals (medium and minor)	30	474	3.68
	Tanks	121	51	0.40
	Open wells	2	1	0.008
	Bore wells	1261	1924	14.93
	Lift irrigation schemes	165	9567	74.23
	Micro-irrigation (Drip and sprinkler)	Nil	Nil	-
	Other sources (please specify) WHS	222	187	1.45
	Total Irrigated Area		12889	
	Pump sets	-	-	-
	Canals (medium and minor)	Not Available	-	-
	Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	No. of blocks/ Tehsils	(%) area	
	Over exploited	Data not available	Data not available	
	Critical	Data not available	Data not available	
	Semi- critical	Data not available	Data not available	
	Safe	All	100	
	Wastewater availability and use	Data not available	Data not available	
	Ground water quality	Contaminant –Iron, greater than 1.00 mg/lit.		
*over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%				

1.6. a.	Fertilizer and Pesticides use	Type	Total quantity (tonnes)
1	Fertilizers*	Urea DAP Potash SSP RP Other complex fertilizers (specify) **Total**	3851 374 1375 3512 1722 10834
2	Chemical Pesticides*	Insecticides+ Fungicides Weedicides Others (specify) Total	44.4 -- .

Source: Office of the Deputy Director, Dept. of Agriculture, Sepahijala District (2016-17)

* If break up is not available, indicate total quantity used in the district for any recent year, mention here the year and source of statistics.

1.7 Area under major field crops & horticulture etc. (Average for last five years)

1.7		Major Field Crops cultivated	Area ('000 ha)					
			Kharif		*Rabi*		Summer	Total
			Irrigated	*Rainfed*	*Irrigated*	*Rainfed*		
	1	Aush Paddy (Summer)		-	-	-	1817	1817
	2	Aman Paddy (Kharif)	25690	-	-	-	-	25690
	3	Boro Paddy (Rabi)	-	-	22880	-	-	22880
	4	Maize	-	1090	320	-	-	1410
	5	Sesamum	-	517	-	-	-	517
	6	Mustard	-	-	600	-	-	600
	7	Pulses	1267	-	1510	-	-	1510
		Horticulture crops - Fruits	**Total area**		**Irrigated**		**Rainfed**	
	1	Mango	1140		-		-	
	2	Pineapple	975		-		-	
	3	Jackfruit	580		-		-	
	4	Banana	1830		-		-	
	5	Litchi	276		-		-	
		Horticultural crops - Vegetables	**Total area**		**Irrigated**		**Rainfed**	
	1	Okra	275		-		-	
	2	Brinjal	292		-		-	
	3	Cole Crops	1044		940		104	
	4	Tomato	163		157		12	
	5	Chilli	795		720		75	
		Medicinal and Aromatic crops	**Total area**		**Irrigated**		**Rainfed**	
	1	Nil.	Data Not Available					

		Plantation crops	**Total area**	**Irrigated**	**Rainfed**
	1	Coconut	800	-	-
	2	Arecanut	495	-	-
	3	Cashewnut	266	-	-
	4	Rubber	-	-	-
	5				
		Fodder crops	**Total area**	**Irrigated**	**Rainfed**
	1	Not Available	-	-	-
	2	-	-	-	-
	3	-	-	-	-
	4	-	-	-	-
	5	-	-	-	-
		Total fodder crop area	-	-	-
		Grazing land	113	-	-
		Sericulture etc	-	-	-
		Others (Specify)	-	-	-

Source: Office of the Deputy Director, Dept. of Agriculture, Sepahijala District (2016-17)

1.8	**Livestock**	**Male ('000)**	**Female ('000)**	**Total (nos)**
	Non descriptive Cattle (local low yielding)	-	-	114.506
	Crossbred cattle	-	-	24.396
	Non descriptive Buffaloes (local low yielding)	-	-	-
	Graded Buffaloes	-	-	-
	Goat	-	-	150.087
	Sheep	1	3	4

	Others (Camel, Pig, Yak etc.)	21562	19195	40,757
	Commercial dairy farms (Number)	-	-	-
1.9	**Poultry**	**No. of farms**	**Total No. of birds ('000)**	
	Commercial	Data not available	Data not available	
	Backyard	Data not available	Data not available	

