Union Territory: **Andaman & Nicobar Islands**

Agriculture Contingency Plan for District: **North & Middle Andaman**

1.0 District Agriculture profile				
1.1	**Agro-Climatic/Ecological Zone**			
	Agro Ecological Sub Region (ICAR)	**20.1**		
	Agro-Climatic Zone (Planning Commission)	The Islands Region-XV		
	Agro Climatic Zone (NARP)	**Not included under 127 NARP zones**		
	List all the districts falling under the NARP Zone* (*>50% area falling in the zone)	North &Middle Andaman		
	Geographic coordinates of district headquarters	**Mayabunder**		
	Geographic coordinates of district headquarters	**Latitude**	**Longitude**	**Altitude**
		12.9333° N	92.9333° E	
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/RRTTS	Kolkata		
	Mention the KVK located in the district with address	KVK, Nimbudera, North & Middle Andaman, Pin- 744201		
	Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro-advisories in the Zone			

1.2	**Rainfall**	**Normal RF(mm) Mean of 2000-14**	**Normal Rainy days (number) Mean of 2008-14**	**Normal Onset (specify week and month)**	**Normal Cessation (specify week and month)**
	SW monsoon (June-Sep):	2,391.7	86.1	20th May	Last week of September
	NE Monsoon (Oct-Dec):	695.2	25.4	First week of October	Last week of December
	Winter (Jan- March)	102.8	5.4		
	Summer (Apr-May)	484.1	16.3		
	Annual	3,673.8	133.3		

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 (000ha)	330.2	7.5	295.6		-	-	-	7.6	1.8	1.2

1. 4	**Major Soils (common names like red sandy loam deep soils (etc.)***	**Area (000ha)**	**Percent (%) of total**
	Inceptisols (Orthrents)	11.1	28.39
	Entisols (Orthrents)	11.5	29.37
	Entisols (Fluvents)	7.5	19.28
	Inceptisols (Ochrepts)	7.8	19.90
	Entisols (Aquents)	0.7	1.91
	Alfisols (ustalfs)	0.5	1.15

* mention colour, depth and texture (heavy, light, sandy, loamy, clayey etc) and give vernacular name, if any, in brackets (data source: Soil Resource Maps of NBSS & LUP)

1.5	**Agricultural land use (Arable Crops)**	**Area (000ha)**	**Cropping intensity %**
	Net sown area	7.5	119.5
	Area sown more than once	1.4	
	Gross cropped area	9.0	

1.6	**Irrigation**	Area (ha)		
	Net irrigated area	1468.3 (area sown more than once)		
	Gross irrigated area	-		
	Rainfed area	-		
	Sources of Irrigation	Number	Area (ha)	Percentage of total irrigated area
	Canals	-	-	-

	Tanks	-	-	-
	Open wells	138	-	-
	Bore wells	-	-	-
	Lift irrigation schemes	-	-	-
	Micro-irrigation	-	-	-
	Other sources (please specify) :ponds	725	-	-
	Total Irrigated Area		-	-
	Pump sets	720	-	-
	No. of Tractors	40	-	-
	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	Safe	100	-
	Wastewater availability and use			-
	Ground water quality	Iron in few tube wells, and Salinity in few dug wells near coastal tracts (post- tsunami) and is of two types: Ca-Mg-HCO_3 and Na-HCO_3 type		
*over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%				

1.7 Area under major field crops & horticulture (as per latest figures) (Specify year: 2013-14) North & Middle Andaman

1.7	S. No.	Major field crops cultivated	Area (ha)							
			Kharif			*Rabi*				
			Irrigated	**Rainfed**	**Total**	**Irrigated**	**Rainfed**	**Total**	**Summer**	**Grand total**
	1	Rice	-	7685.2	7685.2	-	-	-	-	7685.2
	2	Greengram	-	-	-	-	305.1	305.1	-	305.1
	3.	Blackgram	-	-	-	-	242.2	242.2	-	242.2
	4	Sugarcane	201.0	-	201.0	-	-	-	-	201.0
	5	Maize	-	-	-	-	75.4	75.4	-	75.4
	Others (specify)	Sesamum	29.5	-	-	-	-	29.5	-	29.5
		Root crops	453.57	-	453.57	-	-	-	-	453.57

