

State: MIZORAM

Agriculture Contingency Plan for District: **Siaha District**

1.0 District Agriculture profile*			
1.1	Agro-Climatic/Ecological Zone		
	Agro Ecological Sub Region (ICAR)	Purvachal (Eastern Range) (17.2)	
	Agro-Climatic Zone (Planning Commission)	Eastern Himalayan Region –II with Al. toxicity and soil acidity, Soil erosion and floods, shifting cultivation, low Seed Replacement Rates, poor availability of electricity, poor road, poor input delivery system and communication infrastructure.	
	Agro Climatic Zone (NARP)	Humid Temperate Sub-Alpine Zone Humid Sub-Tropical Hill Zone	
	List all the districts falling under the NARP Zone* (*>50% area falling in the zone)	All District of Mizoram	
	Geographic coordinates of district headquarters	Latitude	Longitude
		22 ^o 29'24" N	92 ^o 58'50" E
		Altitude	
		1226 m MSL	
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS Mention the KVK located in the district with full address	KrishiVigyan Kendra, Siahatlah - III, Siaha District, Siaha, Mizoram. PIN 796 901	
	Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro-advisories in the Zone	Not available	

***Source: PMKSY, District irrigation Plan (DIP). Siaha District, 2016**

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):	1462.38	120	1 st week of June	Last week of September
	NE Monsoon(Oct-Dec):	97.44	39	1 st week of october	Last week of December
	Winter (Jan- February)	1.66	19	1 st week of January	Last week of February
	Summer (March-May)	164.14	55	1 st week of March	Last week of May
	Total Annual rainfall	1725.62	233		-

Source: Monthly Rainfall Data, DAO, Siaha District, Siaha (2017)

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)	139.990	133.226	102.671	7.473	0.950	0.980	7.757	1.072	2.840	9.125

1.4	Major Soils (common names like red sandy loam deep soils (etc.,))*	Area ('000 ha)**	Percent (%) of total geographical area
	1. TypicUdorthents (Entisols)	NA	NA
	2. AquicDystrochrepts, Fluventic, Dystrochrepts, TypicDystrochrepts, UmbricDystrochrepts (Inceptisols)	NA	NA
	3. HumicHapludults, TypicHapludults (Ultisols)	NA	NA
	Others (specify): Mostly red and yellow loamy soil		

Source : Geospatial planning for improved land use system in Saiha District, Mizoram, India in *Sci Vis* Vol 13 Issue No 3

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*Source: PMKSY, District irrigation Plan (DIP). Siaha District, 2016

1.5	Agricultural land use	Area ('000 ha)	Cropping intensity %	
	Net sown area	7.122	101.68	
	Area sown more than once Gross cropped area	0.120 7.242		
1.6	Irrigation	Area ('000 ha)		
	Net irrigated area	0.518		
	Gross irrigated area	0.518		
	Rainfed area	7.069		
	Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
	Canals	-	-	-
	Tanks	17 nos	-	-
	Open wells	-	-	-
	Bore wells	-	-	-
	Lift irrigation schemes	-	-	-
	Micro-irrigation	-	0.052	-
	Other sources (please specify)	-	0.384	-
	Total Irrigated Area	20	-	5.148%
	Pump sets	2		
	No. of Tractors	-		
	Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	-	-	-
	Over exploited	-	-	-
	Critical	-	-	-
	Semi- critical	-	-	-
	Safe	-	-	-
	Wastewater availability and use	-	-	-
	Ground water quality			

1. Area under major field crops & horticulture (as per latest figures) (Year: 2017-18)

1.7	S.No.	Major field crops cultivated	Area ('000 ha)							
			Kharif			Rabi			Summer	Grand total
			Irrigated	Rainfed	Total	Irrigated	Rainfed	Total		
1		Paddy-i) Jhum	-	0.616	0.616	-	-	-	-	0.616
		ii) WRC	-	0.522	0.522	-	-	-	-	0.522
	2	Maize	-	0.206	0.206	-	0.020	0.020	-	0.226
	3	Rice bean	-	0.005	0.005	-	-	-	-	0.005
	4	Cowpea	-	0.013	0.013	-	-	-	-	0.013
	5	French bean	-	Nil	Nil	-	-	-	-	Nil
	6	Soybean	-	0.016	0.016	-	-	-	-	0.016
	7	Sesamum	-	0.007	0.007	-	-	-	-	0.007
Sl. No.	Horticulture crops - Fruits		Area ('000 ha)							
			Total		Irrigated		Rainfed			
1	M. Orange		1.371		-		1.371			
2	Hatkora		0.112		-		0.112			
3	Assam Lemon		0.855		-		0.855			
4	Banana		0.560		-		0.560			
5	Passion Fruit		0.156		-		0.156			
6	Grape		0.065		-		0.065			
7	Pineapple		0.494		-		0.494			
8	Mango				-		0.1185			

	Horticulture crops - Vegetables	Total	Irrigated	Rainfed
1	Cabbage	0.193	-	0.193
2	Tomato	0.057	-	0.057
3	Pea (Rabi)	0.015	-	0.015
4	French bean (Rabi)		-	
5	Local mustard		-	
6	French mustard (Rabi)	0.09875	-	0.09875
7	Broccoli	0.095	-	0.095
8	Brinjal	0.103	-	0.103
9	Cucumber	0.02	-	0.02
10	Lady's Finger	0.345	-	0.345
11	Chow chow		-	
12	Pumpkin	0.02	-	0.02
13	Bitter Gourd	0.44675	-	0.44675
14	Snake Gourd	0.005	-	0.005
15	Ash Gourd	0,001	-	0,001
16	Bottle Gourd	0.01575	-	0.01575
17	Water Melon	0.017	-	0.017
18	Musk Melon	0.005	-	0.005
19	Rice Bean		-	
20	Potato	0.00975	-	0.00975

