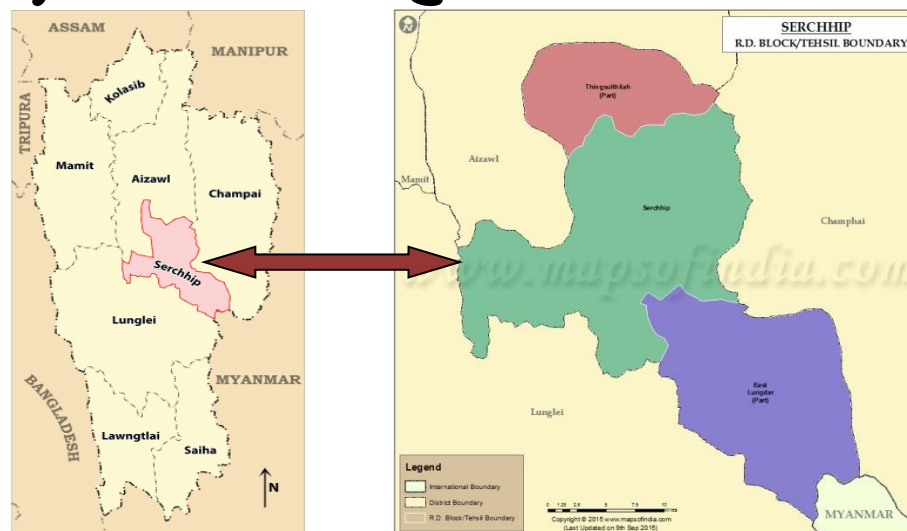


District Agriculture Contingency Plan of KVK, Serchhip District: Mizoram



**KRISHI VIGYAN KENDRA (KVK): SERCHHIP DISTRICT
N.VANLAIPHAI: MIZORAM**

State: MIZORAM

Agriculture Contingency Plan for District: SERCHHIP 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.	
	Agro Climatic Zone (NARP)	Temperate sub-alpine zone, Sub-tropical Hill zone, Mild-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
		35 ⁰ 58'82'' and 23 ⁰ 18' 29" N	92 ^o 51' 24" E and 92 ^o 41' 00'' E
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	500m – 1889m	
	Mention the KVK located in the district with full address	Krishi Vigyan Kendra, Serchhip District, N.Vanlaiphai- 796184, Mizoram	
	Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro-advisories in the Zone	Small Weather Station installed at KVK Serchhip District Complex, N.Vanlaiphai under NICRA Project	

***Indicate source of data while furnishing information at different places in the district profile**

Source: Vision 2020, Krishi Vigyan Kendras, Mizoram. Published by Directorate of Agriculture (Research & Education), Aizawl, Mizoram - 2011

Rainfall data (Average of five year 2009-2014)

1.2	Rainfall	Normal RF(mm)	Normal Rainy days (number)	Normal Onset	Normal Cessation
	SW monsoon (June- September):	1433.28	120	1 st week of June	Last week of September
	NE Monsoon(October- December):	199	8	1 st week of October	Last week of December
	Winter (January- February)	1.66	5	1 st Week of January	2 nd week of February
	Summer (March-May)	377.1	13	1 st ^h week of March	4 nd week of May
	Annual	2011.04			

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

1.3	Land use pattern of the district (latest statistics)	Geographical area	Cultivable area	Forest area	Permanent pastures	Cultivable wasteland	Land under Misc. tree crops and groves	Barren and uncultivable land	Current Fallows
	Area ('000 ha)	142.160	18.497	91.235	0.350	0.480	2.819	0.658	6.821

Source: Agriculture Statistical Abstract(2013-2014), Dte.of Agriculture(Crop Husbandry),Govt. of Mizoram, Aizawl-2015

1.4	Major Soils (common names like red sandy loam deep soils(etc.,))*	Area ('000 ha)**	Percent (%) of total geographical area
	1. Very deep, dark brown to yellowish red, clay loam to clay, very strongly acidic, well drained	-	-
	2. Deep yellowish frown to brownish yellow clay loam to sandy clay loam, strongly acidic, poorly drained	-	-
	3. Dark yellowish brown to yellowish brown, clay loam, strongly acidic	-	-
1.5	Agricultural land use	Area ('000 ha)	Cropping intensity %