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) 2016-17	**No. Farmer owned ponds**		**No. of Reservoirs**		**No. of village tanks**	
		26795		-		497	
	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) 2016-17	3553.33		2.334		8.295	
	Others	-		-		-	

1.11 Production and Productivity of major crops

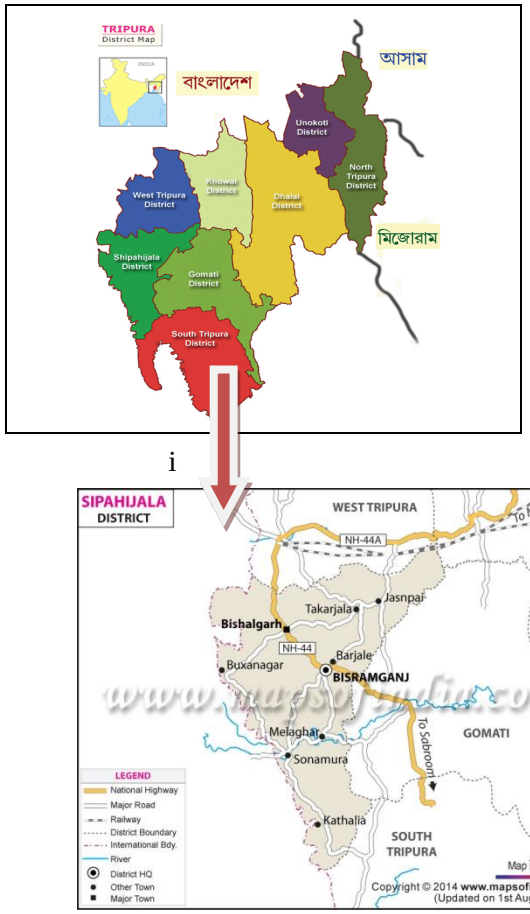
1.11	Name of crop	Kharif		Rabi		Summer		Total		Crop residue as fodder (‘000 tons)		
		Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)			
Major Field crops (Crops to be identified based on total acreage)												
Crop 1	Rice	97528	3327	66665	3258	2080	2546			-		
Crop 2	Maize	-	-	-	-	-	-	891	1510	-		
Crop 3	Groundnut	20	1111	56	1018	-	-	76	2129	-		
Crop 4	Sesamum	198	595	-	-	-	-	198	595	-		
Crop 5	Mustard	-	-	630	849	-	-	630	849	-		
Others										-		
Major Horticultural crops (Crops to be identified based on total acreage)												
Crop 1	Okra					2761	9860.7					
Crop 2	Brinjal	5602	18989									
Crop 3	Cabbage			12176	27990							
Crop 4	Tomato			7526	20231							
Crop 5	Chilli	1695	6780									
Crop6	Cauliflower			10713	26649							
1.12	**Sowing window for 5 major field crops** (start and end of normal sowing period)	Crop 1: Rice		2: Maize		3: Groundnut		4: Sesamum		5: Rape and Mustard		
	Summer rice-Rainfed	Sumer rice-April 2nd week to May 4th week										

	Kharif- Rainfed	June 1st to June 3rd week	2nd week of May to 1st week of June	2nd week of June to 1st week of July	1st week of April to 2nd week of April	1st week of November	
	Kharif-Irrigated	-	-	-	-	-	
	Rabi- Rainfed	-	-	-	-	-	
	Rabi-Irrigated	-	-	Mid October to mid December	-	15th September to 15th October	

1.13	**What is the major contingency the district is prone to?** (Tick mark and mention years if known during the last 10 year period)	Regular			Sporadic			None	
		Severe	Moderate	Mild	Severe	Moderate	Mild		
	Drought	-	-	-	-	√	√	-	
	Flood	-	-	-	-	√	√	-	
	Cyclone	-	-	-	-	√	√	-	
	Hail storm	-	-	-	-	-	√	-	
	Heat wave	-	-	-	-	-	Mild	-	
	Cold wave	-	-	-	-	-	Mild	-	
	Frost	-	-	-	-	-	-	-	
	Sea water intrusion	-	-	-	-	-	-	-	
	Pests and diseases (specify) i) Potato Potato late blight ii) Rice Rice blast, BLB, Gall midge, Stem borer iii) Other Crops Stem borer, pod borer, leaf folder, LB, Termite, Mango hopper, Fruit flies, Mango weevil, fruit & Shoot borer, wilt, leaf curl,		√ √	-	√	-	-	-	
	Others	-	-	-	-	-	-	-	

