

State: TRIPURA

Agriculture Contingency Plan for District: South Tripura

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)	Mid Tropical Plain Zone (NEH-6)	
	List all the districts or part thereof falling under the NARP Zone	South Tripura, West Tripura, Dhalai, North Tripura	
	Geographic coordinates of district	Latitude	Longitude
		22 ^o 57' & 23 ^o 45' N	91 ^o 19' & 91 ^o 53'
	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	Krishi Vigyan Kendra, South Tripura, Birchandra Manu, Tripura.	
	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)
	SW monsoon (June-September):	1134	2 nd week of June
	NE Monsoon (October-December):	326	2 nd week of October
	Winter (Jan-February)	39	-
	Summer (March-May)	468	15 th April
	Annual	1967	-

Source: Agromet Service, ICAR (RC) for NEHR, Lembucherra, West 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)	286801	140899	36940	1064	8101	8143	4100	1224	1449

Source: Source: Land Use Statistics of Tripura

1.4	Major Soils (common names like shallow red soils etc.)	Area ('000 ha)	Percent (%) of total
	1. Red Soil	79.875	43.81
	2. Alluvial Soil	7.01376	3.85
	3. Sandy Soil	11.9049	6.53
	4. Sandy Loam	78.2549	42.92
	5. Clay Loam	5.271	2.89
	Others (specify):	--	--
1.5	Agricultural land use	Area ('000 ha)	Cropping intensity %
	Net sown area	84.101	176
	Area sown more than once	38.830	
	Gross cropped area	147.687	

Source: Agriculture Department, Govt. of Tripura

1.6	Irrigation	Area ('000 ha)		
	Net cultivated Area	84.101		
	Net irrigated area	23.646		
	Gross cultivated area	147.687		
	Gross irrigated area	89.226		
	Rainfed area	60.455		
	Sources of Irrigation	Number	Area ('000 ha)	% of total irrigated area
	Canals (medium and minor)		0.080	0.76
	Tanks	939	1.396	5.90
	Open wells	68	0.345	1.45

Bore wells	1281	1.570	6.63
Lift irrigation schemes	451	11.799	49.89
Micro-irrigation (Drip and sprinkler)		-	-
Other sources (please specify) WHS		8.456	35.76
Total Irrigated Area	-	23.646	100
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	Nil	Nil	
Critical	Nil	Nil	
Semi- critical	Nil	Nil	
Safe	All	100	
Wastewater availability and use			
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	3822 601 1274 2582 527 -- 8806000 kg/147687ha = 60 kg/ha
2	Chemical Pesticides*	Insecticides+ Fungicides Weedicides Others (specify) Total	66.43 N.A. -- 66430 kg/147687ha= 450 g/ha.

Source: CDAP of South Tripura, Agriculture Department, Tripura, 2007-08

* 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. (2008-09)

1.7	Major Field Crops cultivated	Area ('000 ha)					
		Kharif		Rabi		Summer	Total
		Irrigated	Rainfed	Irrigated	Rainfed		
1	Aush Paddy (Summer)	-	-	-	-	5.14	5.14
2	Aman Paddy (Kharif)	-	45.43	-	-	-	45.43
3	Boro Paddy (Rabi)	-	-	-	26.48	-	26.48
4	Maize	-	0.71	-	-	-	0.71
5	Sesamum Mustard	-	0.50	-	-	-	0.50
	Pulses	-	0.52	-	-	-	0.52
			0.93	-	-	-	0.93
	Horticulture crops - Fruits	Total area		Irrigated		Rainfed	
1	Mango	1.98		-		1.98	
2	Pineapple	1.48		-		1.48	
3	Jackfruit	2.83		-		2.83	
4	Banana	1.35		-		1.35	
5	Litchi	0.92		-		0.92	
	Horticultural crops - Vegetables	Total area		Irrigated		Rainfed	
1	Okra	0.320		-			
2	Brinjal	0.757		0.455		0.320	
3	Cole Crops	0.652		0.652		0.302	
4	Tomato	0.325		0.325		-	
5	Chilli	0.344		0.344		-	
	Medicinal and Aromatic crops	Total area		Irrigated		Rainfed	
1	Nil.	Data Not Available					
2							
3							
4							
5							

	Plantation crops	Total area	Irrigated	Rainfed
1	Coconut	2.163	-	2.163
2	Arecanut	1.187	-	1.187
3	Cashewnut	3.120	-	3.120
4	Rubber	10.503	-	10.503
5				
	Fodder crops	Total area	Irrigated	Rainfed
1	Not Available	-	-	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
	Total fodder crop area	-	-	-
	Grazing land	1.064	-	-
	Sericulture etc	-	-	-
	Others (Specify)	-	-	-

Source: CDAP of South Tripura, Agriculture Department, Tripura, 2007-08

1.8	Livestock	Male ('000)	Female ('000)	Total ('000)
	Non descriptive Cattle (local low yielding)	101.000	114.879	215.879
	Crossbred cattle	-	16.022	16.022
	Non descriptive Buffaloes (local low yielding)	-	-	3631
	Graded Buffaloes	-	-	Nil
	Goat	-	-	150.087
	Sheep	-	-	0.468
	Others (Camel, Pig, Yak etc.)	-	-	66.800
	Commercial dairy farms (Number)	-	-	Nil
1.9	Poultry	No. of farms	Total No. of birds ('000)	
	Commercial	676	685.42	
	Backyard	112	-	
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	
	33565		7		41382	
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)		5399.92	1.858	10033.16		
Others		-	-	-		

Source: Resource Support System in Agriculture & Allied Sectors, South Tripura, KVK, 2008-09

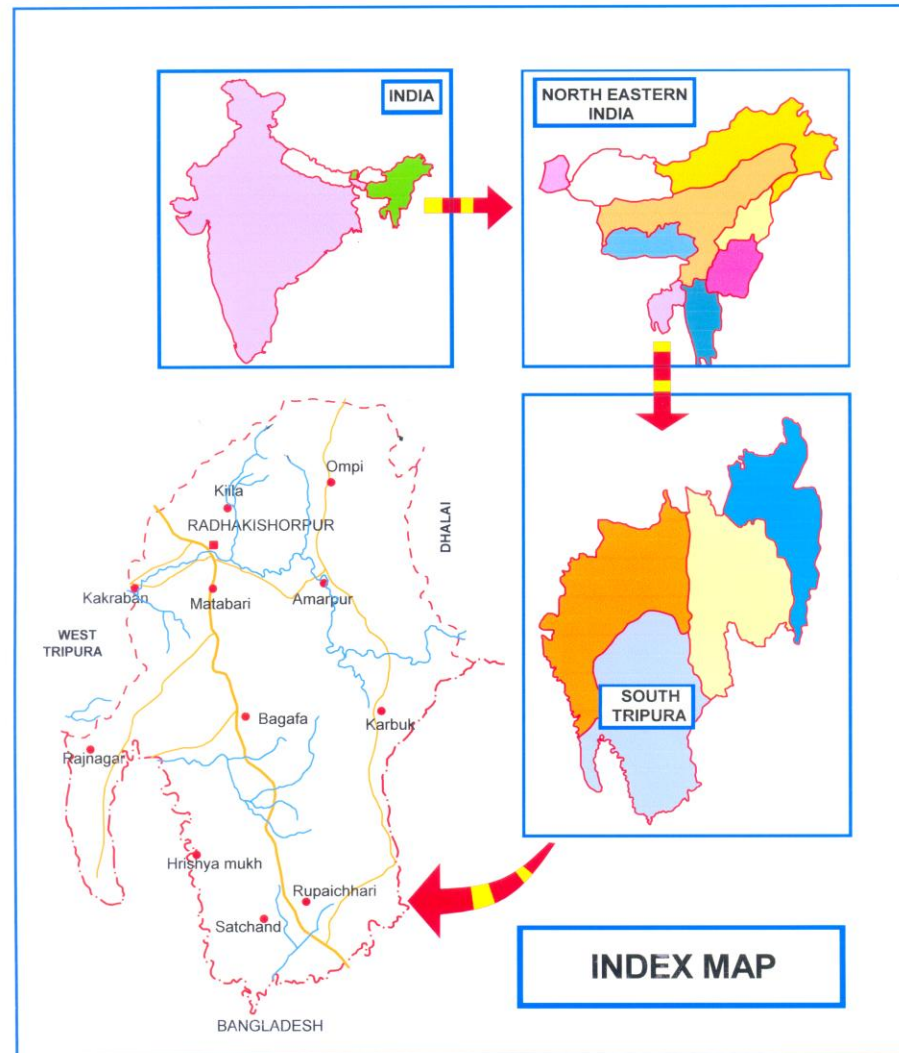
1.11 Production and Productivity of major crops (Average of last 5 years: 2004, 05, 06, 07, 08)