21	Other roots (Colocasia, Topioca, Sweet potato etc.)		-	
Sl. No	Medicinal and Aromatic crops	Total	Irrigated	Rainfed
1	Citronella	0.004	NA	0.004
2	Stevia	0.014	NA	0.014
3	Aloe vera	0.1	NA	0.1
4	NA	NA	NA	NA
5	NA	NA	NA	NA
Others (specify)	NA	NA	NA	NA
	Plantation crops	Total	Irrigated	Rainfed
1	Arecanut	0.692	0.692	-
2	Jatropha	0.025	0.025	-
3	Coconut	0.033	0.033	-
Others (Specify)	Eg., industrial pulpwood crops etc.	NA	NA	NA
	Fodder crops	Total	Irrigated	Rainfed
1	Signal grass	-	-	
Others (Specify)				
	Total fodder crop area	-	-	-
	Grazing land, reserve areas etc	-	-	-
	Availability of	-	-	-

	unconventional feeds/by products eg., breweries waste, food processing, fermented feeds bamboo shoots, fish etc			
	Sericulture etc	-	-	-
	Other agro enterprises (mushroom cultivation etc specify)			
	Others (specify)	-	-	-

Source: Agriculture Statistical Abstract, Department of Agriculture (Crop Husbandry), Mizoram, 2013- 14, Horticulture Statistical Handbook , Mizoram 2016-17

1.8	Livestock	Male ('000)	Female ('000)	Total ('000)
	Indigenous cattle	657	1486	2471
	Improved / Crossbred cattle	135	193	328
	Buffaloes (local low yielding)	413	520	933
	Improved Buffaloes	-	-	-
	Goat	1559	2134	3693
	Sheep	28	22	50
	Pig	-	-	21856
	Mithun	-	-	545
	Yak	-	-	-
	Others (Horses & ponies)	-	-	201
	(Ducks)	-	-	128

	(Turkeys)	-	-	11
	Others (dogs etc)	-	-	2475
	Commercial dairy farms (Number)	-	-	-
1.9	Poultry	No. of farms	Total No. of birds ('000)	
	Commercial	-	1,03,979 (Total No of Fowl in the District)	
	Backyard	-	Livestock and Poultry Population	

Source: Statistical Handbook, Mizoram (2014) and 19th Livestock census 2012.

1.10	Fisheries						
	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)	
		NA	NA	NA	NA	NA	NA
	ii) Inland (Data Source: Fisheries Department)	No. Farmer owned ponds		No. of Reservoirs		No. of village tanks	
400		1012		NA			
	B. Culture						
			Water Spread Area (ha)	Yield (t/ha)	Production ('000 tons)		
	i) Brackish water (Data Source: MPEDA/ Fisheries Department)		NA	NA	NA		
	ii) Fresh water (Data Source: Fisheries Department)		NA	NA	NA		
	Others		NA	NA	NA		

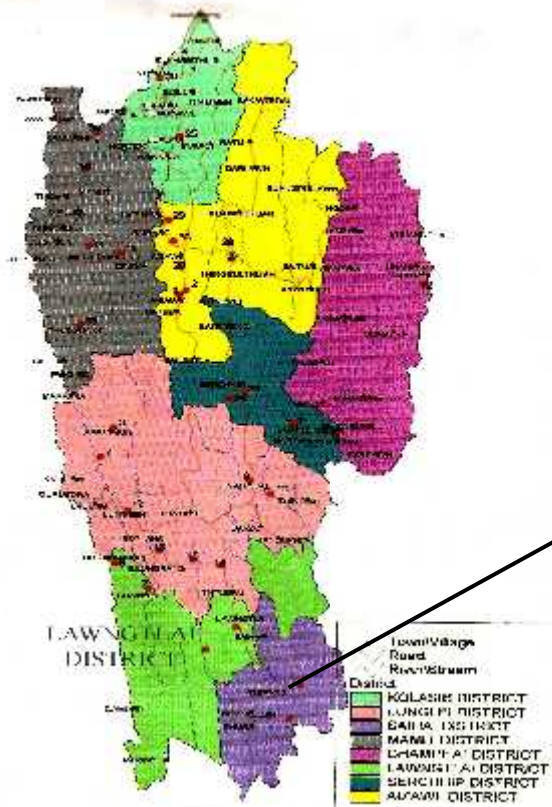
1.12	Sowing window for 5 major field crops (start and end of normal sowing period)					
		Paddy	Maize	Soybean	Sesamum	Cowpea
	Kharif- Rainfed	3 rd wk Jun – 2 nd wk Jul	1 st wk Apr – 1 st wk May	1 st wkJul – 2 nd wk Aug	2 nd wk May – 1 st wk Jun	1 st wk Jul – 2 nd wk Aug
	Kharif-Irrigated	2 nd wk Jun – 1 st wk Jul				
	Rabi- Rainfed			1 st wk Oct – 4 th wk Oct	1 st wk Oct – 4 th wk Oct	1 st wk Oct – 4 th wk Oct
	Rabi-Irrigated	2 nd wk Sep. – 2 nd wk Oct				
	Summer-irrigated					
	Summer-rainfed					

1.13	What is the major contingency the district is prone to? (Tick mark)	Regular*	Occasional	None
	Drought		✓	
	Flood		✓	
	Cyclone		✓	
	Hail storm		✓	
	Heat wave			✓
	Cold wave		✓	
	Frost		✓	
	Sea water intrusion			✓
	Snowfall		✓	
	Landslides		✓	
	Earthquake			
	Pests and disease outbreak (specify)			
	Others (like fog, cloud bursting etc.)			✓