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: Yes

Annexure1. Location Map of Sepahijala District


TRIPURA
District Map
INDIA
বাংলাদেশ
আসাম
মিজোরাম
Unokoti District
North Tripura District
Dhalai District
Khowai District
West Tripura District
Shipahijala District
Gomati District
South Tripura District
SIPAHIJALA
DISTRICT
WEST TRIPURA
To Manu
N
NH-44A
Jasnpai
Takarjala
Bishalgarh
NH-44
Barjale
Buxanagar
BISRAMGANJ
Melaghar
GOMATI
To Subroom
Sonamura
Kathalia
SOUTH
TRIPURA
LEGEND
National Highway
Major Road
Railway
District Boundary
International Bdy.
River
District HQ
Other Town
Major Town
Map not to Scale
Copyright © 2014 www.mapsofindia.com
(Updated on 1st August 2014)

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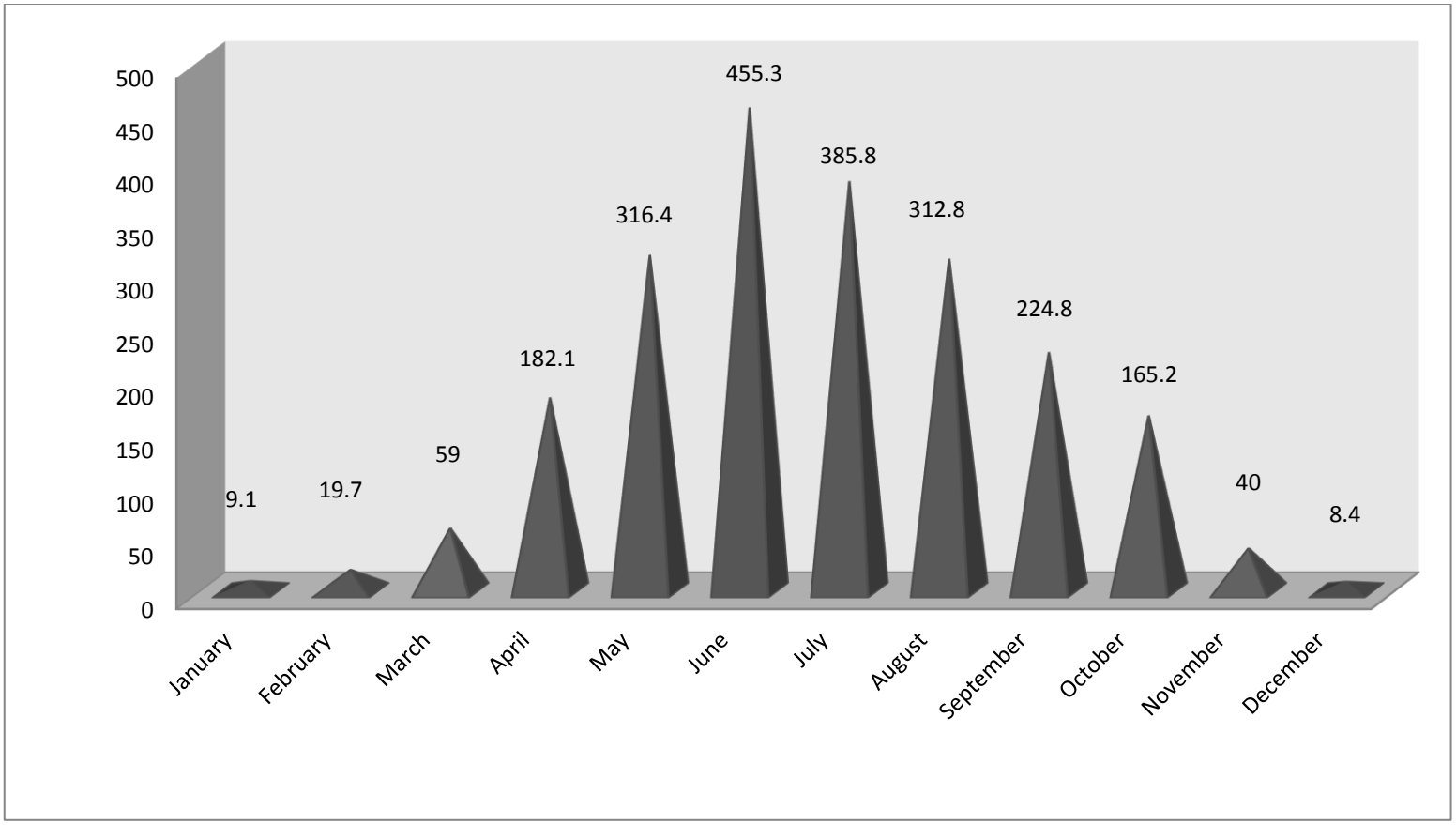