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	89.49	1970	80.76	3049	12.79	2489	183.04	7508	-
Crop 2	Maize	0.926	1292	-	-	-	-	0.926	1292	-
Crop 3	Groundnut	0.07	952	0.92	8700	-	-	0.99	9652	-
Crop 4	Sesamum	0.28	553	-	-	-	-	0.28	553	-
Crop 5	Mustard	-	-	0.42	815	-	-	0.42	815	-
Others		-	-	-	-	-	-	-	-	-
Major Horticultural crops (Crops to be identified based on total acreage)										
Crop 1	Okra	2.63	8220	-	-	-	-	2.63	8220	-
Crop 2	Brinjal	3.77	12480	4.83	10620	-	-	8.60	23100	-
Crop 3	Cole Crops	-	-	14.05	21395	-	-	14.05	21395	-
Crop 4	Tomato	-	-	9.35	28770	-	-	9.35	28770	-
Crop 5	Chilli	-	-	1.78	5170	-	-	1.78	5170	-
Others										
1.12	Sowing window for 5 major field crops (start and end of normal sowing period)	Crop 1: <u>Rice</u>		2: <u>Maize</u>		3: <u>Groundnut</u>		4: <u>Sesamum</u>		5: <u>Rape and Mustard</u>
	Summer rice-Rainfed	Sumer rice-April 2 nd week to May 4 th week								
	Kharif- Rainfed	June 1 st to June 3 rd week		2 nd week of May to 1st week of June		2 nd week of June to 1 st week of July		1 st week of April to 2 nd week of April		-
	Kharif-Irrigated	-		-		-		-		-
	Rabi- Rainfed	-		-		-		-		-
	Rabi-Irrigated	-		-		Mid October to mid December		-		15 th September to 15 th October

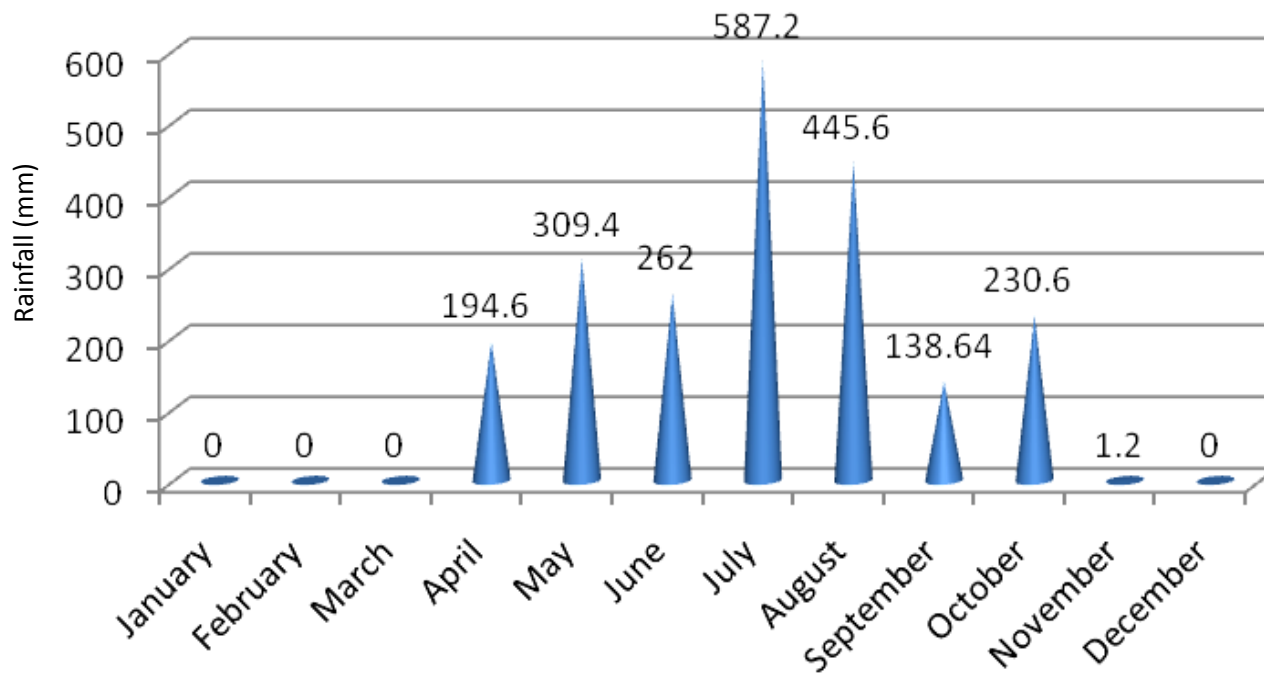
1.13	What is the major contingency the district is prone to? (Tick mark and mention years if known during the last 10 year period)	Regular			Sporadic			None
		Severe	Moderate	Mild	Severe	Moderate	Mild	
	Drought	-	-	-	-	√	√	-
	Flood	-	-	-	-	√	√	-
	Cyclone	-	-	-	-	√	√	-
	Hail storm	-	-	-	-	-	√	-
	Heat 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