	S. No.	**Horticulture crops – Fruits**	**Area (ha)**		
			Total	**Irrigated**	**Rainfed**
	1	Banana	1343.5	1343.5	-
	2	Mango	295.9	-	295.9
	3	Citrus fruits	277.8	-	277.8
	4	Sapota	172.0	-	172.0
	5	Pineapple	37.6	-	37.6
	Others (specify)	Others miscellaneous	166.4	-	166.4
		Horticulture crops - Vegetables	**Total**	**Irrigated**	**Rainfed**
	1	Chillies	206.3	**206.3**	
	2	Sweet potato	184.2		184.2
	3	Tapioca	104.4		104.4
	Others (specify)				
		Medicinal and Aromatic crops	**Total**	**Irrigated**	**Rainfed**
	1				
	Others (specify)				
		Plantation crops	**Total**	**Irrigated**	**Rainfed**
	1	Coconut	3685		3685
	2	Areca nut	1165.4		1165.4
	3	Cashew nut	131.2		131.2
	4	Rubber	9.19		9.19
	Others (Specify)	Eg., industrial pulpwood crops etc.			
		Fodder crops	**Total**	**Irrigated**	**Rainfed**
	1	-	-		
		Total fodder crop area	-		
		Grazing land	Not available		
		Sericulture etc	Nil		
		Others (specify)			

1.8	**Livestock**	**Male (ha)**	**Female (ha)**	**Total (ha)**
	Non descriptive Cattle (local low yielding) Improved cattle (Total)	11,571	13,478	25,049
	Crossbred cattle	2,279	5,017	7,296
	Non descriptive Buffaloes (local low yielding) **(Total)**	3,768	3,081	6849
	Descript Buffaloes			
	Goat	11,647	18,392	30,039
	Sheep	-	-	-
	Others (Pig)	5,193	4,872	10,065
	Commercial dairy farms (Number)			

1.9	**Poultry**	**No. of farms**	**Total No. of birds**
	Commercial	67	408345
	Backyard	Information not available	

1.10 Fisheries (Data source: Chief Planning Officer)

A. Capture

i) Marine (Data Source: Fisheries Department)	**No. of fishermen**	**Boats**		**Nets**		**Storage facilities (Ice plants etc.)**
		Mechanized	Non-mechanized	Mechanized (Trawl nets, Gill nets)	Non-mechanized (Shore Seines, Stake & trap nets)	
		0	544	851	2461	Ice Plants: 4; Cold storage: 2

ii) Inland (Data Source: Fisheries Department)	**No. Farmer owned ponds**	**No. of Reservoirs**	**No. of village tanks**
	1404	1	-

B. Culture

	Water Spread Area (ha)	**Yield (t/ha)**	**Production (tons)**
i) **Brackish water** (Data Source: MPEDA/ Fisheries Department)	-	-	--
ii) **Fresh water** (Data Source: Fisheries Department)	219.14	552	121
Others	-	-	-

1.11 Production and Productivity of major crops (2013-14)

1.11	Name of crop	***Kharif***		***Rabi***		**Summer**		**Total**		**Crop residue as fodder** (tons)
		Production (t)	Productivity (kg/ha)	Production (t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production (t)	Productivity (kg/ha)	
Major Field crops (Crops to be identified based on total acreage)										
Crop 1	Paddy	23170.7	3015					23170.7	3015	34756
Crop 2	Greengram			131.28	430.2			131.28	430.2	656
Crop 3	Blackgram			111.86	271.0			111.86	271.0	559
Crop 4	Sugarcane	4704.6	23406					4704.6	23406	1411
Crop 5	Sesame	6.29	213					6.29	213	-
Others										
Major Horticultural crops (Crops to be identified based on total acreage)										
Crop 1	Coconut	16.8 m nuts	4559 nuts					16.8 m nuts	4559 nuts	-
Crop 2	Areca nut	3509.9	3011.8	-	-	-	-	3509.9	3011.8	-
Crop 3	Banana	9263.8	6895	-	-	-	-	9263.8	6895	-
Crop 4	Mango	3420.8	4249	-	-	-	-	3420.8	4249	-
Crop 5	Citrus	705.0	7870	-	-	-	-	705.0	7870	-
Others				-		-	-			