Fig: Mean annual rainfall (mm) of Sepahijala District

2.0 Strategies for weather related contingencies
2.1 Drought
2.1.1. Rainfed situation (Pre-Kharif)

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming Situation**	**Normal Crop/Cropping System**	**Change in crop/cropping System**	**Agronomic Measures**	**Remarks on Implementation**
Delay by 2 Weeks (Specify Month)* May 3rd Week to	Tilla and slopy land	Jhum Agriculture	No change	No change	-
		Rice – fallow system	No change	No change	-
		Maize -Vegetable system	No change	No change	-
		Sesamum - vegetable	No change	No change	-

June 1st Week)					
	Lunga land(low land)	-	-	-	-

2.1.2. Rainfed situation (Kharif)

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming Situation**	**Normal Crop/Cropping System**	**Change in crop/cropping System**	**Agronomic Measures**	**Remarks on Implementation**
Delay by 2 Weeks (Specify Month)*	Tilla and slopy land				
		Direct seeded Rice – fallow system	No change	No change	-
		Maize -Fallow	No change	No change	-

June 3rd Week		Sesamum - fallow	No change	No change	-
		Vegetable-Fallow			
	Lunga land(low land)	Transplanted Rice – potato	No change	No change	-
		Transplanted Rice - fallow	No change	No change	-
		Transplanted Rice - vegetables	No change	No change	-

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming Situation**	**Normal Crop/Cropping System**	**Change in crop/cropping System**	**Agronomic Measures**	**Remarks on Implementation**
Delay by 4 Weeks (Specify Month) July 1st week	Tilla and slopy land				
		Direct seeded Rice – fallow system	No change	No change	-
		Maize -Fallow	No change	No change	-
		Sesamum - fallow	No change	No change	-
		Vegetable-Fallow	No change	No change	-
	Lunga land(low land)	Transplanted Rice – potato	No change	No change	-
		Transplanted Rice - fallow	No change	No change	-
		Transplanted Rice - vegetables	No change	No change	-

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming Situation**	**Normal Crop/Cropping System**	**Change in crop/cropping System**	**Agronomic Measures**	**Remarks on Implementation**

Delay by 6 Weeks (Specify Month) July 3rd week					Not Applicable

Condition			**Suggested Contingency measure**		
Early season Drought (Normal Onset)	**Major Farming Situation**	**Normal Crop/Cropping System**	**Crop Management**	**Soil Nutrient & Moisture conservation measures**	**Remarks on Implementation**
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination /crop stand	Tilla and slopy land	Direct seeded Rice – fallow system	Resowing /gap filling	Straw Mulching	-
		Maize -Fallow	Resowing /gap filling	Straw Mulching	-
		Sesamum - fallow	Resowing /gap filling	Straw Mulching	-
		Vegetable-Fallow	Gap filling	Straw Mulching	-
	Lunga land(low land)	Transplanted Rice – potato	Life saving irrigation	-	-
		Transplanted Rice - fallow	Life saving irrigation	-	-
		Transplanted Rice - vegetables	Life saving irrigation	-	-