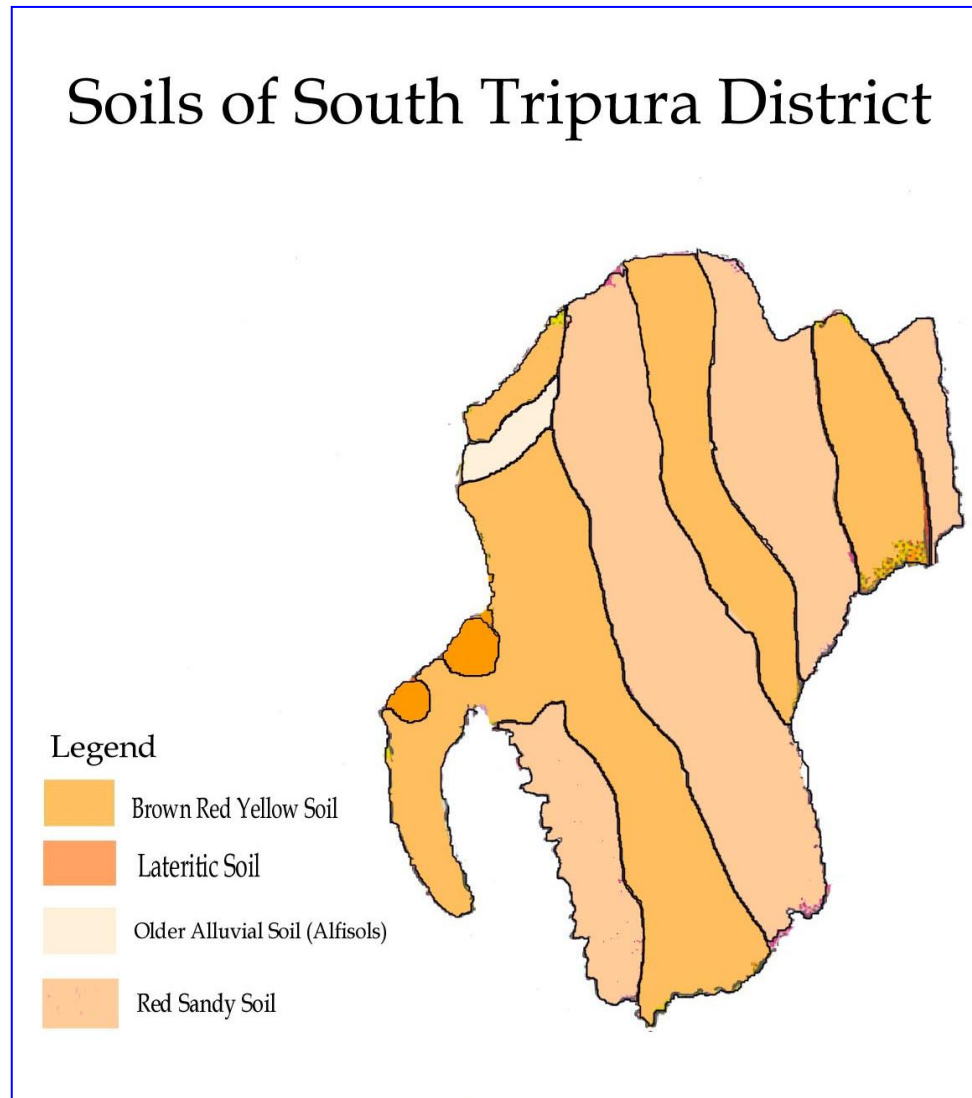
Annexure 1. Location Map of South Tripura District



Annexure 2. Mean Monthly Rainfall (mm) of South Tripura District



Annexure 3. Soil Map of South Tripura District



2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation

Condition	Major Farming situation ^a	Normal Crop/cropping system ^b	Suggested Contingency measures		
			Change in crop/cropping system ^c	Agronomic measures ^d	Remarks on Implementation ^e
Early season drought (delayed onset) Delay by 2 weeks April 4th week (Pre-monsoon)	1. Upland-rain fed (Red soil with moderate rainfall, no irrigation facility)	Upland rice (NDR 97), Maize (HQPM) Bhendi (Arka Anamika), Cowpea (Kashi Kanchan), Banana (Sabri, G-9) Lemon (Assam, Scented) Mango (Amrapali) Pineapple (Kew & Queen)	No change	<ul style="list-style-type: none"> – Sowing with the onset at rainfall. – Closer row and plant spacing – Apply full P, K and 50% N of recommended dose along with well decomposed organic matter for early seedling vigour – Ridge and furrow methods of sowing at closer plant-to-plant distance with wider inter-row spacing. 	Linkage with State Agriculture Dept. under CSS for supply of seed
	2. Medium land-rainfed summer (Red soil with moderate rainfall, no irrigation facility)	Sesamum (ST-1683, B-67), greengram (TMB-37, HUM-16), Maize, Bhendi (Arka Anamika), Cucumber, Gourd	No Change	<ul style="list-style-type: none"> – Sowing with the onset at rainfall. – Closer row and plant spacing – Apply full P, K and 50% N of recommended dose along with well decomposed organic matter for early seedling vigour – Ridge and furrow methods of sowing at closer plant-to-plant distance with wider inter-row spacing. 	Linkage with State Agriculture Dept. under CSS for supply of seed

	3. Low land- (Red soil with moderate rainfall, no irrigation facility)	Sesamum (ST-1683, B-67), Greengram (TMB-37, HUM-16), Maize, Bhendi (Arka Anamika), Cucumber, Gourd	No change	<ul style="list-style-type: none"> – Sowing with the onset at rainfall. – Closer row and plant spacing – Apply full P, K and 50% N of recommended dose along with well decomposed organic matter for early seedling vigour 	Linkage with State Agriculture Dept. under CSS for supply of seed
Delay by 4 weeks May 2nd week (Pre-monsoon)	1. Upland-rain fed (Red soil with moderate rainfall, no irrigation facility)	Upland rice (NDR 97), Maize (HQPM) Bhendi (Arka Anamika), Cowpea (Kashi Kanchan), Banana (Sabri, G-9) Lemon (Assam, Scented) Mango (Amrapali) Pineapple (Kew & Queen)	No change	<ul style="list-style-type: none"> – Sowing with the onset at rainfall. – Closer row and plant spacing – Apply full P, K and 50% N of recommended dose along with well decomposed organic matter for early seedling vigour – Ridge and furrow methods of sowing at closer plant-to-plant distance with wider inter-row spacing. 	Linkage with State Agriculture Dept. under CSS for supply of seed
	2. Medium land-rainfed summer (Red soil with moderate rainfall, no irrigation facility)	Sesamum (ST-1683, B-67), greengram (TMB-37, HUM-16), Maize, Bhendi (Arka Anamika), Cucumber, Gourd	No Change	<ul style="list-style-type: none"> – Sowing with the onset at rainfall. – Closer row and plant spacing – Apply full P, K and 50% N of recommended dose along with well decomposed organic matter for early seedling vigour – Ridge and furrow methods of sowing at closer plant-to-plant distance with wider inter-row spacing. 	Linkage with State Agriculture Dept. under CSS for supply of seed

	3. Low land- (Red soil with moderate rainfall, no irrigation facility)	Sesamum (ST-1683, B-67), Greengram (TMB-37, HUM-16), Maize, Bhendi (Arka Anamika), Cucumber, Gourd	No change	<ul style="list-style-type: none"> - Sowing with the onset at rainfall. - Closer row and plant spacing - Apply full P, K and 50% N of recommended dose along with well decomposed organic matter for early seedling vigour 	Linkage with State Agriculture Dept. under CSS for supply of seed
Delay by 2 weeks (Monsoon) (June 4 th week	1. Upland, Red soil with moderate to high rainfall, no irrigation facility	Banana Lemon Mango Pineapple	No Change	<ul style="list-style-type: none"> - Mulching - Spray of Antitranspirant for Lemon 	
		Cucurbit / Solanaceous Vegetable / Sesamum/Fallow	No change	<ul style="list-style-type: none"> - Sowing with the onset at rainfall. - Dust Mulching - Closer row and plant spacing - Apply full P, K and 20% N of recommended dose along with well decomposed organic matter for early seedling vigour - Ridge and furrow methods of sowing at closer plant-to-plant distance with wider inter-row spacing. 	Linkage with State Agriculture Dept. under CSS for supply of seed
	2. Medium land, Red soil with moderate to high rainfall, no irrigation facility	Cucurbit / Solanaceous Vegetable / Sesamum/Fallow	No change	<ul style="list-style-type: none"> - Mulching - Sowing with the onset of rain - Maintain more plant - Mixed cropping with cowpea (var. Kashi Kanchan) 	Supply of vegetable seed through State Horticulture Dept under NHM. and oilseeds and pulses from State Seed production unit