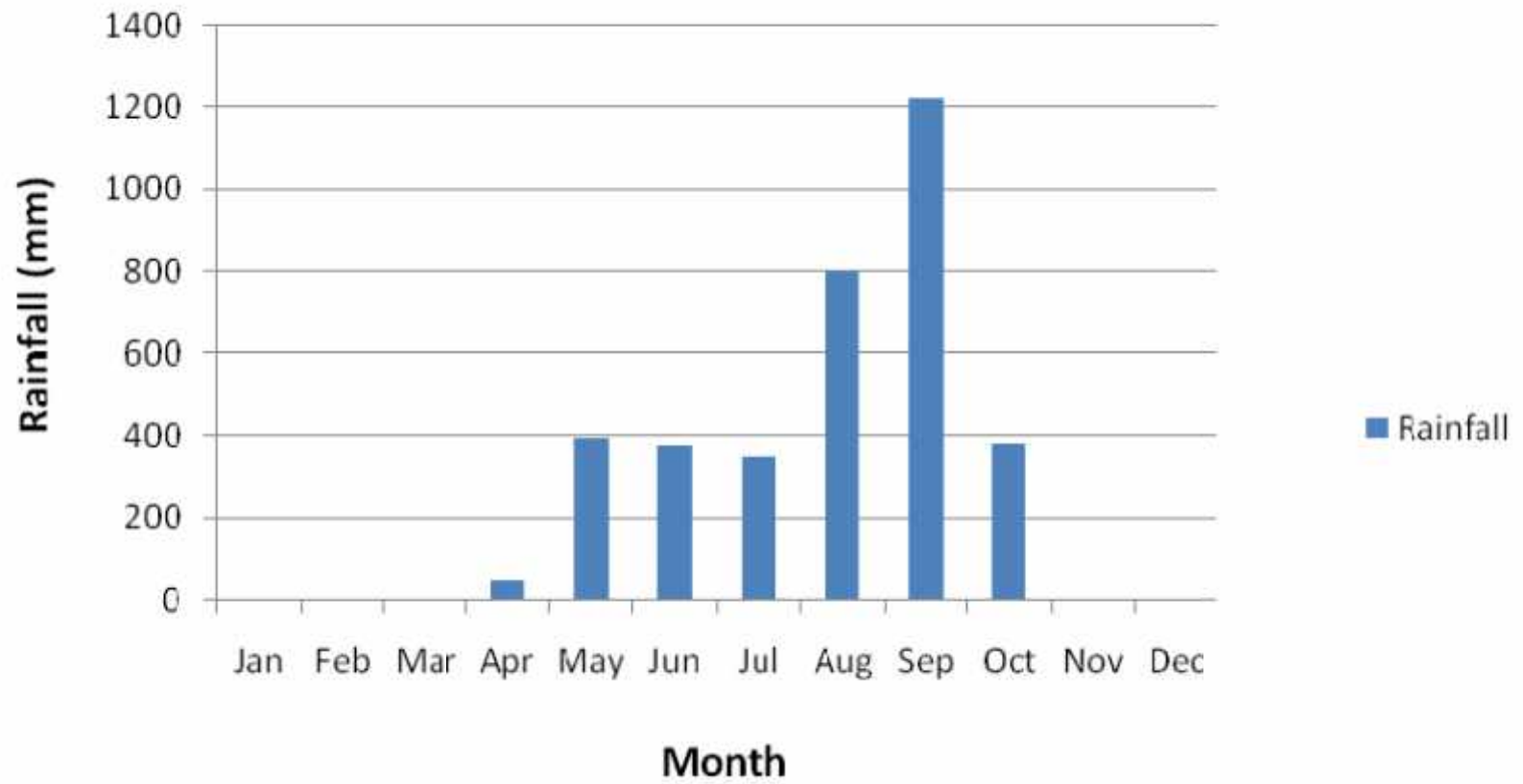
*When contingency occurs in six out of 10 years