Condition			**Suggested Contingency measure**		
Mid season Drought (long dry spell, Consecutive 2	**Major Farming Situation**	**Normal Crop/Cropping System**	**Crop Management**	**Soil Nutrient & Moisture conservation measures**	**Remarks on Implementation**

weeks rainless (>2.5 mm) Period)					
At vegetative stage	Tilla and slopy land	Direct seeded Rice – fallow system	Resowing /gap filling	-	-
		Maize –Fallow system	Resowing /gap filling	Straw Mulching	-
		Sesamum – fallow system	Resowing /gap filling	Straw Mulching	-
		Vegetable-Fallow system	Gap filling	Straw Mulching	-
	Lunga land(low land)	Transplanted Rice – potato system	Retransplanting	Life saving irrigation, Postpone top dressing of nitrogen	-
		Transplanted Rice – fallow system	Retransplanting	Life saving irrigation, Postpone top dressing of nitrogen	-
		Transplanted Rice – vegetables system	Retransplanting	Life saving irrigation, Postpone top dressing of nitrogen	-
Flowering stage	Tilla and slopy land	Direct seeded Rice – fallow system	Life saving irrigation, thinning population		-
		Maize –Fallow system	Can be harvested for fodder followed by sowing of sesamum/ blackgram		-
				Life saving irrigation	-
		Sesamum – fallow system	Thinning	Life saving irrigation	-
		Vegetable-Fallow system	-	Life saving irrigation	-

	Lunga land(low land)	Transplanted Rice – potato system		Life saving irrigation	-
			Plough down the existing crop and timely sowing of rabi crop		
		Transplanted Rice – fallow system		Life saving irrigation	-
		Transplanted Rice – vegetables system		Life saving irrigation	
			Plough down the existing crop and timely sowing of rabi vegetables		
Terminal draught	Not applicable				

2.1.3 Irrigated situation (Pre-Kharif)

Condition			**Suggested Contingency measure**		
	Major Farming Situation	**Normal Crop/Cropping System**	**Change in crop/ cropping system**	**Agronomic measure**	**Remarks on Implementation**
Delayed release Of water in Canals due to Low rainfall	Not applicable				
Limited release of water in canals due to low rainfall	Not applicable				

Non release of water in canals under delayed onset of monsoon in catchment	Not applicable				
Lack of inflows into streams due to Insufficient/ delayed onset of monsoon	Not applicable				

2.1.4 Irrigated situation (Kharif)

Condition			**Suggested Contingency measure**		
	Major Farming Situation	**Normal Crop/Cropping System**	**Change in crop/ cropping system**	**Agronomic measure**	**Remarks on Implementation**
Insufficient ground Water recharge due to low rainfall	**Not applicable**				
Delayed release Of water in Canals due to Low rainfall	**Not applicable**				
Limited release of water in canals due to low rainfall	**Not applicable**				
Non release of water in canals under delayed onset of monsoon in catchment	**Not applicable**				
Lack of inflows into streams due to Insufficient/	**Not applicable**				

delayed onset of monsoon					
Insufficient ground Water recharge due to low rainfall	**Not applicable**				

2.2 Unusual rains (untimely, unseasonal etc.) (For both rainfed and irrigated situations**)**

Condition				**Suggested Contingency measures**			
Continuous high rainfall in a short span		**Vegetable stage**		**Flowering stage**	**Crop maturity**	**Post harvest**	
	leading to water logging				**stage**		
Crop 1.	Rice.	1.	Proper drainage.	Application of hormones/nutrient sprays to prevent flower drop or promote quick flowering/fruiting	Shifting of produce to safer place and protection against pest/disease damage in storage etc.	Shifting of produce to safer place for drying and maintaining the quality of grain/fodder and protection against pest/disease damage in storage etc.	
Crop 2.	Maize	2.	Proper drainage				
Crop 3. Cow Pea		3.	Proper drainage				
Crop 4.Green gram		4.	Proper drainage				

Horticulture						
Crop 1.	Pine apple	Proper drainage of the		Application of		Shifting of produce to
Crop 2.	Orange	basin		hormones/nutrient sprays to	Shifting of produce	safer place for drying and
Crop 3. Mango				prevent flower drop or	to safer place and	maintaining the quality of
Crop 4.				promote quick	protection against	grain/fodder and
Crop 5.				flowering/fruiting	pest/disease	protection against
					damage in storage	pest/disease damage in
					etc.	storage etc.
Heavy rainfall with high speed winds in a short span[2]						
Crop 1. Rice.		Proper drainage of the		Application of	Measures for	Shifting of produce to
Crop 2. Maize		soil.		hormones/nutrient sprays to	preventing seed	safer place for drying and
Crop 3. Cow Pea				prevent flower drop or	germination,	maintaining the quality of
Crop 4.Green gram				promote quick	shifting	grain/fodder and