		Bhindi (Arka Anamika)	No change	– Spacing: plant to plant 20 cm and row to row 45 cm for bhindi.	under ISOPOM/RKVY.
		Groundnut (GG20, GG7, ICGS 76) + Arhar (UPAS 120, Narendra-1)	No Change	– Sowing with the rainfall starts, Apply full P, K and 30% N of recommended dose along with well decomposed FYM.	
	3. Low land, Red soil with moderate to high rainfall, no irrigation facility	Rice	No change	Irrigate the seed bed	

Condition	Major Farming situation ^a	Normal Crop/cropping system ^b	Suggested Contingency measures		
			Change in crop/cropping system ^c	Agronomic measures ^d	Remarks on Implementation ^e
Early season drought (delayed onset)					
Delay by 4 weeks (July 2 nd Week)	1. Upland, Red soil with moderate to high rainfall, no irrigation facility	Banana Lemon Mango pineapple	No Change	– Mulching – Spray of Antitranspirant for Lemon	Linkage with State Agriculture/Horticulture Dept. under CSS for supply of seed
		Arhar/ Groundnut (May-June)	Groundnut (GG20, GG7) Arhar (UPAS- 120)	– Conserve soil moisture by mulching – Intercropping of Arhar with Groundnut. – Apply 0.5 % KCl spray at vegetative stage – Live saving irrigation	
		Cowpea (May-June)	Cabbage (early variety)	Life saving irrigation	
	2. Medium land, Red soil with moderate to high rainfall, no irrigation facility	Upland Rice (May-June)	Sesamum (Variety – ST 1683) Maize (RCM series) Groundnut (GG 7, ICGS 76)	Complete hoeing, weeding followed by ridging to the base of the root crop at 20 DAS for in-situ moisture conservation in groundnut crop	

	3. Medium land, Red soil with moderate to high rainfall, no irrigation facility	Rice	No change	Irrigate the seed bed	
	3. Low land, Red soil with moderate to high rainfall, no irrigation facility	Rice	No change	<ul style="list-style-type: none"> - Transplantation of paddy under conventional system - 3-4 nos. of seedlings per hill - Closer spacing 	
Delay by 6 weeks (July 4 th Week)	1. Upland, Red soil with moderate to high rainfall, no irrigation facility	Groundnut/ Maize (June-July)	Red Gram (var. UPAS-120)	<ul style="list-style-type: none"> - Mulching with locally available material - Spraying of nutrient solution (2 % Urea) 	Linkage with State Agriculture/Horticulture Dept. under CSS for supply of seed
	2 Medium land, Red soil with moderate to high rainfall, no irrigation facility	Groundnut/ Maize (June-July)	Sesamum (Variety – ST – 1683, B-67) Groundnut + Red Gram	<ul style="list-style-type: none"> - Sowing at higher rate - Mulching - Complete hoeing, weeding followed by ridging to the base of the root crop at 20 DAS for in-situ moisture conservation in groundnut crop - Follow ridge and furrow method of planting for groundnut 	Training on moisture conservation and groundwater recharge by KVK and ATMA
	3. Low land, Red soil with moderate to high rainfall, no irrigation facility	Rice	No change	<ul style="list-style-type: none"> - Transplantation of paddy under conventional system - 3-4 nos. of seedlings per hill - Closer spacing 	

Condition	Major Farming situation ^a	Normal Crop/cropping system ^b	Suggested Contingency measures		
			Change in crop/cropping system ^c	Agronomic measures ^d	Remarks on Implementation ^e
Early season drought (delayed onset)	1. Upland, Red soil with moderate to high rainfall, no irrigation facility	Cowpea (Local) , Brinjal, Black gram, Cauliflower, Tomato	Red Gram (UPAS 120), Blackgram (var. PU 31), Green gram (var. Samrat, Meha, PDM 54)	<ul style="list-style-type: none"> - Dust Mulch - Thinning - In-situ rain water conservation, harvesting of runoff for recycling and ground water recharge by elevating the field bunds 	Linkage with State Agriculture/Horticulture Dept. under CSS for supply of seed Training on water harvesting and groundwater recharge by KVK and ATMA
			Early variety of Cauliflower (Var. Kimaya), Cabbage (var BC 76), Tomato.		
	2 Medium land, Red soil with moderate to high rainfall, no irrigation facility	Cowpea (Local) , Brinjal, Black gram, Cauliflower, Tomato	Blackgram (var. PU 31), Green gram (var. Samrat, Meha, PDM 54)	As recommended package of practices	
	3. Low land, Red soil with moderate to high rainfall, no irrigation facility	Rice (Photosensitive short duration variety MTU 1010)	No change	<ul style="list-style-type: none"> - Transplantation of paddy under conventional system - 3-4 nos. of seedlings per hill - Closer spacing 	

***Matrix for specifying condition of early season drought due to delayed onset of Pre-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 Pre-monsoon			
	Delay in onset of monsoon by			
	2 wks	4 wks	6 wks	8 wks
April 2 nd wk	April 4 th wk	May 2 nd week	May 4 th wk	June 2 nd wk

***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 ^b	Suggested Contingency measures		
			Crop management ^c	Soil nutrient & moisture conservation measures ^d	Remarks on Implementation ^e
Early season drought (Normal onset)					
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc. April 4 th wk	1. Upland-rain fed (Red soil with moderate rainfall, no irrigation facility)	Upland rice / Vegetables Banana Lemon Mango pineapple	No change	<ul style="list-style-type: none"> - Mulching, - Spray of Antitranspirant for Lemon 	Training by KVK and ATMA
	2. Medium land-rainfed summer (Red soil with moderate rainfall, no irrigation facility)	Upland Rice/Vegetables Sesamum, greengram, Maize, Bhendi, Cucumber, Gourd	No change	<ul style="list-style-type: none"> - Staggered community nursery with irrigation - Delay transplanting/sowing by 2 weeks. 	
	3. Low land- (Red soil with moderate rainfall, no irrigation facility)	Rice-rice/vegetables Sesamum, greengram, Maize, Bhendi, Cucumber, Gourd	No change	<ul style="list-style-type: none"> - Staggered community nursery with irrigation - Delay transplanting/sowing by 2 weeks. 	
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc. (July 1 st Week)	1. Medium land, Red soil with moderate to high rainfall, no irrigation facility	Sesamum /Vegetables	Resowing of sesamum/vegetables if the mortality is more than 50%.	<ul style="list-style-type: none"> - Moisture conservation measures - Recommended nutrient and intercultural management - Life saving irrigation 	Training by KVK and ATMA
	2. Lowland , Alluvial soil, high rainfall, no irrigation facility (Rainfed)	Rice	10 to 12 days nursery can be replanted	<ul style="list-style-type: none"> - Urea application at active tillering stage can be delayed in rainfed shallow lowland - Intercultural operations can be delayed 	