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: No

Map of Mizoram showing Administrative Districts



Monthly rainfall of Saiha District (mm), 2013

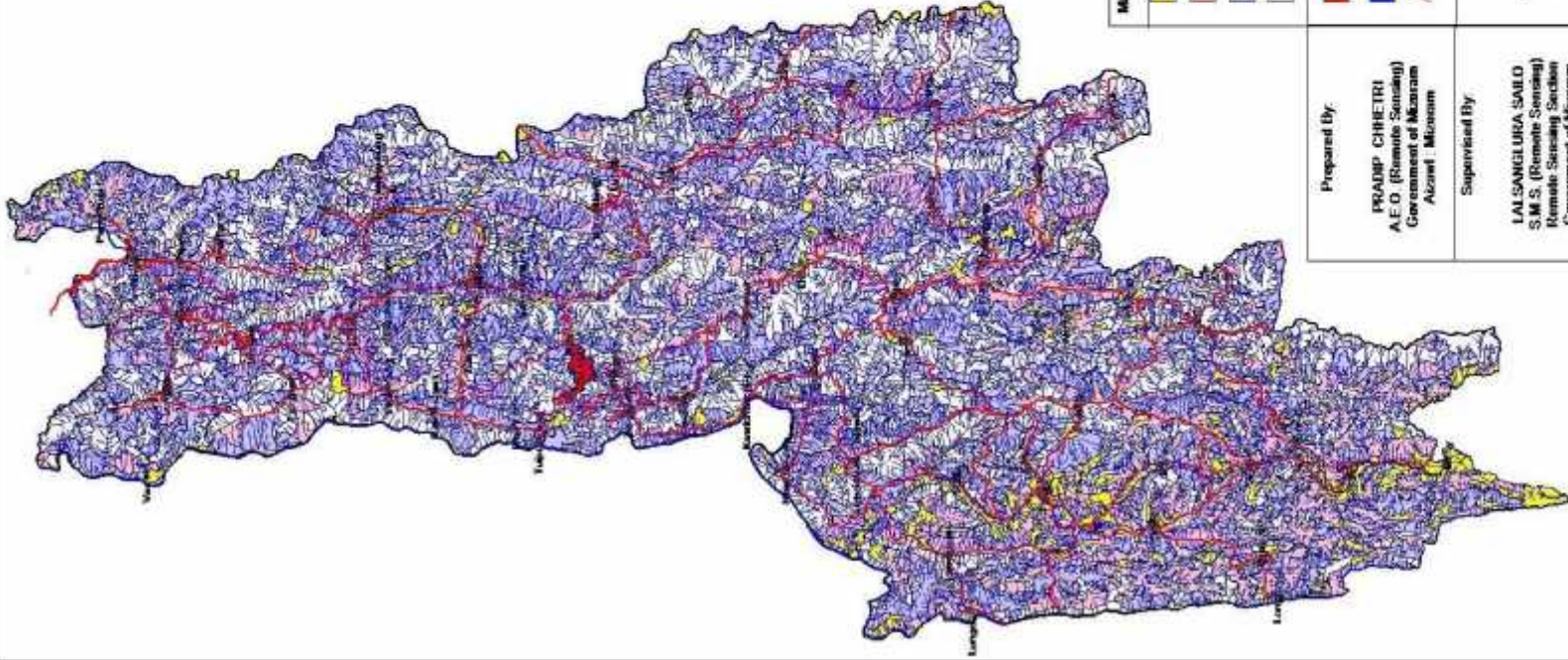


**Map of Saiha District
showing Arable & Non-Arable Land
Mizoram**

**Land Capability Class based on
All India Soil & Landuse Survey**



Source :
1. Survey of India Toposheet 1 : 50,000
2. Satellite Imagery IRS-ID - FCC 1 : 50,000



Legend

- Iic - Permanent Cultivation
- Ile - Terrace Cultivation
- Ive - Bench Terrace & Horticulture
- Vie - Plantation / Pasture
- Vile - Forestry
- Vilic - Foresty & Wildlife

Mapping Unit	Slope Class	Arable Land	Non-Arable Land	Land Capability Class	Area in Ha
	1-33%			Iic, Ile, Ive	30,918
	33-50%		Non-Arable Land	Vie	
	50-70%			Vile	1,09,072
	>70%			Vilic	
	Settlement				
	Rivers				
	Roads				
Prepared By: PRADIP CHHETRI A.E.O. (Remote Sensing) Government of Mizoram Aizawl, Mizoram					TOTAL : 1,39,990 Ha
Supervised By: LALSANGLURA SAILO S.M.S. (Remote Sensing) Remote Sensing Section Government of Mizoram Aizawl, Mizoram					Checked By: Dr. H. SAITHANTLUANGA State In-house Board Government of Mizoram Aizawl, Mizoram
					Approved By: C. LAIZARLIANA Chief Executive Officer SINA for Watershed Government of Mizoram Aizawl, Mizoram

2.2 .Unusual rains (untimely, unseasonal etc) (for both rainfed and irrigated situations): 2.0 Strategies for weather related contingencies

2.1 Drought: NA

2.1.1 Rainfed situation (maintain separate rows for each cropping system and please write contingency measures)

2.1.1.1 Pre monsoon (4th week of March)

<i>Condition</i>	<i>Suggested Contingency measures</i>				
Early season drought (delayed onset of monsoon)	Major Farming situation	Normal Crop / Cropping system	Change in crop / cropping system including variety	Agronomic measures including soil and water conservation, life saving irrigation, nutrient sprays, etc.	Remarks on Implementation
Delay by 2 weeks (2 nd to of April)	Early rice	Japan, ,Matupi, Masuri	No change	--	--
Delay by 4 weeks (4 th week of April)	Early rice	Japan, ,Matupi, Masuri	No change	--	--
Delay by 6 weeks (2 nd week of May)	NA				
Delay by 8 weeks (4 th week of May)	NA				

2.1.1.2 South West Monsoon (1st week of June)

<i>Condition</i>	<i>Suggested Contingency measures</i>				
Early season drought (delayed onset of monsoon)	Major Farming situation	Normal Crop / Cropping system	Change in crop / cropping system including variety	Agronomic measures including soil and water conservation, life saving irrigation, nutrient sprays, etc.	Remarks on Implementation

Delay by 2 weeks (3rd week of June)	1) Rainfed Upland /Jhum with Rich Alluvial Soil	1) Paddy+ Ginger +Bird's eye Chilli,	No change	Logwood bunding on sloppy land, Sowing can be delayed up to June with anticipation of rain. Ridge & Furrow /Raised bed sowing in plain areas and in Terraces. Dibbling instead of broadcasting.	Supply of seeds through State Dept. ATMAs & KVKs
		2) Ginger (sole crop)	No change	Logwood bunding on sloppy land, Sowing can be delayed up to June with anticipation of rain. Ridge & Furrow /Raised bed sowing in plain areas and in Terraces. Dibbling instead of broadcasting.	
		3) Bird's eye chilli (sole crops)	No change	Logwood bunding on sloppy land, Sowing can be delayed up to June with anticipation of rain. Ridge & Furrow /Raised bed sowing in plain areas and in Terraces. Dibbling instead of broadcasting.	
		4) Maize (sole crops)	No change	Logwood bunding on sloppy land, Sowing can be delayed up to 1 st week of July with anticipation of rain. Ridge & Furrow /Raised bed sowing in plain areas and in Terraces. Dibbling instead of broadcasting.	
		Horticulture crops: Cabbage French Bean Cow pea Brinjal	No change	Logwood bunding on sloppy land, Sowing can be delayed up to 1 st week of July with anticipation of rain. Ridge & Furrow /Raised bed sowing in plain areas and in Terraces. Dibbling instead of broadcasting.	Promote optimum water supply system, WHS
	2)Terrace / mid land with no irrigation facility with rich alluvial soil	1.Rice(Sazukthau,Faz ai,buhbial,buhtial) 2. Maize(local) 3.Soyabean(local)	Idaw, RCM-7 RCM 75, HQPM5 RCS1-1, RCS1-9, RCS1-10	Normal sowing, Logwood bunding on sloppy land, Sowing can be delayed up to 1 st week of July with anticipation of rain. Ridge & Furrow /Raised bed sowing in plain areas and in Terraces. Dibbling instead of broadcasting.	