	Net sown area	18.497	99.375	
	Area sown more than once	0.190		
	Gross cropped area	18.687		
1.6	Irrigation	Area ('000 ha)		
	Net irrigated area	2.054		
	Gross irrigated area	2.054		
	Rainfed area	16.443		
	Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
	Canals	-	-	Area may be indicated
	Tanks			
	Open wells			
	Bore wells			
	Lift irrigation schemes			
	Micro-irrigation			
	Other sources (please specify)			
	River			
	Perennial stream			
	Springs (Tuikhur)			
	Farm pond			
	Total Irrigated Area			
	Pump sets			
	No. of Tractors	35		
	Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	No. of blocks/ Tehsils	(%) area	Quality of water (specify the problem such as high levels of arsenic, fluoride, saline etc)
	Over exploited	-	-	-
	Critical	-	-	-
	Semi- critical	-	-	-
	Safe	-	-	-
	Wastewater availability and use	-	-	-
	Ground water quality			
*over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%				

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

1.7 Area under major field crops & Horticulture

1.7	Major field crops cultivated	Area ('000 ha)							
		Kharif			Rabi			Summer	Grand total
		Irrigated	Rainfed	Total	Irrigated	Rainfed	Total		
Paddy	-	2.054	2.054	-	-	-	-	2.054	
Maize	-	1.520	1.520	-	-	-	-	1.520	
Arhar	-	0.078	0.078	-	-	-	-	0.078	
Field Pea	-	-	-	-	0.075	0.075	-	0.075	
Rice bean	-	0.089	0.089					0.089	
Soyabean	-	0.26	0.26	-	-	-	-	0.26	
Bitterguard	-	0.60275	0.60275					0.60275	
Brinjal		0.419	0.419					0.419	
Cabbage		1.093	1.093					1.093	
Onion		0.3215	0.3215					0.3215	
Tomato	0.069		0.069					0.069	
Broccoli	0.017		0.017					0.017	
Cow pea	-	0.342	0.342	-				0.342	
French bean	-	0.02	0.02	-	0.07	0.07	-	0.09	
Sesamum	-	0.088	0.088	-	-	-	-	0.088	
Rapeseed & Mustard	-	-	-	-	0.045	0.045	-	0.045	
Sugarcane	-	0.44	0.44	-	-	-	-	0.44	
Bird's eye chilli		1.25625	1.25625					1.25625	

Horticulture crops - Fruits	Area ('000 ha)		
	Total	Irrigated	Rainfed
Banana	4.18		4.18
Khasi mandarin	2.729		2.729
Hatkora	0.203		0.203
Lemon	1.11		1.11
Passion fruit	0.101		0.101
Pineapple	0.59		0.59
Amla	0.035		0.035

Grapes	0.282		0.282
Papaya	0.0865		0.0865
Avocado	0.03		0.03
Strawberry	0.026	0.026	
Horticulture crops - Vegetables	Total	Irrigated	Rainfed
French bean	0.63	0.63	-
Bitterguard	0.60275	-	0.60275
Brinjal	0.419	-	0.419
Cabbage	1.093	1.093	-
Onion	0.3215	0.3215	-
Tomato	0.069	0.069	-
Broccoli	0.107	0.107	-
Medicinal and Aromatic/Spice crops	Total	Irrigated	Rainfed
1. Ginger	1.5656		1.5656
2. Turmeric	1.2435		1.2435
3. Chilli	1.69175		1.69175
Plantation crops	Total	Irrigated	Rainfed
Arecanut	0.42		0.42
Jatropha	0.025		0.025
Other plantation crops (Tum)	0.047		0.047
Fodder crops	Total	Irrigated	Rainfed
NA	NA	NA	NA
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	475	1151	1626
	Improved / Crossbred cattle	166	590	756
	Buffaloes (local low yielding)	228	381	609
	Improved Buffaloes	-	-	-
	Goat	158	309	467
	Sheep	0	0	0
	Pig	39963	34377	74340
	Mithun	26	68	94
	Yak	0	0	0
	Others (Horse, mule, donkey etc., specify)			
	1. Dog	-	-	1.825
	2. Rabbit	-	-	-
	3. Horse			0.0128
	Commercial dairy farms (Number)			
1.9	Poultry	No. of farms	Total No. of birds ('000)	