At vegetative stage (July 3rd Week)	1. Medium land, Red soil with moderate to high rainfall, no irrigation facility	Sesamum / Vegetables	<ul style="list-style-type: none"> – Thinning of plants to reduce the plant population and avoid the competition of moisture & nutrients among crops. 	<ul style="list-style-type: none"> – Mulching – Life saving irrigation 	Training by KVK and ATMA
		Ginger, Turmeric, Citrus, Cucurbitaceous crops	<ul style="list-style-type: none"> – Weeding – Thinning the plant population – Spray of anti-transpirants – Mulching – Need based plant protection measures 	<ul style="list-style-type: none"> – Application of sufficient amount of organic manures before sowing – Balance fertilization 	
		Vegetables / Sesamum	<ul style="list-style-type: none"> – Mid term correction 	<ul style="list-style-type: none"> – Mulching – Off season ploughing 	
		Maize	<ul style="list-style-type: none"> – During this drought season, the occurrence of Aphids in Maize crop at its vegetative stage is quite high. Long dry spells increase the incidence of this insect. This can be controlled by spraying Cypermethrin (0.1%) or Phosphomidon (2 ml/L) at 80-90 DAS. 	<ul style="list-style-type: none"> – Mulching – Life season irrigation 	
		Groundnut	<ul style="list-style-type: none"> – Incidence of White grub. Following control measures to be taken up: – Crop rotation with maize – Collection and destruction of white grub adults – Spraying the plants with Chloropyriphos 20 EC @ 2 ml/lit of water 	<ul style="list-style-type: none"> – Weeding followed by ridging to the base of the root crop at 20 DAS for in-situ moisture conservation in groundnut crop 	
		Black gram	<ul style="list-style-type: none"> – During this dry spell, shot holes made by Beetles may be seen. This can be controlled by spraying Dimethoate @ 1ml/ lit of water 		

	2. Lowland , Alluvial soil, high rainfall, no irrigation facility (Rainfed)	Paddy	<ul style="list-style-type: none"> - During this phase, appearance of Blast disease maybe observed. As soon as one or two blast spots are seen, Carbendazim @ 1 g/lit of water is to be sprayed. - There may be occurrence of Brown spot disease also. For this dry or wet seed treatment with carbendazim @ 1 g/kg of seed followed by one spraying of Mancozeb @ 2.5 g/lit maybe done at initial symptom development. 	<ul style="list-style-type: none"> - Gap filling with nursery kept for the purpose in the same field while transplanting (3-4 seedlings/hill). - Repairing of field bunds to conserve water. - Life saving irrigation 	
Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	Major Farming situation^a	Normal Crop/cropping system^b	Crop management^c	Soil nutrient & moisture conservation measues^d	Remarks on Implementation^e
At flowering/ fruiting stage (August 1st week)	1. Medium land, Red soil with moderate to high rainfall, no irrigation facility	Black gram	Spray 2 %KCl + 0.1 ppm Boron to Black Gram	<ul style="list-style-type: none"> - Mulching - Off season ploughing to conserve moisture - Cover / Crop 	--
		Groundnut	If termite infestation found, Chloropyriphos @3 ml/L of water	--	--
		Cucurbitaceous crops, Citrus	Need based plant protection measures Spray of anti-transpirants	Moisture conservation practices like ridging, mulching.	
	2. Lowland , Alluvial soil, high rainfall, no irrigation facility (Rainfed)	Rice	Alternate Wetting and Drying technology can be utilized	--	--

Terminal drought	1. Medium land, Red soil with moderate to high rainfall, no irrigation facility	Ginger, Turmeric, Fruit crops, Cucurbitaceous crops, Brinjal	Providing life saving irrigation Mulching	--	--
	2. Lowland , Alluvial soil, high rainfall, no irrigation facility (Rainfed)	Boro rice (Gomati, Naveen)	Sowing/planting Mustard/Toria (B-7)	Mustard/Toria seeds can be sown as broadcasting or zero-till methods in the lowland field	

Notes:

- a. Describe the major farming situation such as shallow red soils, deep black soils, uplands, medium lands, eroded hill slopes etc. tank fed black soils, shallow acid soils, sodic vertisols etc
- b. Describe the normal crop or cropping system grown in that farming situation including catch crop, sequence, rotation & variety if known
- c. Describe the alternative crop or variety or cropping pattern in view of the delay in monsoon and shortening of the growing period including delay in sowing of nurseries in case of paddy.
 - In case of normal onset followed by early season droughts re-sowing may be recommended including variety seed rate etc.
 - In case of early or mid season dry spells indicate crop management techniques to save standing crop.
 - In case of terminal drought indicate giving life saving supplemental irrigation, if available or taking up harvest at physiological maturity with some realizable grain/fodder yield etc.
- d. Describe all agronomic practices which help in coping with late planting like increased or decreased spacing, changes in planting geometry, intercropping in case of sole crops, thinning, mulching, spray of anti-transpirants or other chemicals, supplemental irrigation, soil and moisture conservation practices like ridging, conservation furrows, dust mulch etc.
 - In case of early and mid season dry spells indicate moisture conservation techniques to save standing crop.
 - In case of terminal drought indicate early rabi cropping with suitable crops/varieties with a possibility of giving pre-sowing/come up irrigation etc.
- e. Give details on the source of the breeder seed, in case an alternate crop or variety is suggested as part of the contingency. For agronomic measures, indicate any convergence possible with ongoing central or state schemes like National Rural Employment Guarantee Scheme (NREGS), Integrated Watershed Management Programme (IWMP), Rashtriya Krishi Vikas Yojana (RKVY), National Food Security Mission (NFSM), Integrated Scheme on Oilseeds, Pulses, Oilpalm and Maize (ISOPOM), National Horticulture Mission (NHM), Community Land Development Programme (CLDP) etc., to meet the cost of materials, labour or implements etc. to carry out any field based activity quickly.

2.1.2 Irrigated situation

Condition	Major Farming situation ^f	Normal Crop/cropping system ^g	Suggested Contingency measures		
			Change in crop/cropping system ^h	Agronomic measures ⁱ	Remarks on Implementation ^j
Delayed release of water in canals due to low rainfall	Lowland , Alluvial soil	Rice	Late sown variety (short duration) of rice	--	--
		Lentil	HYV of Mustard/Toria		
		Cauliflower, Cabbage, Brinjal, Potato, Tomato	Late variety of vegetable crops with mulching Aphid problems may be appeared due to late sowing. Application of Methyl parathion @2 ml/L of water. Fruit and shoot borer may appear in brinjal. Apply Carbaryl @2 g /L of water.	--	
Limited release of water in canals due to low rainfall	Lowland , Alluvial soil	Rice	Drought resistant variety of rice may be taken. Late sowing of boro rice Lentil (WBL 58, B 77) and Toria/Mustard may be taken in place of Rice	Recommended package of practices Mulching for residual soil moisture	
		Cole crops, potato, tomato	Cowpea, Brinjal, Chilli, green pea may be taken	--	--