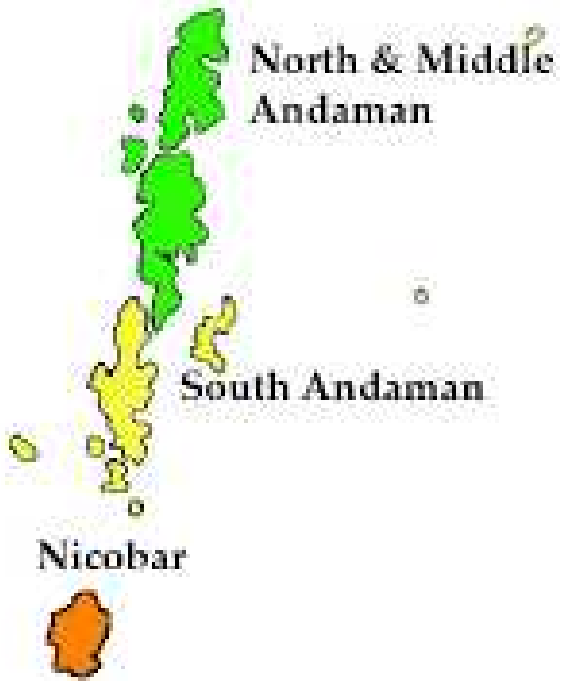
1.12	**Sowing window for 5 major field crops** (start and end of normal sowing period)	Rice	Greengram	Blackgram	Sugarcane	Maize
	Kharif- Rainfed	July- August	-	-	June-	-
	Kharif-Irrigated	-	-	--	-	-
	Rabi- Rainfed	-	December-January	December-January	-	December-January
	Rabi-Irrigated	-	-	-	-	-

1.13	**What is the major contingency the district is prone to?** (Tick mark)	**Regular**	**Occasional**	**None**
	Drought (January-April/ May i.e. during winter and summer season)	√	-	-
	Flood (low lying areas like valleys and coastal regions)	√	-	-
	Cyclone	√	-	-
	Hail storm	-	-	√
	Heat wave	-	-	√
	Cold wave	-	-	√
	Frost	-	-	√
	Sea water intrusion (in valleys and coastal regions)	√	-	-
	Pests and disease outbreak (specify) • Rice : BLB, SB; stem borers, leaf folder, sucking pests and rats: • Pulse: Dry root rot • Coconut & areca nut: bud rot, yellow leaf disease, leaf blight/spot and rhinoceros beetle; rats • Banana Bunchy Top Virus, leaf spot/ blight • Rhizome rot/ leaf blight of ginger and turmeric • Pepper leaf blight	√	-	-
	Others (specify) Soil erosion on sloppy lands and runoff water loss and low water availability	√		