		Horticulture crops: Passion Fruit Pineapple Banana M. Orange	No change	Mulching with organic materials(dry leaves,farm waste,saw dust), Earthing up, half moon terraces. Bunding, check dams, promote WHS	
	3) Rainfed Low land	Rice(Pasa,Sasai,Japan ,Matupi,Masuri)	Paddy var. RCM-10, RCM-11, Local, CAU R1,	Deep ploughings (3 times), application of fertilizers & manures, Late sowing	
Delay by 4 weeks (1 st week of July)	1) Upland /Jhum Rich Alluvial Soil	Rice based Rice + Maize + Cucumber	Rice : local short duration var.Sazukthu,fazai,buhbial) CAU R1 Maize: Local sticky maize, HQPM , RCM- 75, Cucumber: Var. Local, Pusa Sanyog, Pant Khiraa- 1 Local vegs	Late sowing, Sowing by dibbling, Interculture operations, Mulching Earthing up, Log/ bamboo bunding to conserve run –off water & top soil, Spraying of 0.2 % Urea spraying of 0.2 % Potash	
		Ginger	Local var. Thingpui, Thinglaidum, & Thingria,	Mulching with organic materials, Earthing up, Spraying of 0.2 % Urea spraying of 0.2 % Potash	
		Bird's eye chilli	Local variety	Mulching,Spraying of 0.2 % Urea spraying of 0.2 % Potash	
		Horticulture crops Cabbage French Bean Cow pea Brinjal	1. Cabbage var. Ryozeke, Indam 1299, Improved Bahar, Rocky 2. French Bean var. Local, Arka Anoop, Arka Komal, Arka Sharat 3. Cow pea var. Local, Arka Garima Pusa Kumal, PKM-1 4. Brinjal var. Arka Kesav, Arka Neidhi, Arka Anand, Pusa Kranti	Logwood bunding on sloppy land, Sowing can be delayed up to June with anticipation of rain. Ridge & Furrow /Raised bed sowing in plain areas and in Terraces. Dibbling instead of broadcasting.	
	2) Terrace / mid land with no irrigation facility	Rice	Early varieties as above	Late sowing, Application of slaked lime & organic manure, Mulching with available bio-mass, Frequent inter-culture operations, Spraying of 0.2 % Urea spraying of 0.2 % Potash	

		Perennial crops Pineapple, Banana, M. Orange	No change	Mulching, Application of slaked lime & organic manure	
	3) Low land with irrigation facility	Rice	Short duration varieties by system of rice intensification	Deep ploughing Application of organic manure Late sowing	
	4) Low land without irrigation facility	Rice	Short duration varieties by system of rice intensification	Deep ploughing Application of organic manure Late sowing	
		Lowland Paddy	Nursery preparation	Dry & Wet bed method	
Delay by 6 weeks (July 3 rd week)	1) Upland /Jhum Rich Alluvial Soil	NA	NA	NA	
		NA	NA	NA	
		NA	NA	NA	
		NA	NA	NA	
		NA	NA	NA	
		NA	NA	NA	
		NA	NA	NA	
		NA	NA	NA	
Delay by 8 weeks (August 1 st week)		NA	NA	NA	
		NA	NA	NA	
		NA	NA	NA	
		NA	NA	NA	

***Matrix for specifying condition of early season drought due to delayed onset of monsoon (2, 4, 6 & 8 weeks) compared to normal onset (2.1.1)**

Normal onset (month and week)	Month and week for specifying condition of early season drought due to delayed onset of monsoon				
	Delay in onset of monsoon by				
	2 wks	4 wks	6 wks	8 wks	
June 1 st wk	June 3 rd wk	July 1 st wk	July 3 rd wk	Aug 1 st wk	
June 2 nd wk	June 4 th wk	July 2 nd wk	July 4 th wk	Aug 2 nd wk	
June 3 rd wk	July 1 st wk	July 3 rd wk	Aug 1 st wk	Aug 3 rd wk	
June 4 th wk	July 2 nd wk	July 4 th wk	Aug 2 nd wk	Aug 4 th wk	
July 1 st wk	July 3 rd wk	Aug 1 st wk	Aug 3 rd wk	Sep 1 st wk	
July 2 nd wk	July 4 th wk	Aug 2 nd wk	Aug 4 th wk	Sep 2 nd wk	

<i>Condition</i>			<i>Suggested Contingency measures</i>		
Early season drought (Normal onset)	Major Farming situation^a	Normal Crop/cropping system	Crop management^c	Soil nutrient & moisture conservation measure	Remarks on Implementation

Normal onset followed by 15-20 days dry spell after sowing leading to poor germination /crop stand etc.	1) Up land/ Jhum Rich Alluvial soil	1. Rice based 2. Ginger 3. Bird's eye chilli	Weeding Gap filling Plant protection measures	Wood log/ bamboo bunding Mulching Earthing up, Optimum irrigation technique	To create awareness on moisture management and crop management technique.
	2) Terrace/ Mid land Red Alluvial soil	1. Rice 2. Fruit crops	Intercultural operations Gap filling Plant protection measures	Application of organic manure, Mulching with biomass, Earthing up Half moon terracing for M. Orange	
	3) Low land with irrigation facility Clayey loam	Rice	Weeding Gap filling Plant protection measures	SRI	
	4) Low land without irrigation facility Sandy loam	Rice	Weeding Gap filling Plant protection measures	SRI	

<i>Condition</i>			<i>Suggested Contingency measures</i>		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	Major Farming situation	Normal Crop/cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
At vegetative stage	1) Farming situation: Up land/ Jhum Rich Alluvial soil	1. Rice based	Weeding, mulching with locally available organic materials Plant protection measures	Efficient use of store water for life saving irrigation.	Create awareness on soil conservation measures
		2. Ginger	Weeding, mulching with locally available organic materials PP measures	Mulching with locally available organic materials , Earthing up	
		3. Bird's eye chilli	Weeding , mulching with locally available organic material Thinning PP Measures	Mulching with bio mass Earthing up	
	2) Terrace/ Mid	Rice	Weeding	Earthing up	

	land Red Alluvial soil		PP Measures Dripping & Wetting method	Mulching with locally available organic materials	
		Fruit crops – Pineapple, Banana, M. Orange	Weeding PP Measures Dripping & Wetting method	Earthing up, Mulching with available biomass, use of cover crops. Half /fullmoon terrace.	
	3) Low land with irrigation facility Clayey loam	Rice	Need based PP measures	Wetting & drying	
	4) Low land without irrigation facility Sandy loam	Rice	PP measures	Wetting & drying	