	Commercial	2	0.84				
	Backyard	3.950	52.654				
1.10	Fisheries (Data source: Chief Planning Officer)						
	A. Capture						
	i) Marine (Data Source: Fisheries Department)	No. of fishermen	Boats		Nets		Storage facilities (Ice plants etc.)
			Mechanized	Non-mechanized	Mechanized (Trawl nets, Gill nets)	Non-mechanized (Shore Seines, Stake & trap nets)	
		-	-	-	-	-	-
	ii) Inland (Data Source: Fisheries Department)	No. Farmer owned ponds		No. of Reservoirs		No. of village tanks	
		776		-			
B. Culture							
			Water Spread Area (ha)	Yield (t/ha)	Production ('000 tons)		
	i) Brackish water						
	ii) Fresh water		202	NA	NA		
	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)										
	Paddy	4.620	2074					4.620	2074	
	Maize	1.139	749.34			-	-	1.139	749.34	
	Sesame	0.027	306.81					0.027	306.81	
	Cowpea	0.175	853.65					0.175	853.65	
	French bean	-	-	0.051	72.85	-	-	0.051	72.85	-
Major Horticultural crops (Crops to be identified based on total acreage)										
	Pineapple	7.11	12050.847					7.11	12050.847	
	Turmeric	3.847	3089.95					3.847	3089.95	
	Khasi mandarin	14.70425	5388.145					14.70425	5388.145	
	Banana	50.70675	12128.625					50.70675	12128.625	
	Bird eye chilli	1.25625	742.257 (dried)					1.25625	742.257 (dried)	
	Ginger	8.7685	5601.1					8.7685	5601.1	
	Passion Fruit	0.301	2980.198					0.301	2980.198	

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

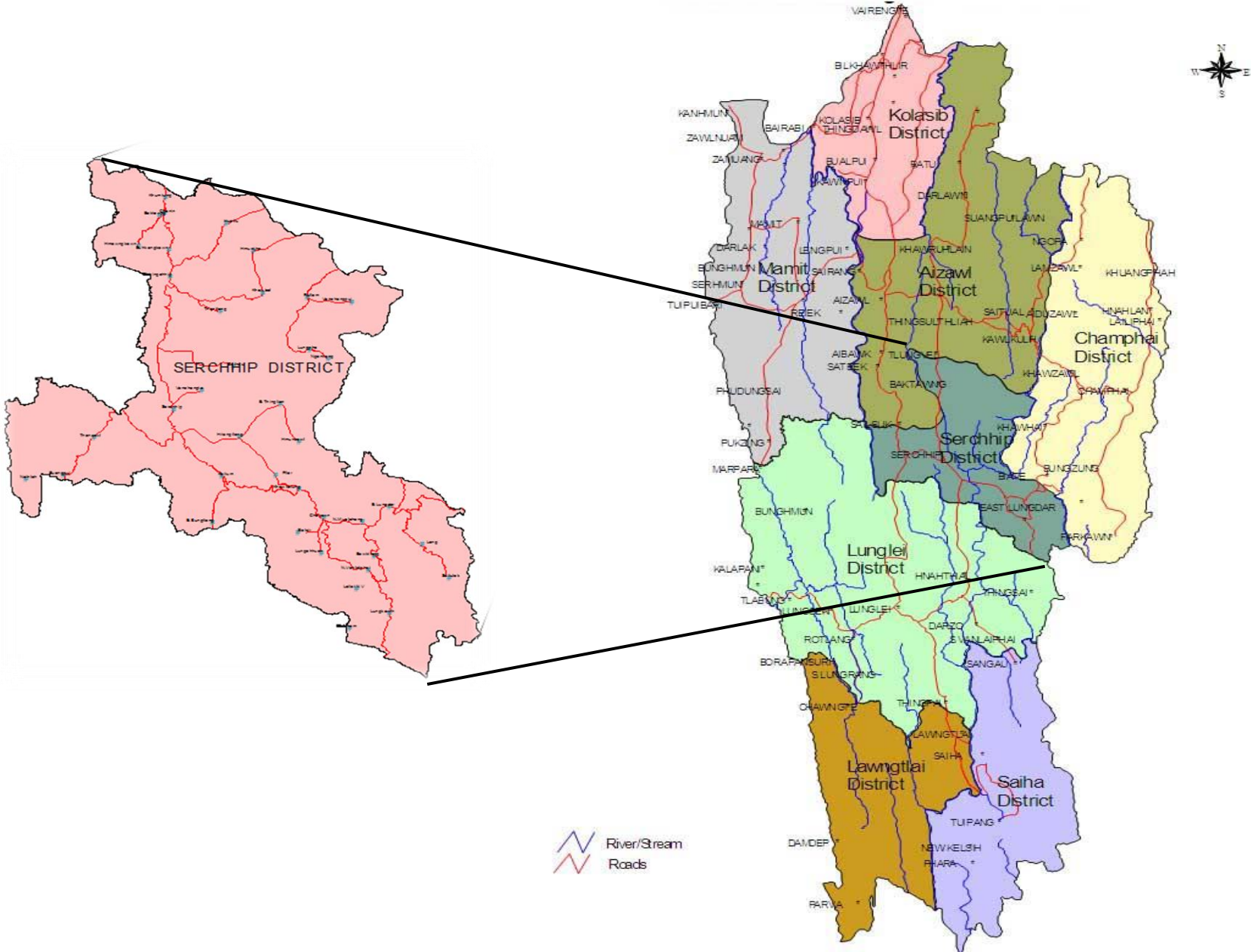
1.12	Sowing window for 5 major field crops (start and end of normal sowing period)	Paddy	Maize	Cowpea	French bean	Birds' eye chilli
	Khariif- Rainfed	4 th Week of May - 1 st week of July	4 th Week of May - 1 st Week of July	2 nd week of April- 2 nd week of May	2 nd week of march - 1 st week June	2 nd week of march - 1 st week June
	Khariif-Irrigated	1 st week of March- 1 st week of July	1 st week of March- 1 st week of July	1 st week of March- 1 st week of July	1 st week of March- 1 st week of July	1 st week of March- 1 st week of July
	Rabi- Rainfed	NA	1 st week of September to 2 nd Week of October	1 st week of September to 2 nd Week of October	1 st week of September to 2 nd Week of November	1 st week of September to 2 nd Week of November
	Rabi-Irrigated	NA	1 st week of September to 2 nd Week of October	1 st week of September to 2 nd Week of October	1 st week of September to 2 nd Week of November	1 st week of September to 2 nd Week of November
	Summer-irrigated	NA	1 st week of March to 4 th Week of May	1 st week of March to 4 th Week of May	1 st week of March to 4 th Week of May	1 st week of March to 4 th Week of May
	Summer-rainfed	NA	2 nd week of March to 4 th Week of May	2 nd week of March to 4 th Week of May	2 nd week of March to 4 th Week of May	2 nd week of March to 4 th Week of May