Condition	Suggested Contingency measures				
	Major Farming situation ^f	Normal Crop/cropping system ^g	Change in crop/cropping system ^h	Agronomic measures ⁱ	Remarks on Implementation ^j
Non release of water in canals under delayed onset of monsoon in catchment	Lowland, Alluvial soil	Rice	Mustard/Toria Lentil	Nitrogen application in split doses Timely Interculture Mulching for moisture conservation	
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	Lowland, Alluvial soil	Rice	Mustard/Toria Lentil	Nitrogen application in split doses Timely Interculture Mulching for moisture conservation	
		Cole crops, potato, tomato	Cowpea, Brinjal, Chilli, Green pea may be taken	Nitrogen application in split doses Timely Interculture Mulching for moisture conservation	
Insufficient groundwater recharge due to low rainfall	Lowland, Alluvial soil	Rice	Mustard/Toria Lentil		
Any other condition (specify)	--	--	--	--	--

Notes:

^f Describe such as uplands, medium and low lands and source of irrigation such as tank fed medium or deep black/alluvial/red soils, tube well irrigated alluvial soils, canal irrigated red soils, well irrigated black soils etc.,

^g The normal crop or cropping systems grown in a given irrigated situation

^h Suggested change in the crop, variety or cropping system in view of delay in release of irrigation water, less water availability etc.,

ⁱ All agronomic measures like improved methods of irrigation (skip row etc.), micro irrigation (drip/sprinkler/sub-surface), deficit irrigation, limited area irrigation, mulching etc, that improve water use efficiency and make best use of limited water including methods of ground water recharge and sharing.

^j Comments on source of availability of seed of the alternate crop or variety, any constraints in marketing of alternative crop implications for livestock and dairy sectors and details of state or central schemes like National Rural Employment Guarantee Scheme (NREGS), Rashtriya Krishi Vikas Yojana (RKVY), National Food Security Mission (NFSM), Integrated Scheme on Oilseeds, Pulses, Oilpalm and Maize (ISOPOM), National Horticulture Mission (NHM) etc., which facilitate implementation of the agronomic measures suggested.

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

Condition	Suggested contingency measure			
	Vegetative stage ^k	Flowering stage ^l	Crop maturity stage ^m	Post harvest ⁿ
Continuous high rainfall in a short span leading to water logging				
Crop1 Rice	Drainage of excess water	Application of nutrient solution to prevent flower drop.	Harvesting at Physiological Maturity.	Proper Sun Drying, Keep away from Storage Pest.
Crop 2 Maize, Groundnut	Drainage of stagnating water	Drainage channels	Harvesting immediately at physiological maturity	Storing the produce at dry place
Crop3 Sesamum, Mustard/Rapeseed	Drainage of stagnating water	Drainage channels	Harvesting immediately at physiological maturity	Storing the produce at dry place
Crop4 Blackgram, Green gram	Drainage of stagnating water	Drainage channels	Harvesting immediately at physiological maturity	Storing the produce at dry place
Horticulture				
Crop1 (specify) Chilli, Potato, Cowpea, Okra, Brinjal, Cole Crops	Drainage	Drainage , Application of hormones, nutrient, sprays to prevent flower drop	Drainage Harvesting of the produce before the rain occurs	. Shifting of the produce to drier place, Cold storage.
Crop2 Papaya, Citrus, Jack fruit, Mango, Banana	Avoid waterlogging at the Collar portion	Avoid water logging at the Collar portion Application of hormones, nutrient, sprays to prevent flower drop.	Avoid water logging at the Collar portion	- Store the produce at dry place
Heavy rainfall with high speed winds in a short span²				
Crop1 Rice, Maize, Groundnut, Sesamum	Drainage of excess water	Application of nutrient solution to prevent flower drop.	Harvesting at Physiological Maturity.	Proper Sun Dry Before Storing
Horticulture				
Crop1 Tomato, Chilli, Potato, Cowpea, Okra, Brinjal, Cole Crops.	Making of trenches/furrows in between ridges to facilitate drainage of excess water, propping.	Installation of wind breaks	Installation of wind breaks	Shifting of the produce to drier place, Cold storage.
Crop2 Banana, Citrus, Jack Fruit, Mango	Avoid waterlogging at the Collar portion	Installation of wind breaks, Propping	Installation of wind breaks, propping	Shifting of the produce to drier place, Cold storage.

Outbreak of pests and diseases due to unseasonal rains				
Crop ¹ Rice	Field sanitation to prevent disease (Rice Blast) or Spray tricyclazole against blast, Rice hispa damage. Proper application of Chlorpyriphos 1 ml / litre water for leaf folder. Monocrotophos for stem borer,	Spray tricyclazole against blast and Chloropyriphos against stem borer, Monocrotophos against Swarming caterpillar & leaf folder	Keep the produce in air tight container to avoid the stored against pest damage.	--
Crop ² Groundnut, Mustard / Rapeseed	Proper drainage to prevent Damping off diseases	--	--	--
Crop ³ Sesamum	Removal of infested tips to manage leaf webber	Spraying of systemic insecticide against borers	Spray of Ekalux against capsule borer	Store in dry and clean room. Disinfect gunny bags / storage structure with malathion
Crop ⁴ Maize	Apply Phorate 10G in the whorls Spray Endosulfan against maize stem borer	Spray Methyl dematon against aphid	--	Store in clean godown after disinfection of gunny bags chemicals
Crop ⁵ Vegetables	Use Mancozeb @ 2g/litre of water to prevent seedling rot diseases of any fungicides as precautionary measures.		--	Keep the produce in air tight container to against any pest damage.
Horticulture				
Crop ¹ Potato	Spray Mencozeb @ 2 gm / litre of water as precautionary measure against Late Blight.	Drainage out excess water to prevent wilting diseases.	--	Store seed in clean and dry condition with Fungicidal Treatment.

^k Such as drainage in black soils, indicate taking up need based inter-culture operations, outbreak of pests/diseases along with their management etc.

^l Such as drainage in black soils, application of hormones/nutrient sprays to prevent flower drop or promote quick flowering/fruitletting and indicate possibility of pest/disease outbreak with need based prophylactic / curative management etc.

^m Such as drainage in black soils, measures for preventing seed germination etc and Indicate possibility of harvesting at physiological maturity immediately and shifting produce to safer place and protection against pest/disease damage in storage etc.

ⁿ Such as shifting of produce to safer place for drying and maintaining the quality of grain/fodder and protection against pest/disease damage in storage etc

2.3 Floods

Condition	Suggested contingency measure ^o			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Transient water logging/ partial inundation¹				
Crop1 Rice, Maize, Blackgram	Drain out excess water, Gap filling and drenching with fungicide to prevent seedling rot	Drain out excess water, Weeding and top dressing	Drain out excess water	Drain out excess water, Harvesting and drying of earheads
Horticulture				
Crop1 Tomato, Chilli, Cowpea, Okra, Brinjal, Cole Crops	Cleaning of channels in between the raised nursery bed.	Drain out excess water	Drain out excess water	Drain out excess water
Crop2 Citrus, Jackfruit, mango.	Provision for proper drainage	Drain out excess water	Drain out excess water	Drain out excess water
Continuous submergence for more than 2 days²				
Crop1 Rice	Drain out excess water	Drain out excess water, Weeding and top dressing	Drain out excess water; Tying up of lodged plants	Drain out excess water, Tying up of lodged plants drying of earheads and Harvesting
Crop 2 Blackgram, Maize	Drain out excess water, Gap filling	Drain out excess water, Weeding and top dressing	Drain out excess water, Earthing up of maize plant; Tying up of lodged plants	Drain out excess water, Harvesting and drying of Cobs/plants
Horticulture				
Crop1 Tomato, Chilli, Cowpea, Okra, Brinjal, Cole Crops.	Crop cannot survive	-	-	-
Sea water intrusion³				
Crop1 Not Applicable		-	-	-