			produce to	
		flowering/fruiting, staking the	safer place and	protection against
		maize plants.	protection against	pest/disease damage in
			pest/disease	storage etc.
			damage in storage	
			etc.	
Horticulture				
Crop 1. Pine apple	Proper drainage of the	Application of	Measures for	Shifting of produce to
Crop 2. Orange	soil,	hormones/nutrient sprays to	preventing seed	safer place for drying and
Crop 3. Mango		prevent flower drop or	germination,	maintaining the quality of
		promote quick	shifting produce to	grain/fodder and
		flowering/fruiting	safer place and	protection against
			protection against	pest/disease damage in
			pest/disease	storage etc.
			damage in	

			storage	
			etc.	
Outbreak of pests and diseases due to				
unseasonal rains				
Crop 1. Rice.	Foliar spray with systemic	Foliar spray of chlorpyriphos	Harvest at proper	1. Clean & white wash the
Crop 2. Maize	fungicide like	@ 2 ml/ lit, neem based	stage of maturity,	store before storing.
Crop 3. Cow Pea	carbendazim @0.3%, Soil	insecticides, use of bird	spraying of	2. Cleared dry garon with
Crop 4.Green gram	application of bioagent	perches,	imidacloprid @ 4	<12 % moisture should
	like *Trichoderma* spp		ml/10 lit,	stored. 3. Gunny bag
	@5g/lit along with CMC		chlorpyriphos @ 2	treatment with malathion
	@0.2% (W/V), *Pseudomonas* @5 g/lit, neem based insecticides.		ml/lit, NSKE 5% at 10 days intervals.	1ml/li of water or dichlorvos @2ml/lit of water. 4. Spraying godown wall

				with malathion @ 2ml/lit of water. 5. Disinfect the storage with formaldehyde @4%. 6. Use improved storage bin. 7. Rodent management by using rodent trap or poison bait.
Horticulture				
Crop 1. Pine apple Crop 2. Orange Crop 3. Mango	Spray mancozeb 75 WP @ 2g/lit, blitox @ 4g/lit	Use of NAA @200 ppm, ANAA @ 1ml/4.5 lit of water. @ 1ml/ lit,	Spray malathion @ 1 ml/lit of water. Use Ethephon @ 100 ppm for uniform ripening.	Shift the freshly harvested produce to dry and cool place. Damaged, diseased harvest should not kept storage. Value addition to the

				harvest. Vacuum packaging.

2.3 Floods.

Condition	**Suggested Contingency measure**			
Transient water logging/ partial Inundation	**Seedling/nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Rice	Drainage	2. Foliar spray of 2% NPK solution (19:19:19) 3. Prophylactic spray of fungicide to prevent the crop from pest attack	Not aplicable	Not applicable
Maize				
Vegetable				

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	**NA**	**NA**	**NA**	**NA**
Crop 1	-	-	-	-
Crop 2	-	-	-	-

Crop 3	-	-	-	-
Crop 4	-	-	-	-
Crop 5	-	-	-	-
Horticulture	**-**	**-**	**-**	**-**
Crop 1 (specify)	-	-	-	-
Crop 2	-	-	-	-
Crop 3	-	-	-	-
Cold Wave	**NA**	**NA**	**NA**	**NA**
Crop 1	-	-	-	-
Crop 2	-	-	-	-
Crop 3	-	-	-	-
Crop 4	-	-	-	-
Crop 5	-	-	-	-
Horticulture	**-**	**-**	**-**	**-**
Crop 1 (specify)	-	-	-	-
Crop 2	-	-	-	-
Crop 3	-	-	-	-
Frost	**NA**	**NA**	**NA**	**NA**
Crop 1	-	-	-	-
Crop 2	-	-	-	-

Crop 3	-	-	-	-
Crop 4	-	-	-	-
Crop 5	-	-	-	-
Horticulture	-	-	-	-
Crop 1 (specify)	-	-	-	-
Crop 2	-	-	-	-
Crop 3	-	-	-	-