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			√
	Pests and disease outbreak (specify)		√	
	Others (like fog, cloud bursting etc.)		√	

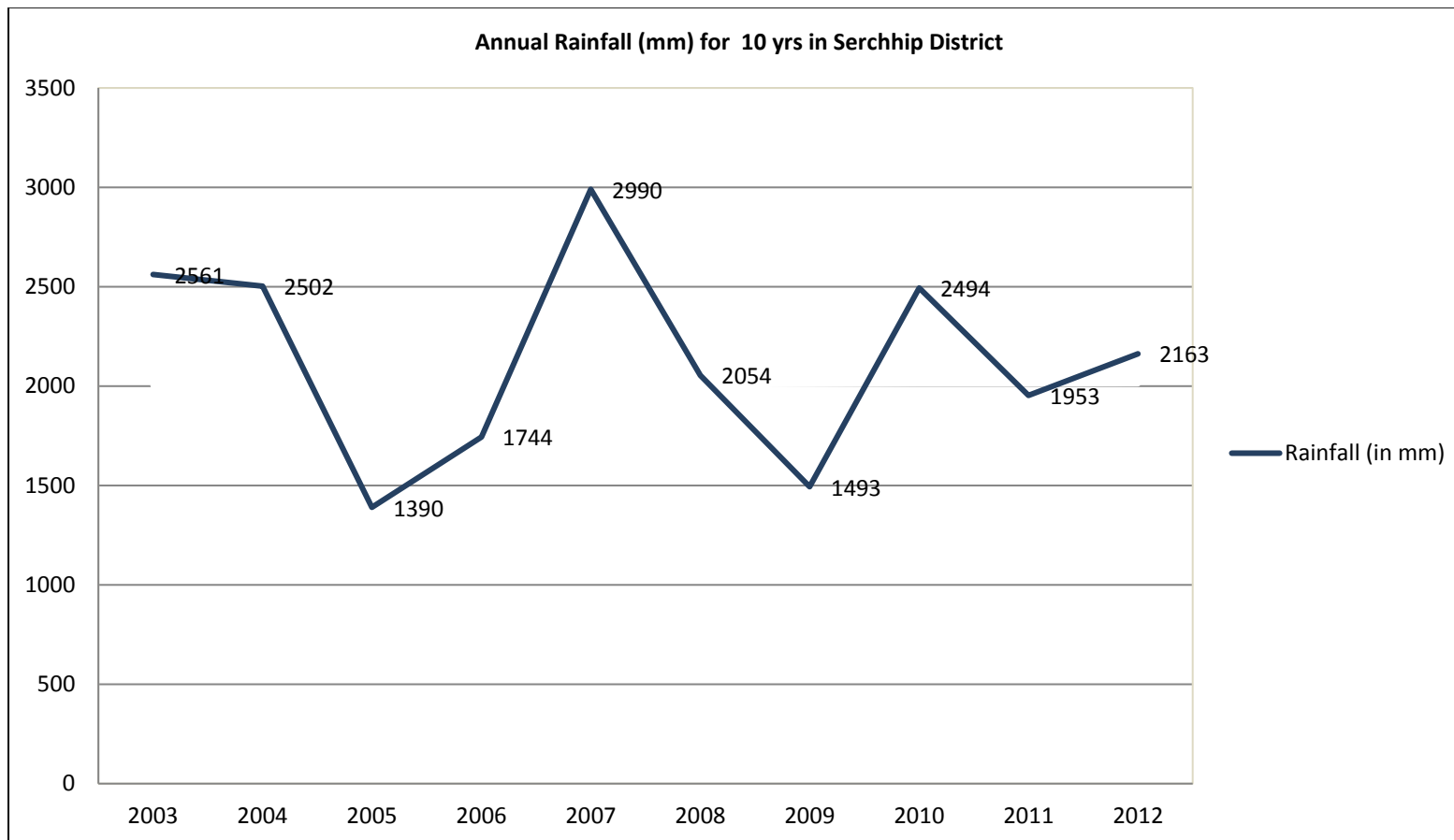
*When contingency occurs in six out of 10 years