<i>Condition</i>			<i>Suggested Contingency measures</i>		
Mid season drought (long dry spell)	Major Farming situation^a	Normal Crop/cropping system^b	Crop management	Soil nutrient and moisture conservation measures.	NA Remarks on Implementation
At flowering/ fruiting stage	1) Up land/ Jhum Rich Alluvial soil	1. Rice based	Tolerant/ resistant varieties Plant protection measures	Earthing up, mulching with locally available materials	
		2. Ginger	Weeding PP measures	Mulching with bio mass Earthing up	
		3. Bird's eye chilli	Weeding PP Measures	Mulching with bio mass Earthing up	
	2) Farming situation: Terrace/ Mid land Red Alluvial soil	Rice	PP Measures Dripping & Wetting method	Earthing up Mulching with available biomass	
		Fruit crops – Pineapple, Banana, M. Orange	PP Measures Dripping & Wetting method	Earthing up Mulching with available biomass	
	3) Low land with irrigation facility Clayey loam	Rice	Need based PP measures	Wetting & drying	

	4) Low land without irrigation facility Sandy loam	Rice	PP measures	Wetting & drying	
Condition			Suggested Contingency measures		
Terminal drought (Early withdrawal of monsoon)	Major Farming situation	Normal Crop/cropping system	Crop management	Rabi Crop planning	Remarks on Implementation
	1) Farming situation: Up land/ Jhum Rich Alluvial soil	1. Rice based	Plant protection measures	Cole crops, tomato, leafy mustard, French bean, Onion, garlic,	Contour trench formation.
		2. Ginger	Weeding PP measures	NA	
		3. Bird's eye chilli	Weeding PP Measures	NA	
	2) Farming situation: Terrace/ Mid land Red Alluvial soil	Rice	PP Measures Dripping & Wetting method	French bean, soybean, groundnut, maize,	
		Fruit crops – Pineapple, Banana, M. Orange	PP Measures Dripping & Wetting method	NA	
	3) Low land with irrigation facility Clayey loam	Rice	Need based PP measures	NA	
	4) Low land without irrigation facility sandy loam	Rice	PP measures	Cole crops, French bean, soybean, onion, garlic, field pea, brinjal, tomato, okra .	
Condition			Suggested Contingency measures		
	Major Farming situation^f	Normal Crop/cropping system^g	Change in crop/cropping system^h	Agronomic measuresⁱ	Remarks on Implementation^j
Limited release of water in canals due to low rainfall	1) Farming situation: Mention source of irrigation, topography (upland/lowland) and soil colour & depth Eg; canal irrigated shallow red soils;	NA	NA	NA	NA

	tankfed medium deep black soils				
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Non release of water in canals under delayed onset of monsoon in catchment	1) Farming situation: Lowland clayey loam	NA	NA	NA	NA
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Condition	Suggested Contingency measures				
	Major Farming situation	Normal Crop/cropping system ^g	Change in crop/cropping system ^h	Agronomic measures ⁱ	Remarks on Implementation ^j
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	NA	NA	NA	NA	NA
Insufficiency of surface water for irrigation	1) Farming situation: Lowland clayey loam	NA	NA	NA	NA

Condition	Suggested Contingency measures				
	Major Farming situation ^f	Normal Crop/cropping system ^g	Change in crop/cropping system	Agronomic measures	Remarks on Implementation ^j
Insufficient groundwater recharge due to low rainfall	1) Farming situation: Lowland clayey loam	NA	NA	NA	NA

Condition	Suggested contingency measure			
	Vegetative stage	Flowering stage	Crop maturity stage	Post-harvest
Continuous high rainfall in a short span leading to water logging				
Paddy	Improve drainage system. Stone terracing to help in	Drain out excess water. Application of	Drain out excess water. Lodge panicle may be harvested at	Dry and safe well ventilated storage place

	conserving soil in hill slope . strip cropping.	hormones/nutrient sprays to prevent flower drop or promote quick flowering/fruitle	physiological maturity state.,	
Maize	Ridge planting, proper drainage . Improve drainage system. Stone terracing to help in conserving soil in hill slope . strip cropping.	Proper drainage to avoid water logging. Application of hormones/nutrient sprays to prevent flower drop or promote quick flowering/fruitle	Proper drainage, PP measures	Dry and safe well ventilated storage place
Bird's eye chilli	Ridge planting, Improve drainage system. Stone terracing to help in conserving soil in hill slope . strip cropping.	Proper drainage to avoid water logging. Application of hormones/nutrient sprays to prevent flower drop or promote quick flowering/fruitle	Proper drainage, PP measures	Sun drying after harvest. Provision for good storage facilities.
Pineapple	Proper drainage, need based PP measures	Proper drainage, need based PP measures. Application of hormones/nutrient sprays to prevent flower drop or promote quick flowering/fruitle	Proper drainage, need based PP measures	Stored in a dry place
Banana	Proper drainage, need based PP measures	Proper drainage, need based PP measures. Application of hormones/nutrient sprays to prevent flower drop or promote quick flowering/fruitle	Proper drainage, need based PP measures	Stored in a dry place
Grapes	Proper drainage, need based PP measures	Proper drainage, need based PP measures. Application of hormones/nutrient sprays to prevent flower drop or promote quick flowering/fruitle	Proper drainage, need based PP measures	Stored in a dry place
M. Orange	Proper drainage, need based PP measures	Proper drainage, need based PP measures. Application of hormones/nutrient sprays to prevent flower drop or promote quick flowering/fruitle	Proper drainage, need based PP measures	Stored in a dry place
Ginger	Proper drainage, need based PP measures	Proper drainage, need based PP measures	Proper drainage, need based PP measures	Stored in a dry place
Vegetables	Proper drainage, need based PP measures	Proper drainage, need based PP measures	Proper drainage, need based PP measures	Proper storage facilities
Heavy rainfall with high				