Notes:

¹ Water logging due to heavy rainfall, poor drainage in vertisols, flash floods in streams and rivers due to high rainfall, breach of embankments

² If the water remains in the field due to continuous rains, poor infiltration and push back effect

³ Entry of sea water into cultivated fields in coastal districts due to tidal wave during cyclones or tsunami

⁰ Crop/field management depends on nature of material (sand or silt) deposited during floods. In sand deposited crop fields/ fallows indicate ameliorative measures such as early removal of sand for facilitating *rabi* crop or next kharif. In silt deposited indo-gangetic plains, indicate early *rabi* crop plan in current cropped areas and current fallow lands. Indicate drainage of stagnating water and strengthening of field bunds etc. In diara land areas indicate crop plans for receding situations. Usually rice cropped areas are flood prone causing loss of nurseries, delayed transplanting or damage to the already transplanted fields etc. Indicate community nursery raising, scheduling bushenings, re-transplanting in damaged fields and transplanting new areas or direct seeding including seed availability so that the season is not lost. Indicate steps for preventing pre-mature germination of submerged crop at maturity or harvested produce.

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

Extreme event type	Suggested contingency measure ^r			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Heat Wave^p				
Crop1	-	-	-	-
Horticulture				
Crop1 Vegetables	Life Saving Irrigation should be given to vegetables crops and young plantations, and ridge and furrow method of planting with bed ridges at 15 – 20 m length is suggested.	Life Saving Irrigation should be given to vegetables crops and young plantations, and ridge and furrow method of planting with bed ridges at 15 – 20 m length is suggested.	Life Saving Irrigation should be given to vegetables crops and young plantations, and ridge and furrow method of planting with bed ridges at 15 – 20 m length is suggested.	
Crop2 Fruits	Moth Bean, Cluster Bean and Cowpea should be grown in the interspaces of Orchard.	Irrigate, provide shade, white wash on tree trunks	Apply growth hormones to prevent fruit drop, maintain water balance to avoid fruit cracking	Harvest at morning hours, pre cooling is important
Cold wave^q				
Crop1 Rice	Delayed raising of Rice nursery	10-12 days old seedling to be transplanted	Urea application at panicle stage delayed	-
Crop 2 Groundnut, Arhar	-	Mulching to avoid intercultural operations(Paddy straw)	Life saving irrigation	-
Horticulture				
Crop1 Vegetables.	Provision for providing shade net and Thatch Roofing Protection.	-	-	-
Crop2 Fruit.	Frequent irrigation for young nursery	-	-	-
Frost				
Crop1	-	-	-	-
Horticulture				
Crop1 Vegetables	Provide shade	Irrigate regularly	Irrigate regularly	-
Crop2 Fruit	Provide shade	Provide wind break, irrigate regularly	Small trees cover with grasses, irrigate regularly	-
Crop3	Provision for construction of greenhouse and shade net house			

Hailstorm				
Crop1	Rice nursery delayed raising	8-10 days old seedling to be transplanted	Recommended urea application at panicle stage delayed	-
Crop 2	Groundnut	Mulching (Paddy straw)	Life saving irrigation	
Horticulture				
Crop1 Vegetable	Provide shade	Provide shade	Provide shade	-
Crop2	-	-	-	-
Cyclone				
Crop1	-	-	-	-
Horticulture				
Crop1	Growing of wind break trees	-	-	-
Crop2	Provision for providing Net.	-	-	-

^p In regions where the normal maximum temperature is more than 40⁰C, if the day temperature exceeds 3⁰C above normal for 5 days it is defined as heat wave. Similarly, in regions where the normal temperature is less than 40⁰C, if the day temperature remains 5⁰C above normal for 5 days, it is defined as heat wave.

^q In regions where normal minimum temperature remains 10⁰C or above, if the minimum temperature remains 5⁰C lower than normal continuously for 3 days or more it is considered as cold wave. Similarly in regions with normal minimum temperature is less than 10⁰C, if the minimum temperature remains 3⁰C lower than normal it is considered as cold wave

^r Indicate appropriate crop/soil management measures depending upon the crop and its stage for alleviating the specified stress.

2.5 Contingent strategies for Livestock, Poultry & Fisheries

2.5.1 Livestock

Drought	Suggested contingency measures		
	Before the event ^s	During the event	After the event
Feed and fodder availability	<ul style="list-style-type: none"> a. Storage of feed ingredient namely Maize, wheat bran, rice polish, moc etc. b. Storage of Rice straw silage making. c. Cultivation of perennial grass, fodder trees etc 	<ul style="list-style-type: none"> a. Stall feeding (restricted) b. Utilization of agricultural by-product, house hold wastage, kitchen wastage, hotel wastage(pig) 	<ul style="list-style-type: none"> a. Rainfed fodder cultivation of both seasonal and perennial type b. Utilization of fodder tree leaves
Drinking water	<ul style="list-style-type: none"> a. Provision created for shallow tube well, Mini deep tube well. b. Community water tank 	<ul style="list-style-type: none"> a. Utilization of shallow Tubewell, Ring well b. Community water tank c. Minimum use of water 	Community tank
Health and disease management	<ul style="list-style-type: none"> Vaccination against viral and bacterial disease b. Anti stress management 	<ul style="list-style-type: none"> a. Heat stress management as and when required. b. Showering facilities c. Wallowing (Bufaloo) d. Restricted movement 	<ul style="list-style-type: none"> a. Health tonic, Vitamin b. Management for any disease management break
Floods			
Feed and fodder availability	<ul style="list-style-type: none"> a. Storage of feed ingredient (wheat bran, Rice polish) b. Straw, processed fodder above the water level of last major flood. 	<ul style="list-style-type: none"> a. Community shelter b. Restricted stall feeding c. Fodder tree leaves. 	<ul style="list-style-type: none"> a. Cultivation of seasonal and perennial fodder crop b. Utilization of fodder tree leaves
Drinking water	<ul style="list-style-type: none"> a. Overhead storage water tank 	<ul style="list-style-type: none"> Utilization of chemical treated (Chlorinated) water Boiled water 	Community tank
Health and disease management	<ul style="list-style-type: none"> a. Vaccination against FMD, HS, BQ b. De-worming 	<ul style="list-style-type: none"> a. Community rescue centre b. Quarantine/ Isolation facility c. Vaccination/ Treatment 	<ul style="list-style-type: none"> a. Post flood disease management (Vaccination/Treatment/ Isolation) b. Quarantine/ Isolation of any suspected animal

Cyclone			
Feed and fodder availability	a. Storage of feed ingredient (wheat bran, Rice polish) b. Storage of fodder crop in the form of silage etc	--	--
Drinking water	a. Ground water facility creation--	--	--
Health and disease management	a. Vaccination against FMD, HS, BQ b. De-worming	a. Community rescue centre b. Quarantine/ Isolation facility c. Vaccination/ Treatment	a. Post flood disease management (Vaccination/Treatment/ Isolation) b. Quarantine/ Isolation of any suspected animal
Heat wave and cold wave			
Shelter/environment management	Provision for community shelter	a. Community shelter facility b. Covering sheds/ animals during cold wave c. Roof reflector for sun light during heat wave.	--
Health and disease management	Vaccination against common disease	a. Anti stress medicated b. Restricted movement c. Stall feeding and watering	Culling of affected animals