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

Annexure I: Location Map of Serchhip District, Mizoram



Annexure 2: Average Mean annual rainfall of Serchhip District



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>				Remarks on Implementation
	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.	
Delay by 2 weeks (2 nd to of April)	Early rice	Tai, idaw, Buhsakei, Phulbuh, tialte, fangsei, farel	No change	--	--
Delay by 4 weeks (4 th week of April)	Early rice	Tai, idaw, Buhsakei, Phulbuh.	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	Paddy+ Ginger +Bird's eye Chilli,	No change	Logwood bunding on sloppy land, Sowing can be delayed 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
		Ginger (sole crop)	No change	Logwood bunding on sloppy land, Sowing can be delayed with anticipation of rain. Ridge & Furrow /Raised bed sowing in plain areas and in Terraces. Dibbling instead of broadcasting.	
		Bird's eye chilli (sole crops)	No change	Logwood bunding on sloppy land, Sowing can be delayed with anticipation of rain. Ridge & Furrow /Raised bed sowing in plain areas and in Terraces. Dibbling instead of broadcasting.	
		Maize (sole crops)	No change	Logwood bunding on sloppy land, Sowing can be delayed 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, Ridge & Furrow /Raised bed sowing in plain areas and in Terraces. Dibbling instead of broadcasting.	

	2) Terrace / mid land with no irrigation facility with rich alluvial soil	1. Rice 2. Maize 3. Soyabean	Changkawi, Lalrawna, manipurbuh, RCM7, CAUR2, Bhalum 3,4 RCM 75, HQPM5, Charhang, Mimbanvar. RCS1-1, RCS1-9, RCS1-10, JS335	Normal sowing, Logwood bunding on sloppy land, Sowing can be delayed 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
		Horticulture crops: Passion Fruit Pineapple Banana M. Orange	No change	Mulching with organic materials, Earthing up, half moon terraces. Bunding, check dams, promote WHS, life saving irrigation, application of lime/FYM	
	3) Rainfed Low land	Rice	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. Idaw, tai, Buhsakei, CAU R1 Maize: Local sticky maize, HQPM , RCM- 75, Cucumber: Var. Local, Pusa Sanyog, Pant Khiraa- 1 Local vogs	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. Ryozekei, 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 May 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, Banan, 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	
	2) Terrace / mid land with no irrigation facility	NA	NA	NA	
	3) Low land with irrigation facility	NA	NA	NA	
	4) Low land without irrigation facility	NA	NA	NA	
Delay by 8 weeks (August 1 st week)	1) Farming situation : Jhum/ up land with rich alluvial soil	NA	NA	NA	
	2) Farming				

	situation: Terrace/ Midland with red alluvial soil				
	3) Low land with no irrigation facility Sandy loam	NA	NA	NA	NA
	4) Low land with irrigation facility Clayey loam	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