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

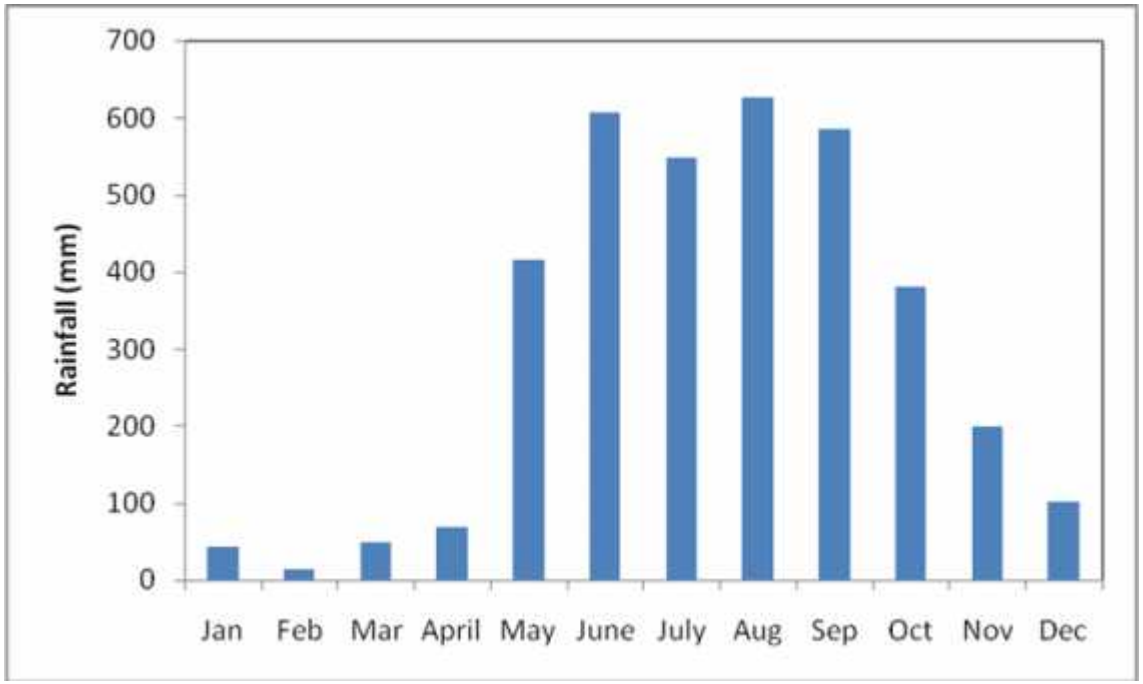
Annexure I

Location map of North & Middle Andaman district within Andaman & Nicobar Islands



Annexure 2

Mean annual rainfall of North & Middle Andaman district within Andaman & Nicobar Islands



Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop / Cropping system**	**Change in crop / cropping system including variety**	**Agronomic measures**	**Remarks on Implementation**
Early season drought (delayed onset): **Delay by 2/4/6/8 weeks**	Not Applicable				

Condition	Rabi/winter/summer season		Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**
Early season drought (Normal onset)					
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.		Rice-pulse / vegetable	• Gap filling of vegetable crops/ nursery • Re-sowing of field crops	• Mulching of crops with crop residues / plastics • Provide crop saving irrigation	
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)					
At vegetative stage		Rice-pulse / vegetable	• Remove the weeds and use them as mulch	• Provide life saving irrigation including fertigation	
Mid season drought (long dry spell)					
At flowering/ fruiting stage		Rice –pulse/ vegetable	• Harvest the green pods of mungbean for vegetable purpose		

Terminal drought (Early withdrawal of monsoon)	High rainfall uplands, eroded hill slopes, medium lands, valleys and coastal areas with winter and summer season moisture stress.	Rice- pulse / groundnut / vegetable / maize		• Zero till sowing of post rice (*rabi*) crops (including *paira* / *utera* cropping of pulse crops) • Use of short duration drought tolerant varieties • Mulching with rice stubbles / residues • Optimum plant population maintenance • Life saving irrigation	• RKVY funds for micro irrigation
		Coconut / areca nut / fruit crop based homestead farming	• Water shed based development • De-silting and raising of embankment of existing water bodies, establishment of community water harvesting structures • Micro irrigation with conserved water • Mulching with coconut / areca nut leaves, shells and other crop wastes in the plant basins • Apply organic manures to enhance soil water storage		

2.1.2 Drought - Irrigated situation

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delayed release of water in canals due to low rainfall			Not applicable		
Limited release of water in canals due to low rainfall					
Non release of water in canals under delayed onset of monsoon in catchment					
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	Medium and low lands of valleys and coasts	Rice-vegetables/ pulse	• Adopt zero till cultivation of vegetable / pulse crop	• Adopt micro irrigation • Mulching	
Insufficient groundwater recharge due to low rainfall	Uplands and medium lands	Plantation crops	No change	• Take effective control of weeds in tree basins by mulching or by interculture / manual land inversion practices • Don't exploit ground water excessively as it leads to saline water lifting from ground	
Any other condition (specify)					