^s based on forewarning wherever available

2.5.2 Poultry

	Suggested contingency measures			Convergence/linkages with ongoing programs, if any
	Before the event ^a	During the event	After the event	
Drought				
Shortage of feed ingredients	Early storage of feed ingredients	Restricted feeding, reducing the stock	Reducing the stock and restricted feeding	No
Drinking water	Storage water tank, Jal kund construction	Restricted use of water	Restricted use of water	No
Health and disease management	Strategic vaccination of the bird for all possible diseases	Preventive doses of antimicrobial drug, bio-security, electrolyte powder in day to day management	Preventive doses of antimicrobial drug, bio-security, electrolyte powder in day to day management.	No
Floods				
Shortage of feed ingredients	Storage of feed ingredients	Reducing the stock	Reducing the stock and restricted feeding	No
Drinking water	Over head water reservoir, Jal kund construction	Use boiled water	Use boiled water.	No
Health and disease management	Strategic vaccination of the bird for all possible diseases	Preventive doses of antimicrobial drug, biosecurity, electrolyte powder in day to day management	Preventive doses of antimicrobial drug, biosecurity, electrolyte powder in day to day management	No
Cyclone				
Shortage of feed ingredients	Storage of feed ingredients	Reducing the stock	Reducing the stock and restricted	--
Drinking water	Ground water facility creation-	Use boiled water	Use boiled water	--
Health and disease management	Strategic vaccination of the bird for all possible diseases, anti stress	Preventive doses of antimicrobial drug, biosecurity,	Preventive doses of antimicrobial drug, biosecurity,	--

	medicine	electrolyte powder in day to day management , anti stress medicine	electrolyte powder in day to day management	
Heat wave and cold wave				
Shelter/environment management	Arrangement of coverage of the poultry sheds	Proper coverage of the poultry sheds		
Health and disease management	Strategic vaccination and preventive application of anti-microbial drug, anti stress medicine	Preventive doses of antimicrobial drug, bio-security, electrolyte powder in day to day management , anti stress medicine		--

^a based on forewarning wherever available

2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event ^a	During the event	After the event
1) Drought			
A. Capture			
Marine	--	--	--
Inland			
(i) Shallow water depth due to insufficient rains/inflow	--	-	
(ii) Changes in water quality	--	--	--
(iii) Any other			--
B. Aquaculture			
(i) Shallow water in ponds due to insufficient rains/inflow	<p>a. Reduce the stocking density of fishes by harvesting the marketable sized fishes</p> <p>b. At one side of the pond, depth should be made more by digging so that during drought fishes can take shelter in this deeper portion of the pond.</p> <p>c. If possible, provision should be made for pumping water into the pond from other sources or ground water.</p> <p>d. If the water body is very small, air breathing fishes like magur culture should be encouraged rather than IMC</p> <p>e. If possible provision for mechanical aerator should be</p>	<p>a. Application of feed and FYM should be restricted.</p> <p>b. Aeration should be done either manually or mechanically at least two times in a day (Morning and evening)</p> <p>c. Netting over pond surface can be made in these areas where attack of predatory birds is dominant.</p> <p>d. Frequent netting activities should be restricted.</p> <p>e. Lime should be applied at proper dose.</p> <p>f. KMnO₄ can also be applied @ 2-4ppm</p>	<p>a. After drought one partial harvesting should be done to check the fish health. If any symptom of disease seen, measures should be taken immediately.</p> <p>b. Lime should be applied at proper dose.</p> <p>c. Restock the pond with fingerlings if available.</p> <p>d. If the water quality and fish health is good enough then start feeding.</p>

	made.		
(ii) Impact of salt load build up in ponds / change in water quality	a. Growth of Azolla pinnata should be encouraged to check eutrophication and excessive evaporation. b. Lime should be applied according to PH of water.	a. Don't make any disturbances in the pond from outside like netting, application of feed, FYM etc. b. Activities like bathing, washing domestic animals should be stopped. --	After drought check water quality and fish health. b. When fish health and water quality becomes normal start feeding and fertilizing activities
(iii) Any other			
2) Floods			
A. Capture			
Marine	--	--	--
Inland	Extensive use of pens for grow-out culture of carps in lakes /reservoirs and beels to provide flexibility while doing culture.	--	--
(i) Average compensation paid due to loss of human life	--	--	--
(ii) No. of boats / nets/damaged	--	--	--
(iii) No.of houses damaged	--	--	--
(iv) Loss of stock			
(v) Changes in water quality	--	--	--
(vi) Health and diseases	--	--	--
B. Aquaculture			
(i) Inundation with flood water	a. Broken dykes of pond should be repaired. b. Height of the pond dyke should be increased above the flood level. c. Bamboo screen or nylonnets should be made ready for sudden rise in flood level. d. Inlets and outlets of the ponds	a. Bamboo screen or nylonnets should be placed round the pond dyke. b. Stop application of feed, fertilizer and lime. c. If flood level starts decreasing apply KMnO ₄ @ 2-4 ppm.	a. Lime should be applied at proper dose. b. Repeated netting should be done to check fish health and entry of any unwanted and predatory fishes. c. Apply KMnO ₄ @ 2-4 ppm

	should be checked for working condition. e. Marketable sized fishes should be harvested		
(ii) Water continuation and changes in water quality	a. Reduce the stocking density of fishes by harvesting the marketable sized fishes b. Stop application of feed, fertilizer and manure. c. Lime should be applied at proper dose.	a. Stop feeding b. Stop application of manure.	a. Examine water quality and then go for liming, manuring and feeding. --
(iii) Health and diseases	a. Lime should be applied at proper dose. b. Apply KMnO ₄ @ 2-4 ppm frequently.	a. Stop feeding, manuring and netting activities.	a. Check fish health by netting b. Lime should be applied at proper dose.— c. Apply CIFAX.
(iv) Loss of stock and inputs (feed, chemicals etc)	--	--	--
(v) Infrastructure damage (pumps, aerators, huts etc)	--	--	--
(vi) Any other			
3. Cyclone / Tsunami	N.A.		
A. Capture	--	--	--
Marine	--	--	--
(i) Average compensation paid due to loss of fishermen lives	--	--	--
(ii) Avg. no. of boats / nets/damaged	--	--	--
(iii) Avg. no. of houses damaged	--	--	--
Inland	--	--	--

B. Aquaculture	--	--	--
(i) Overflow / flooding of ponds	--	--	--
(ii) Changes in water quality (fresh water / brackish water ratio)	--	--	--
(iii) Health and diseases	--	--	--
(iv) Loss of stock and inputs (feed, chemicals etc)	--	--	--
(v) Infrastructure damage (pumps, aerators, shelters/huts etc)	--	--	--
(vi) Any other	--	--	--
4. Heat wave and cold wave-	NA		
A. Capture			
Marine	--	--	--
Inland	--	--	--
B. Aquaculture			
(i) Changes in pond environment (water quality)	--	--	--
(ii) Health and Disease management	--	--	--
(iii) Any other	--	--	--

^a based on forewarning wherever available



Agriculture Contingency Plan

District: South Tripura



Krishi Vigyan Kendra
(ICAR Research Complex for NEH Region)
South Tripura