

State : Jharkhand

Agriculture Contingency Plan for District : Garhwa.

1.0 District Agriculture profile			
1.1	Agro-Climatic/Ecological Zone		
	Agro Ecological Sub Region (ICAR)	Moderately To Gently Sloping ChattisgarhMahanadi Basin, Hot Moist/Dry Subhumid Transitional ESR With Deep Loamy To Clayey Red And Yellow Soils (11.0)	
	Agro-Climatic Zone (Planning Commission)	EASTERN PLATEAU AND HILLS REGION (VII)	
	Agro Climatic Zone (NARP)	WESTERN PLATEAU ZONE (BI-5)	
	Geographic coordinates of district headquarters	Latitude	Longitude
		23 ⁰ 34' 11" – 24 ⁰ 32' -05" N	83 ⁰ .10' 13" - 83 ⁰ 56' 38" E
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Zonal Research Station (Z.R.S.), Chianki, medinigar, Palamau, Pin – 822133 (Birsa Agricultural University, Ranchi) Pin – 834006.	
	Mention the KVK located in the district	Krishi Vigyan Kendra, Garhwa, Pin - 822114	

1.2	Rainfall	Normal RF(mm) 2008	Normal Rainy days (number)	Normal Onset (specify week and month)	Normal Cessation (specify week and month)
	SW monsoon (June-Sep):	780.8	47	III rd week of June	Last week of September
	NE Monsoon(Oct-Dec):	00	00		
	Winter (Jan- March)	53.4	31	-	-
	Summer (Apr-May)	31.6	3	-	-
	Annual Average rain fall 1355	865.8	53	-	-

1.3	Land use pattern of the district (latest statistics)	Geographical area	Cultivable area	Forest area	Land under non-agricultural use	Permanent pastures	Cultivable wasteland	Land under Misc. tree crops and groves	Barren and uncultivable land	Current fallows	Other fallows
	Area ('000 ha)	428.550	100.950	169.790	19.456	2.05704	6.600	2.271	24.727	102.351	

1.4	Major Soils (common names like red sandy loam deep soils (etc.,))*	Area ('000 ha)	Percent (%) of total
	sandy loam	201.419	47
	Red loam (Moram)	184.277	43
	Grey soil	42.855	10

* mention colour, depth and texture (heavy, light, sandy, loamy, clayey etc) and give vernacular name, if any, in brackets

1.5	Agricultural land use	Area ('000 ha)	Cropping intensity %
	Net sown area	100.950	115
	Area sown more than once	35.178	
	Gross cropped area	136.128	

1.6	Irrigation	Area ('000 ha)		
	Net irrigated area	35.180		
	Gross irrigated area	35.180		
	Rainfed area	65.770		
	Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
	Canals, Ponds, check dams, lifts		19.740	19.554
	Tanks			7.53
	Open wells		7.6	0.86
	Bore wells, Pump sets		0.870	
	Lift irrigation schemes			

	Micro-irrigation			
	Other sources (please specify)			
	Total Irrigated Area		28.210	27.95
	Pump sets			
	No. of Tractors			
	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%				

1.7 Area under major field crops & horticulture

1.7	Major field crops cultivated	Area ('000 ha)							Summer	Grand total
		<i>Kharif</i>			<i>Rabi</i>					
		Irrigated	Rainfed	Total	Irrigated	Rainfed	Total			
	Paddy			51.00						
	Maize	1.5	25.6	27.1						
	Wheat				6.875	-	6.875			
	Arhar		14.833	14.833						
	Mustard						4.00			

	Chickpea					3.033	3.033		
--	----------	--	--	--	--	-------	-------	--	--

Source : Rabi and Kharif report (2009-10) Department of Agriculture, Garhwa.

	Horticulture crops - Fruits	Area ('000 ha)		
		Total	Irrigated	Rainfed
	Horticulture crops - Vegetables	Total	Irrigated	Rainfed
	Potato	1.5		
	Okra	1.00		
	Chilies	0.670		
	Brinjal	0.640		
	Tomato	0.600	0.600	
	Cauliflower	0.520	0.520	
	Medicinal and Aromatic crops			
	Plantation crops			
	Fodder crops			
	Total fodder crop area			
	Grazing land			

	Sericulture etc			
	Others (specify)			

1.8	Livestock	Male ('000)	Female ('000)	Total ('000)			
	Non descriptive Cattle (local low yielding)	193.407 (Bullocks)	397.995	591.402			
	Calf			79.173			
	Non descriptive Buffaloes (local low yielding)			15.835			
	Graded Buffaloes						
	Goat			159.305			
	Sheep			1.131			
	Others (Camel, Pig, Yak etc.) Pig			28.051			
	Commercial dairy farms (Number)						
1.9	Poultry	No. of farms	Total No. of birds ('000)				
	Commercial		344.966				
	Backyard						
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	
	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)			
	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)										
	Rice	18.58	1279.0					18.58	1279.0	
	Maize	14.24	870.0	3.75	2500.00			17.99		
	Pigeon Pea	3.00	460.0					3.00	460.00	
	Wheat			13.75	2000.00			13.75	2000.00	
	Mustard			2.00	500.00			2.00	500.00	
Major Horticultural crops (Crops to be identified based on total acreage)										

1.12	Sowing window for 5 major field crops (start and end of normal sowing period)	Paddy	Maize	Pigeon pea	Wheat	Mustard
	Kharif- Rainfed	June 2 nd week to 3 rd week	June 2 nd week to July 1 st week	June 1 st week to June 3 rd week		
	Kharif-Irrigated	June 1 st week to July 1 st week	June 2 nd week to June 4 th week	June 2 nd week to July 3 rd week		
	Rabi- Rainfed				October 2 nd week to	October 1 st week to

					October 4 th week.	October 2 nd week
	Rabi-Irrigated				November 2 nd week to November. 4 th week.	October 1 st week to November 2 nd week.