Condition	Major Farming situation ^a	Normal Crop/cropping system	Suggested Contingency measures		
			Crop management ^c	Soil nutrient & moisture conservation measure	Remarks on Implementation
Early season drought (Normal onset)					
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination	1) Up land/ Jhum Rich Alluvial soil	1. Rice based 2. Ginger 3. Bird's eye chilli	Weeding Gap filling Plant protection measures Use of drought resistant variety local var	Wood log/ bamboo bunding Mulching Earthing up, Optimum irrigation technique	To create awareness on moisture management technique.

/crop stand etc.					
	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 land Red Alluvial soil	Rice	Weeding PP Measures Dripping & Wetting method	Earthing up up Mulching with locally available organic materials	
Fruit crops – Pineapple, Banana, M. Orange		Weeding PP Measures Dripping & Wetting method	Earthing up 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	Need based 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	Major Farming situation ^f	Normal Crop/cropping system ^g	Change in crop/cropping system ^h	Agronomic measures ⁱ	Remarks on Implementation ^j
Limited release of water in canals due to low rainfall	1) Farming situation: Mention source of irrigation, topography (upland/lowland) and soil colour &	NA	NA	NA	NA

	depth Eg; canal irrigated shallow red soils; tankfed medium deep black soils				
--	---	--	--	--	--

Non release of water in canals under delayed onset of monsoon in catchment	1) Farming situation: Lowland clayey loam	NA	NA	NA	NA
---	---	----	----	----	----

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

2.2 .Unusual rains (untimely, unseasonal etc) (for both rainfed and irrigated situations) :

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 conserving soil in hill slope . strip cropping.	Drain out excess water. Application of hormones/nutrient sprays to prevent flower drop or promote quick flowering/fruitle	Drain out excess water. Lodge panicle may be harvested at physiological maturity state.,	Dry and safe well ventilated storage place
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	Proper drainage, need based PP measures	Stored in a dry place

		hormones/nutrient sprays to prevent flower drop or promote quick flowering/fruitle		
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	Malathionspray 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	

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	Spray the canopy with water in the	Spray the canopy with water in	Harvested at physiological

	water in the morning	morning.	the morning	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 Cavendish to minimize loss. Provision of wind break to reduce wind speed	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 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	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	Propping of plants to avoid fall down. Harvested mature bunches and store for ripening in closed godowns for

	reduce wind speed		reduce wind speed	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 unusual/ heavy rains with polysheet.	Collect and utilised locally available feed including kitchen waste	Collect the residual crop (maize, paddy, cowpea leaves etc) & dried for future
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	Proper disposal of manure Regular cleaning of shed Disinfection of shed	Disinfection and sanitation of all the shed Movement other than the attendant

	regular Feeding of balanced diet, Restriction of the entry to farm premises, isolation of the dise4ase animals	Restricting movement of livestock in any case of epidemics. Rescue of sick and injured animals and their treatments.	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 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
Snowfall	NA	NA	NA
Earthquake	NA	NA	NA
Landslides	NA	NA	NA

^s based on forewarning wherever available

2.5.2

Poultry

	Suggested contingency measures			Convergence/linkages with ongoing programs, if any
	Before the event ^a	During the event	After the event	
Drought	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				
Drinking water	NA	NA	NA	NA
Health and disease management	NA	NA	NA	NA
cold wave	NA	NA	NA	NA
Shelter/environment management	Proper Selection of housing site,	Provision of proper ventilation, protection from extreme temperature using covers. Provision of heater	Disinfection of sheds, disposal of dead /inferior birds	
Health and disease management	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	NA
Snowfall	NA	NA	NA	NA
Earthquake, Landslides etc	NA	NA	NA	NA

^a based on forewarning wherever available

2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event ^a	During the event	After the event
1) Drought			
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.	1. Timely broadcast and telecast and other types of announcement	1. Relief operation will continue. 2. Care of health of affected people

	2. Repair and maintenance of bunds. 3. Insurance coverage provision for life and property	warning about the danger level with respect to water level. 2. Relief operation.	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 through nets Administer medicines through random catch Disinfect water by lime , KMnO4	1. Application of lime and KmnO4. 2. Assessment of the health status of fish and accordingly control measure should be taken. 3. Control on transport of brooders and seeds.
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