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				
Rice	• Drain out the excess water • Delay N topdressing till water recedes • Take up gap filling with seedlings available from nursery or by splitting the tillers from the surviving hills.	• Apply the recommended dose of fertilizers after excess water drainage	• Improve drainage facility and establish alleys • Harvest the crop at physiological maturity.	• Spread the sheaves loosely in the fields or on field bunds that are devoid of water stagnation. • Dry the grain to proper moisture content before bagging and storage. • Add salt to the grain for removing moisture from grain • Go for drying of grain when weather is clear.
Pulse (mungbean and urdbean)	• Go for raised bed planting • Drain out excess water as early as possible • Inter cultivation at optimum moisture condition to loosen and aerate the soil and to control weeds • Top dress 20 kg urea or DAP /ha after drainage of water • Foliar spray 1% KNO_3 or water complex (NPK) fertilizers to support nutrition • Spray systemic fungicides two to three times to control fungal diseases and their outbreak following rains • Take up timely control measures against the outbreak of pests like *Spodoptera* etc.	• Spray 2% urea solution for quick recovery	• Harvest mungbean for green seeds and Incorporate the rest of biomass into soil to act as green manure or dual purpose crop	• Dry the produce to proper moisture content before bagging and storage • Quickly dispose the produce

Vegetables (Brinjal, okra, cowpea, cabbage, cauliflower)	• Go for raised bed planting • Drain out excess water	• Cover the curd (cauliflower) through tying the outer leaves up over the curd.		• Harvest the produce immediately for disposal.
Horticulture				
Banana Papaya Citrus Mango	• Provide proper drainage • Spray systemic fungicides to control fungal diseases outbreak		• Delay the harvest	• Improve storage facility/ godowns.
Coconut, Areca nut, spices	• Grow cover crops to arrest soil loss from runoff in steep slopes • Collect and conservation of rainwater into ponds / check dams for post rainy season use			• Use of copra dryers / solar dryers for quick drying of produce
Heavy rainfall with high speed winds in a short span				
Rice	• Improve drainage facility • Establish shelter belts with coconut / areca nut trees			• Improve storage facility
Banana	• Improve drainage • Propping of banana and establish shelter belts / wind breaks			
Coconut, areca nut, pepper, fruit crops	• Provide proper drainage in low lying areas • Provide vegetation cover in sloppy lands to prevent soil erosion			• Dry the copra with solar dryers
Vegetables	• Provide proper drainage and establish wind breaks • Plant vegetables on raised beds in such areas			• Harvest the produce and dispose immediately
Outbreak of pests and diseases due to unseasonal rains				
Rice	• Use bacterial leaf blight (BLB) and sheath blight (SB) resistant varieties. • Adopt prophylactic and curative measures • Use of disease free seeds and treat the seeds with fungicides / bactericides • Adopt balanced application of fertilizers • Follow phyto-sanitary measures • Rats should be controlled by traps/rodenticide (bromadiolone cake: 0.005%, zinc phosphide 2%)			
Coconut	• Prophylactic and control measures against bud rot and red palm weevil be taken up • Rats should be controlled by traps / rodenticide (bromadiolone cake: 0.005%, zinc phosphide 2%) use and banding the trunks of palms with galvanized iron sheets			
Areca nut	• Avoid water stagnation in the garden by providing drainage facilities. • Prophylactic spray of fungicides and field sanitation be followed			
Banana	• Take Sigatoka leaf spot control measures by removing and destroying severely infected and			

	completely dried leaves. • Use disease free healthy planting material • Avoid any sort of root injury through intercultural operations or by root pests, provide better drainage and spray carbendazim (0.1%) or give alternate sprays of tridemorph (0.05%), mancozeb (0.2 %) and carbendazim (0.1%) soon after the appearance of initial disease symptoms.	
Vegetables	• Control measures against fungal diseases	

2.3 Floods

Condition	**Suggested contingency measure**			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Transient water logging/ partial inundation				
Maize (post rainy season)	Do raised bed planting	Drain out the water		Harvest and dry the cobs
Pulse (post rainy season)		Foliar spray the nutrients		
Coconut / areca nut	-	Drain out the water		
Horticulture				
Banana	Drain out the water			
Continuous submergence for more than 2 days				
Rice	Select water logging tolerant varieties for cultivation	-		Drain out the water at the earliest possible Provide support to the lodged crop
Maize /pulse	Gap filling should be done at the earliest possible opportunity	Apply fertilizers by top dressing / foliar spray		Harvest the maize cobs / pulse crop at earliest opportunity and dry
Horticulture				
Banana	Drain out the excess water			
Sea water intrusion[3]				
Rice	• Grow salt tolerant varieties like CSR 36, CIARI Dhan 5 & 6 • Cultivate rice in peak rainy season (May-November) so that slats gets diluted and have little adverse impacts • Construction of dykes, sluice gates, drainage & field bunds			