speed winds in a short span²				
Paddy	Drain out excess water. Provide wind break.	Drain out excess water.	Drain out excess water.	Dry and safe storage place
Maize	Ridge planting, proper drainage, provide wind break, support with bamboo.	Proper drainage to avoid water logging.	Proper drainage, PP measures	Dry and safe storage place
Bird's eye chilli	Ridge planting, proper drainage, provide wind break, support with bamboo.	Proper drainage to avoid water logging.	Proper drainage, PP measures	Sun drying after harvest. Provision for good storage facilities.
Pineapple	Proper drainage, need based PP measures, provide wind break, support with bamboo.	Proper drainage, need based PP measures	Proper drainage, need based PP measures	Stored in a dry place
Banana	Proper drainage, need based PP measures	Proper drainage, need based PP measures	Proper drainage, need based PP measures	Stored in a dry place
Grapes	Proper drainage, need based PP measures	Proper drainage, need based PP measures	Proper drainage, need based PP measures	Stored in a dry place
M. Orange	Proper drainage, need based PP measures, provide wind break, support with bamboo.	Proper drainage, need based PP measures	Proper drainage, need based PP measures	Stored in a dry place
Ginger	Proper drainage, need based PP measures	Proper drainage, need based PP measures	Proper drainage, need based PP measures	Stored in a dry place
Outbreak of pests and diseases due to unseasonal rains	NA	NA	NA	NA
Paddy	Spray tricyclazole against blast, Chloropyriphos, Regent against stem borer, Monocrotophos against Swarming caterpillar	Spray tricyclazole against blast, Chloropyriphos against stem borer, Monocrotophos against Swarming caterpillar & leaf folder	Malathion spray against Gundhi bug at the time of grain filling stage/milking stage.	Proper winnowing and sun drying of grains. Fumigation/disinfection of storage bin/bags including store house.
Horticulture				
Pineapple	Need based PP measures	Need based PP measures	Need based PP measures	NA
Banana	Need based PP measures	Need based PP measures	Need based PP measures	
Grapes	Need based PP measures	Need based PP measures	Need based PP measures	
M. Orange	Need based PP measures	Need based PP measures	Need based PP measures	

Ginger	Need based PP measures	Need based PP measures	Need based PP measures	
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2.3 Floods: NA

Condition	Suggested contingency measure ^o			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Transient water logging/ partial inundation ¹				
Continuous submergence for more than 2 days ²	NA	NA	NA	NA
Sea water intrusion ³	NA	NA	NA	NA

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

Extreme event type	Suggested contingency measure ^f			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Heat Wave^p	NA	NA	NA	NA
Crop1	NA	NA	NA	NA
Crop2	NA	NA	NA	NA
Crop3	NA	NA	NA	NA
Crop4	NA	NA	NA	NA
Crop 5	NA	NA	NA	NA
Horticulture	NA	NA	NA	NA
Crop1 (specify)	NA	NA	NA	NA
Crop2	NA	NA	NA	NA
Crop3	NA	NA	NA	NA
Cold Wave^q	NA	NA	NA	NA
Crop1	NA	NA	NA	NA
Crop2	NA	NA	NA	NA
Crop3	NA	NA	NA	NA
Crop4	NA	NA	NA	NA
Crop 5	NA	NA	NA	NA
Horticulture	NA	NA	NA	NA
Banana	Spray the canopy with water in the morning	Spray the canopy with water in the morning.	Spray the canopy with water in the morning	Harvested at physiological maturity.

				Induce ripening under controlled conditions.
Crop2	NA	NA	NA	NA
Crop3	NA	NA	NA	NA
Frost	NA	NA	NA	NA
Crop1	NA	NA	NA	NA
Crop2	NA	NA	NA	NA
Crop3	NA	NA	NA	NA
Crop4	NA	NA	NA	NA
Crop 5	NA	NA	NA	NA
Horticulture	NA	NA	NA	NA
Banana	Spray the canopy with water in the morning	Spray the canopy with water in the morning.	Spray the canopy with water in the morning	-
Pineapple	Spray the canopy with water in the morning	Spray the canopy with water in the morning /open wounds.	Spray the canopy with water in the morning	-
Crop3	NA	NA	NA	NA
Hailstorm	NA	NA	NA	NA
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
Maize	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
Crop3	NA	NA	NA	NA
Crop4	NA	NA	NA	NA
Crop 5	NA	NA	NA	NA

Horticulture	NA	NA	NA	NA
Banana	Cover the crops 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
M orange	Cover the crops 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 3				
Cyclone	NA	NA	NA	NA
Paddy	Re-sowing of crop. Cultivation of Short duration varieties	NA	NA	Timely broadcast and telecast and other types of announcement warning regarding cyclone. Harvest crop as much as possible. Store harvest crop at safe place Emphasis should be given on forthcoming rabi crops Supply of seeds and other agro-inputs of <i>rabi</i> crops at subsidized rate, provision of bank loan etc
Horticulture				
Banana	Replanting of suckers Proping Growing more wind tolerant varieties i.e. dwarf	NA Provision of wind break to reduce wind speed	Propping of plants to avoid fall down. Harvested at green stage or table purpose.	Propping of plants to avoid fall down. Harvested mature bunches and store for

	Cavendish to minimize loss. Provision of wind break to reduce wind speed			ripening in closed godowns for marketing
Citrus	Replanting of seedling/sapling. Support with bamboo Provision of wind break to reduce wind speed	Provision of wind break to reduce wind speed	Provision of wind break to reduce wind speed	Harvested mature and ripe fruits Provision of wind break to reduce wind speed
Papaya	Resowing of seeds in nursery. Growing dwarf varieties i.e. PusaNanha etc. Replanting of seedling Provision of wind break to reduce wind speed	Provision of wind break to reduce wind speed	Propping of plants to avoid fall down. Harvested at green stage or table purpose. Provision of wind break to reduce wind speed	Propping of plants to avoid fall down. Harvested mature bunches and store for ripening in closed godowns for marketing
Sand deposition or heavy siltation				
Specify crop/horticulture/plantation				