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	Quantification of requirement and availability, preservation of fodder	Efficient utilization of preserved and unconventional fodder and feeds	Evaluate the suitability of measures taken during draught and application during next event.
Drinking water	Awareness programme to conserve water resource like rain water	Application of techniques to reduce water loss, reduce sweating.	Programme to aware people to realize the last havoc and feel the importance

	harvesting and reduced wastage of water		of water conservation.
Health and disease management	Awareness programme on draught preparedness.	Application of measures suggested by health professionals and veterinarians.	Programme to aware people to realize the last havoc and feel the importance of water conservation.
Floods NA			
Cyclone			
Feed and fodder availability	Weather forecast to the general people along with advice	-	Rehabilitation programme based on damage assessed.
Drinking water	Weather forecast to the general people along with advice	Drinking of sterilized and filtered water.	Dispose the dead animals properly away from water source.
Health and disease management	Keep first Aid medicines	Keep vigil on animals	Health camps
Heat wave and cold wave			
Shelter/environment management	Awareness programmes to cop up with the events	Vigilance on casuality and rectification of the faults.	Aware the people to cop up with next event.
Health and disease management	Awareness programmes to cop up with the events	Vigilance on casuality and rectification of the faults.	Aware the people to cop up with next event.

2.5.2. Poultry

	Suggested contingency measures			**Convergence/linkages with ongoing programs, if any**
	Before the event	**During the event**	**After the event**	
Drought				
Shortage of feed ingredients	Stocking of feed after quantifying the requirement.	Efficient utilization of stocked feed.	Cultivation of draught resistant feed ingredients.	Preparation of low cost feed with locally available ingredients.
Drinking water	Awareness programme to conserve water resource like rain water harvesting etc.	Utilization of conserved water.	Let the people feel about the importance of water preservation.	Awareness programme on draught.
Health and disease management	Awareness programme on health and hygiene.	Vigilance by veterinarian.	Dispose the dead bodies properly.	Awareness programme on health and hygiene.
Floods				
Shortage of feed ingredients	To grow flood resistant	Efficient	Evaluate the suitability of	Preparation of low cost feed with locally

	variety of feed ingredients	utilization of stocked feed.	measures taken during flood and application during next event	available ingredients.
Drinking water	Awareness programme on filtration techniques of water	Proper utilization of sterilization and filtration of water	Health camp	Vaccination and health camp
Health and disease management	Flood preparedness, awareness camp	Health camp and proper disposal of dead bird	Health camps and awareness programme to cop up with the last event	Vaccination and health camp
Cyclone				
Shortage of feed ingredient	Weather forecast along with advice	-	Proper disposal of dead bird	Health camp
Drinking water	Awareness programme on filtration techniques of water	Provide sterilized and filtrated water	Dispose the dead bird away from water sources	-
Health and disease management	Keep first aid medicines ready			
Heat wave and cold wave				

Shelter/Environment management	Awareness programme to cop up these events	Vigil on casuality and correction of faults	Aware the people about preparedness to meet event	-
Health and disease management	Awareness programme to cop up these events	Vigil on casualitty and correction of faults	Aware the people about preparedness to meet event	Awareness programme on health and hygiene.

2.5.3. Fisheries/Aquaculture

	Suggested contingency measures		
	Before the event	During the event	After the event
1.Drought			
A. Capture			
Marine	NA	NA	NA
Inland			
(i) Shallow water depth due to insufficient rains/inflow	Reduce stocking density	De-silting, renovation etc.	Application of full package of practices
ii. Changes in water quality	Liming	Ploughing, proper dose of lime application	Application of full package of practices
. Any other	-	-	-
B. Aquaculture			
i. Shallow water in ponds due to insufficient rains/inflow	Reduce stocking density	De-silting, renovation etc.	Application of full package of practices
ii. Impact of salt load build up in ponds/change in water quality	Liming	Ploughing, proper dose of lime application	Application of full package of practices
iii. Any other	-	-	-
2. Floods			