	• Establishment of shelter belts/ wind breaks / bioshield along coastal line • Land shaping of the sea water intrusions areas by making broad bed and furrows. Use beds for upland crops and furrows for rice cum fish culture • If permitted go for rice-brackish water aquaculture • Mangrove protection/ conservation / rejuvenation	
Coconut, areca nut	• Cultivation on mounds for providing way for leaching of salts • Sea wall protection establishment • Mangrove protection/ conservation / rejuvenation • Establishment of shelter belts/ wind breaks / bio shield along coastal line	• Paddy land conservation for reduction of sea water intrusion and conversion of sea water intrusion prone plantations into paddy fields

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	Not Applicable			
Cold wave				
Frost				
Hailstorm				
Cyclone				
Rice	Provide field drainage			Cleaning and drying of harvested field crops
Pulse/ maize/ groundnut	Provide field drainage by making channels			Weather based advisory to be followed for harvesting
Areca nut, coconut	Provide staking and propping of plantation crops Plug the erosion holes with boulders			
Banana	Open deep trenches to between rows to improve drainage			
Mango, citrus, papaya, sapota	Drain excess water from orchards			Collect the fallen fruits for marketing (if suitable) processing

2.5 Contingent strategies for Livestock, Poultry & Fisheries

2.5.1 Livestock

	Suggested contingency measures		
	Before the event	**During the event**	**After the event**
Drought			
Feed and fodder availability	• Cultivation of perennial fodders like napier bajra hybrid, guinea, • Paragrass, perennial sorghum on paddy field bunds, pond banks, plantation crops • Establishment of village level fodder banks with surplus material • Promote *Azolla* cultivation at backyard • Hay/haylage making at individual and community level.	• Harvest and judiciously use crop residues as fodder. • Harvest rice (C-14-8) for fodder and leave ratoon for grain production • Harvest all the top feeds available (*Subabul, Glyricidia*, etc) from nearby forests and farms • Establish fodder banks • Concentrate feeds be arranged for feeding high productive animals • Utilize rice fallows for cultivation of annual fodder crops • Resort to innovative fodder production practices like hydroponics • Feeding unconventional feed supplements as per availability in the locality	• Encourage farmers to grow fodder crops • Flushing the stock to recoup with balanced ration containing concentrate & mineral mixture • Replenish the feed and fodder banks
Drinking water	• Adopt various water conservation methods (check dams, ponds) at appropriate places in farm /village to augment water supplies. • Identification of shallow ground water resources for extraction • Desilting of ponds • Rain water harvesting and create water bodies/watering points (when water is scarce use only as drinking water for animals) • Construction of drinking water tanks in herding places/village junctions • Community drinking water trough can be arranged in shandies /community grazing areas	• Prevent wallowing of animals in water bodies/resources • Add alum in stagnated water bodies • Provide clean drinking water	• Watershed management practices shall be promoted to conserve the rain water. • Bleach (0.1%) drinking water / water sources • Provide clean drinking water