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 NA			
Feed and fodder availability	NA	NA	NA
Drinking water	NA	NA	NA
Health and disease management	NA	NA	NA
Floods			
Feed and fodder availability	Storage of available fodder recourses at elevated place, Protection of stored fodder from	Collect and utilize locally available feed including kitchen waste	Collect the residual crop (maize, paddy, cowpea leaves etc) & dried for future

	unusual/ heavy rains with poly sheet.		
Drinking water	Harvest the rainwater and collect in tank.	Provide clean and Hygienic water	Cleaning tank, restore hygienic environment.
Health and disease management	Regular supplementation of Vitamin and minerals Vaccination and deworming should be regular Feeding of balanced diet, Restriction of the entry to farm premises, isolation of the dise4ase animals	Proper disposal of manure Regular cleaning of shed Disinfection of shed Restricting movement of livestock in any case of epidemics. Rescue of sick and injured animals and their treatments.	Disinfection and sanitation of all the shed Movement other than the attendant into the farm premises should be restricted Proper disposal of dead animals
Cyclone	NA	NA	NA
Feed and fodder availability	NA	NA	NA
Drinking water	NA	NA	NA
Health and disease management	NA	NA	NA
Cold wave			
Shelter/environment management	Provision of proper shelter.	Proper Housing, cover the surrounding with covers,	Clean the surrounding environment.
Health and disease management	Regular supplementation of Vitamin and minerals Vaccination and deworming should be regular Feeding of balanced diet, Restriction of the entry to farm premises, isolation of the diseased animals	Proper disposal of manure . Regular cleaning of shed. Disinfection of shed. Restricting movement of livestock in any case of epidemics. Rescue of sick and injured animals and their treatments.	Disinfection and sanitation of all the shed. Movement other than the attendant into the farm premises should be restricted. Proper disposal of dead animals.
Snowfall	NA	NA	NA
Earthquake	NA	NA	NA
Landslides	NA	NA	NA

⁵ 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	NA	NA	NA	NA
Shortage of feed ingredients				
Drinking water				
Health and disease management				
Floods				
Shortage of feed ingredients	Storage of available feed, Protection of stored feed from rodents	Collect and utilised locally available feed including kitchen waste	Collect the residual, routine managerial practices	
Drinking water	Harvest the rainwater and collect in tanky	Provide clean and Hygienic water	Cleaning tank, restore hygienic environment.	
Health and disease management	Regular supplementation of Vitamin and minerals Vaccination and deworming should be regular Feeding of balanced diet, Restriction of the entry to farm premises, isolation of the dise4ase animals	Proper disposal of manure Regular cleaning of shed Disinfection of shed Restricting movement of livestock in any case of epidemics. Rescue of sick and injured animals and their treatments.	Disinfection and sanitation of all the shed Movement other than the attendant into the house Premises should be restricted Proper disposal of dead bird	
Cyclone	NA	NA	NA	NA
Shortage of feed ingredients	Proper storage of locally available feeds	Provision of medicine		Backyard Poultry Production
Drinking water	NA	NA	NA	NA
Health and disease management	NA	NA	NA	NA

Heat wave and cold wave	NA	NA	NA	NA
Shelter/environment management	Stress Management	Provision of proper ventilation, protection from extreme temperature using covers.		Backyard Poultry Production
Health and disease management	NA	NA	NA	NA
Snowfall	NA	NA	NA	NA
Earthquake, Landslides etc	Proper Selection of housing site, stock preventive medicines, vaccines; procurements of feeds & litter materials	Measures to Prevent outbreak of diseases, continue feeding and construction of shed, proper disposal of dead birds	Biosecurity, disinfection of sheds, disposal of dead birds	Backyard Poultry Production

^a based on forewarning wherever available

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2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event^a	During the event	After the event
1) Drought			
Shallow water in ponds due to insufficient rains/inflow	NA	NA	NA
Impact of heat in ponds / change in water quality	NA	NA	NA
2) Floods			
Inundation with flood waters	1. Storage of sand filled bags for emergency use. 2. Repair and maintenance of bunds. 3. 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. Relief operation.	1. Relief operation will continue. 2. Care of health of affected people 3. Settlement of insurance. 4. Financial support to other people.
Water contamination & change in BOD	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
Health and diseases management	Stock preventive medicines, vaccines	Prevent influx of diseased fish from outside source, Check	1. Application of lime and KmnO4. 2. Assessment of the health status of

		through nets Administer medicines through random catch Disinfect water by lime , KMnO4	fish and accordingly control measure should be taken. 3. Control on transport of brooders and seeds.
3. Cyclone / Tsunami	NA	NA	NA
A.Capture	NA	NA	NA
Marine	NA	NA	NA
Inland	NA	NA	NA
B. Aquaculture	NA	NA	NA
(i) Overflow / flooding of ponds	NA	NA	NA
(ii) Changes in water quality (fresh water / brackish water ratio)	NA	NA	NA
(iii) Health and diseases	NA	NA	NA
(iv) Loss of stock and inputs (feed, chemicals etc)	NA	NA	NA
(v) Infrastructure damage (pumps, aerators, shelters/hutsetc)	NA	NA	NA
(vi) Any other	NA	NA	NA
4. Heat wave and cold wave	NA	NA	NA
A. Capture	NA	NA	NA
Marine	NA	NA	NA
Inland	NA	NA	NA
B. Aquaculture	NA	NA	NA
(i) Changes in pond environment (water quality)	NA	NA	NA
(ii) Health and Disease management	NA	NA	NA
(iii)Any other			

^a based on forewarning wherever available