A. Capture			
Marine	NA	NA	NA
Inland			
i. Average compensation paid due to loss of human life	Awareness programme	Rescue and relief	Health camp
ii. No.of boats/nets/damaged	Repairing	Proper handling of boats and nets etc.	Repairing and knitting
iii. No.of houses damaged	Awareness programme	Rescue	Rehabitation
iv. Loss of stock	Reduce stocking density	Harvesting fish and proper guarding by mess nets	Cleaning of aquatic weeds, application of lime, $KMnO_4$ and catching weed and predatory fishes
v. Changes in water quality	Proper maintenance of pond embankments	Proper guard by mess nets	Application of bleaching powder
vi. Health and diseases	Reduce stocking density	Proper guard by mess nets	Netting and sorting programme
B. Aquaculture			
(i) Inundation with flood water	Proper maintenance of pond embankments	Checking and repairing	Application of lime and $KMnO_4$
ii. Water continuation and changes in water quality	Proper maintenance of pond embankments	Checking and repairing	Application of lime and $KMnO_4$
iii. Health and diseases	Reduce stocking density	Proper guard by mess nets	Netting and sorting programme
iv. Loss of stock and inputs (feed, chemicals etc.)	Reduce stock and less application of inputs	Withdraw feed and chemicals	Assessment and fixing of stocking density and proper dose of inputs
v.. Infrastructure damage(pumps, aerators, huts etc.)	Keep these in secured place	Keep these in secured place	Checking and reinstallation
vi. Any other	-	-	-
3. Cyclone/ Tsunami			
A. Capture			
Marine	NA	NA	NA
i. Average compensation paid due to loss of fishermen lives			

ii. Avg. no. of boats/nets/damaged			
Inland			
B. Aquaculture			
i. Overflow/flooding of ponds	Reduce stocking density	Arrange outflow	Assessment of stocking density
ii. Changes in water quality(fresh water/brackish water ratio)	Maintain pond embankments	Checking and repairing	Application of lime and $KMnO_4$
iii. Health and diseases	Reduce stocking density	Proper guard by mess nets	Application of bleaching powder
iv. Loss of stock and inputs(feed, chemicals etc.)	Reduce stock and less application of inputs	Withdraw feed and chemicals	Assessment and fixing of stocking density and proper dose of inputs
v. Infrastructure damage(pumps,aerators, shelters/huts etc.)	Keep these in secured place	Keep these in secured place	Checking and reinstallation
vi. Any other	-	-	-
4. Heat wave and cold wave			
A. Capture			
Marine	NA	NA	NA
Inland			
B. Aquaculture			
i. Changes in pond environment(water quality)	Influx of water from nearby channels during heat wave and reduce stocking density in cold	Harvesting of fish during both heat and cold wave	Harvesting of fish during both heat and cold wave and water quality maintenance
ii. Health and Diseases management	-	-	-
iii. Any other	-	-	-

Hailstorm				
Crop 1. Rice	Cover the nursery with net	Prevention of hails by hails suppression techniques, following forecasts of weather and protecting crops, Use heaters, wind machines, sprinkling water etc.	Prevention of hails by hails suppression techniques, following forecasts of weather and protecting crops, Use heaters, wind machines, sprinkling water etc.	Following forecasts of weather and protecting crops, spraying salt on harvested paddy or other crop to prevent the germination and sprouting of the harvested produce
Crop 2. Maize				
Crop 3. Mustard				
Crop 4. Lentil				

Horticulture				
Crop 1. Pine apple	Planting crop after the damage,	Prevention of hails by	Prevention of hails by hails	Following forecasts of
Crop 2. Orange	select varieties which will mature	hails suppression	suppression techniques,	weather and protecting
Crop 3. Mango	before the beginning of the hazard	techniques, following	following forecasts of	crops, spraying salt on
		forecasts of weather and	weather and protecting	harvested paddy or other
		protecting crops, Use	crops, Use heaters, wind	crop to prevent the
		heaters, wind machines,	machines, sprinkling water	germination and sprouting
		sprinkling water etc.	etc.	of the harvested produce,
				Covering plants with hot
				caps
Cyclone				
Crop 1. Rice	Use proper method of irrigation, use	use of shelter belts (like	use of shelter belts (like row	use of shelter belts (like row
Crop 2. Maize	of shelter belts (like row of trees	row of trees planted for	of trees planted for wind	of trees planted for wind
Crop 3. Mustard	planted for wind protection), grow	wind protection)	protection)	protection)
	lodge resistance varieties,			
Crop 4. Lentil				
	Use proper method of irrigation, use	use of shelter belts (like	use of shelter belts (like row	use of shelter belts (like row
Crop 2. Orange	of shelter belts (like row of trees	row of trees planted for	of trees planted for wind	of trees planted for wind
Crop 3. Mango	planted for wind protection), grow	wind protection)	protection)	protection)
	lodge resistance varieties,			