Health and disease management	• Procure and stock emergency medicines and vaccines for major endemic diseases • All the stock must be immunized for endemic diseases of the area • Surveillance and disease monitoring network to be established at the district level • Procure and stock multivitamins & area specific mineral mixture • Deworming and deticking measures should be carried out. • Sufficient stock of disinfectants like potassium permanganate, lime, bleaching powder, savlon, dettol should be stocked. • At farmlevel strict biosecurity measures should be adopted.	• Carryout deworming to all animals • Identification and quarantine of sick animals • Constitution of Rapid Action Veterinary Force • Performing ring vaccination in case of any outbreak • Restricting movement of livestock in case of any epidemic • Tick control measures be undertaken to prevent tick borne diseases in animals	• Surveillance on disease outbreak. • Undertake need based vaccination • Keep the animal houses, milking sheds clean and spray disinfectants • Farmers should be advised to breed their milch animals during July-Sept. so that the peak milk production does not coincide with mid summer
Floods			
Feed and fodder availability	• Preparation of haylage and hay from excess fodder • Insurance of livestock • Store sufficient dry fodder for the transportation to the flood affected villages • Keep stock of bleaching powder and lime • Carry out Butax spray for control of external parasites	• Proper hygiene and sanitation of the animal shed • In severe storms, un-tether or let loose the animals • Use of unconventional and locally available cheap feed ingredients for feeding of livestock. • Avoid soaked and mould infected feeds /fodders to livestock • Spraying of fly repellents in animal sheds	• Repair of animal shed • Bring back the animals to the shed • Cleaning and disinfection of the shed • Bleach (0.1%) drinking water / water sources • Encouraging farmers to cultivate short-term fodder crops like sunhemp. • Deworming with broad spectrum dewormers • Drying the harvested crop material and proper storage for use as fodder. • Claim insurance
Drinking water		• Provide clean drinking water	• Disinfectants should be used in water bodies where animals are drinking
Health and disease management	• Treatment of animals for both external and internal parasites. • Keep stock of sufficient medicines like	• Spraying of fly repellents in animal sheds	• Deworming with broad spectrum dewormers

	anthelmentics, anticoccidials and antimicrobials.		
Cyclone	• Preparation of haylage and hay from excess fodder • Insurance of livestock • Store sufficient dry fodder for the transportation to the flood affected villages • Keep stock of bleaching powder and lime • Treatment of animals for both external and internal parasites. • Keep stock of sufficient medicines like anthelmentics, anticoccidials and antimicrobials.	• Proper hygiene and sanitation of the animal shed • In severe storms, un-tether or let loose the animals • Use of unconventional and locally available cheap feed ingredients for feeding of livestock. • Avoid soaked and mould infected feeds /fodders to livestock • Provide clean drinking water • Spraying of fly repellents in animal sheds	• Repair of animal shed • Bring back the animals to the shed • Cleaning and disinfection of the shed • Bleach (0.1%) drinking water / water sources • Encouraging farmers to cultivate short-term fodder crops like sunhemp.
Heat wave and cold wave	Not applicable		

2.5.2 Poultry

Condition	**Suggested contingency measures**			**Convergence/linkages with ongoing programs, if any**
	Before the event	**During the event**	**After the event**	
Drought				
Shortage of feed ingredients	• Storing of house hold grain like maize, broken rice etc, in to use as feed in case of severe drought	• Supplementation only for productive birds with house hold grain • Supplementation of shell grit (calcium) for laying birds • Culling of weak birds	• Supplementation to all survived birds	
Drinking water	• Adopt various water conservation methods at village level to improve the ground water level for adequate water supply.	• Use water sanitizers or offer cool hygienic drinking water	• Sanitation of drinking water	
Health and disease	• Culling of sick birds. • Deworming and vaccination	• Mixing of Vit. A, D, E, K and B-complex	• Hygienic and sanitation of poultry house	

management	against RD and IBD	including vit C in drinking water (5ml in one litre water)	• Disposal of dead birds by burning /burying with lime powder in pit	
Floods				
Shortage of feed ingredients	• In case of early forewarning of floods, shift the birds to safer place • Storing of house hold feeds like broken rice, pulse etc,	• Use stored feed as supplement • Don't allow for scavenging • Culling of weak birds	• Routine practices are followed Deworming and vaccination against RD	
Drinking water	• Adopt various water conservation methods at village level to improve the ground water level for adequate water supply.	• Use water sanitizers or offer cool hygienic drinking water	• Sanitation of drinking water	
Health and disease management	• Add antibiotic powder in drinking water to prevent any disease outbreak	• Prevent water logging surrounding the sheds through proper drainage facility • Assure supply of electricity by generator or solar energy or biogas • Sprinkle lime powder to prevent ammonia accumulation due to dampness	• Sanitation of poultry house • Treatment of affected birds • Disposal of • dead birds by burning / burying with lime powder in pit • Disposal of poultry manure to prevent protozoal problem • Supplementation of coccidiostats in feed • Vaccination against RD	
Cyclone	Not Applicable			
Heat wave and cold wave				

2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event	**During the event**	**After the event**
1) Drought			

A. Capture			
Marine	Not applicable	Not applicable	Not applicable
Inland	Not applicable	Not applicable	Not applicable
B. Aquaculture			
(i) Shallow water in ponds due to insufficient rains/inflow	• Maintaining appropriate water level in ponds • Constructing additional ponds for harvesting rainwater (Reservoir ponds)	• Pumping in harvested rainwater into culture ponds • Deepening of ponds • Reduce the stocking density or harvest the stock	• Prestocking management like drying, desilting liming etc.
(ii) Impact of salt load build up in ponds / change in water quality	• Maintaining appropriate water quality parameters • Continuous monitoring of water quality	• Application of lime in dikes to reduce the effects of acidity	• Partial water exchange to optimize salinity
(iii) Any other			
2) Floods			
A. Capture			
Marine	Not applicable	Not applicable	Not applicable
Inland	Not applicable	Not applicable	Not applicable
B. Aquaculture			
(i) Inundation with flood water	• Strengthening of dike • Maintain a freeboard of 2-3 feet above water line • Fix overflow pipes with nets at the outflow	• Pumping out water • Fixing nets with appropriate size to reduce the loss of stock • Harvest the stock to reduce loss	• Strengthening of dikes and other structures • Stock the ponds at appropriate stocking density
(ii) Water contamination and changes in water quality	• Maintenance of appropriate water quality parameters • Conduct training programmes for monitoring water quality parameters	• Apply remedial measures to keep optimum water quality parameters for culture	• Continuous monitoring of water quality parameters • Maintenance of appropriate water quality parameters

(iii) Health and diseases	• Conducting surveillance programmes • Identify risks associated with the suspected outbreak of pathogens • Suggest suitable remedial measures for common pathogens • Follow best management practices	• Continuous monitoring of pathogens • Apply suitable remedial measures	• Continuous monitoring of pathogens
(iv) Loss of stock and inputs (feed, chemicals etc)	• Stock the ponds at appropriate stocking density • Store the feeds in a proper place • Apply for crop insurance	• Harvest the stock • Avail the crop insurance	• Restore the damaged structures and stock seeds at appropriate density
(v) Infrastructure damage (pumps, aerators, huts etc)	NA	NA	NA
(vi) Any other			
3. Cyclone / Tsunami			
A. Capture			
Marine	• Prevention of fishing during cyclone / Tsunami warning times	• Safely return back to the shore/Stay at home / move to safe places	• Cyclone / Tsunami shelter Rehabilitation of affected area
(i) Average compensation paid due to loss of fishermen lives	As per prevailing Government norms		
(ii) Avg. no. of boats /nets /damaged			
(iii) Avg. no. of houses damaged			
Inland			
B. Aquaculture			
(i) Overflow / flooding of ponds	• Strengthening of dike • Maintain a freeboard of 2-3 feet above water line • Fix overflow pipes with nets at the outflow	• Pumping out water • Fixing nets with appropriate size to reduce the loss of stock • Harvest the stock to reduce loss	• Strengthening of dikes and other structures • Stock the ponds at appropriate stocking density
(ii) Changes in water quality (fresh	• Maintenance of appropriate water	• Apply remedial measures to	• Continuous monitoring of water

water / brackish water ratio)	quality parameters • Conduct training programmes for monitoring water quality parameters	keep optimum water quality parameters for culture	quality parameters • Maintenance of appropriate water quality parameters
(iii) Health and diseases	• Conducting surveillance programmes • Identify risks associated with the suspected outbreak of pathogens • Suggest suitable remedial measures for common pathogens • Follow best management practices	• Continuous monitoring of pathogens • Apply suitable remedial measures	• Continuous monitoring of pathogens
(iv) Loss of stock and inputs (feed, chemicals etc)	• Stock the ponds at appropriate stocking density • Store the feeds in a proper place • Apply for crop insurance	• Harvest the stock • Avail the crop insurance	• Restore the damaged structures • and stock seeds at appropriate density
(v) Infrastructure damage (pumps, aerators, shelters/huts etc)	NA	NA	NA
(vi) Any other			
4. Heat wave and cold wave	NA	NA	NA