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			
	Pests and disease outbreak (specify)			
	Others (specify) Late blight in potato			

1.14	Include Digital maps of the district for		
		Location map of district within State as Annexure I	Enclosed: No
		Mean annual rainfall as Annexure 2	Enclosed: No
		Soil map as Annexure 3	Enclosed: No

2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming situation ^a	Normal Crop / Cropping system ^b	Change in crop / cropping system ^c including variety	Agronomic measures ^d	Remarks on Implementation ^e
Delay by 2 weeks (Specify month)* June 3 rd week	shallow red soils	Maize + Pigeon Pea	Maize (Birsa Maize-1) + Cowpea	Maize : 60 X 20	Supply of seeds under RKVY MNREGS & NWDPRA Schemes
		Pigeon Pea + Groundnut	Pigeonpea : Bahar, Narendra Arhar, Birsa Arhar-1		
		Maize + Groundnut	Groundnut : AK. 12.24, Birsa Bold		
		Blackgram, Sesame	Sesame : Kanke safed		
		Finger millet	Finger millet : A 404 (Transplant) Pigeon Pea + Castor. Soybean : Birsa Soybean safed – 2 Jowar : CSV – 20	Transplanting Field management by banding	
	Medium land Medium deep sandy loom	Rice and Hybrids	Rice : Sahbhagi, Naveen, IR - 64	Direct sowing through	Supply of seeds and implements under RKVY.
			Hybrids : PAC. 807, Uday – 111, Abhishek, 27P31	Drum seeder Use of pre emergence weedicides e.g. Glyphosate or post emergence Butachlor.	
	Low land Deep clay	Rice – Sonam, Rupali, Mansuri	Rajendra Mansuri, Rajshree (OP)	Transplanting at closer	MNREGS & NWDPRA Schemes
		Arize – 6444, Advanta – 801	IR – 36, IR - 64	Spacing	
		PHB – 71 (Hybrid)	PAC – 807, 25P31, Abhishek ,Uday-111 (Hybrids)	Field Bunding	

		Rice Rice – Vandna, BVD – 109, IR- 64 Local, Birsamati, MTU - 7029			
		Urd – Birsa Urd – 1, T – 9, Pant U - 19			

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)	Rainfed, Swallow, acidic, Redsoil	Maize + Pigeon Pea, Maize + Groundnut.	Maize + Cowpea, Maize + Okra, Maize + Ridgeground Maize : Birsa Vikas makka -2	Closer spacing of Pigeon Pea and Maize	Seeds to be needed available under RKVY and NFSM (Places)
		Maize + Blackgram.	Pigeon Pea : Birsa Arhar – 1 ICPH – 2671 Pigeon Pea + Fingermillet (A 404). Soyabean : Birsa Soyabean Safed- 2 Jowar : CSV – 20 Sesam : Kanke white, Pragati.		
		Rice – IR – 36, IR – 64.	Rice : Vandana, Naveen, Sahbhagi, PAC – 807, 27 P 31, Uday - 111, Abhishek (Hybrid)		
	Medium deep sandy loom soil.		Naveen : IR – 64, IR – 36, Rupali, PAC – 807, Uday – 111, Abhishek		
	Deep, heavy clay soil.				

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 6 weeks	Upland	Maize + Pigeon Pea	Maize : (Birsa Maize – 2) + Cowpea (Swarna Harita/S. Sweta)		Vegetable seeds supply under RKVY
		Sesame, Blackgram	Pigeon Pea : Birsa Arhar – 1 + Okra		
July 3rd week.		Fingermillet	Jowar : CSV – 20		
			Groundnut : Birsa Bold		
			Soyabean : Birsa Soyabean safed – 2		
	Medium land sandy loom with medium depth		Rice : Sahabhagi, Naveen (OP) PAC – 807 27P - 31 (Hybrid)		
			Maize : Birsa Maize – 2, HSPM - 1		
			Vegetable : Tomato, Brinjal, Cowpea		

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming situation^a	Normal Crop/cropping system^b	Change in crop/cropping system^c	Agronomic measures^d	Remarks on Implementation^e
Delay by 8 weeks (Specify month) 1st week of August	Upland, Rainfed, Redsoil.	Maize + Pigeon Pea	Pigeon Pea – Birsa Arhar-1		S.M.
		Sesame, Blackgram	Sesame – Kanke safed, Pragati, Krishna Blackgram - Shekhar-2 Fingermillet - A 404 (Transplanting) Niger – Birsa Niger – 1 Horsegram : Birsa Kulthi–1 JNC – 6		

	Medium land medium deep sandy loom soil	Rice : Pigeon Pea +Sesame	Pigeon Pea – ICPH – 2671, Bahar Narendra Arhar – 1 Pigeon Pea + Caster/Sesame Torla – PT 303 Niger–JNC-6,Birsa Niger–1 Horsegram – Birsa Kulthi–1 Totamato – Swarna Lalima Cabbage – Early Kuwari, Pusa Deepali	Close planting (60 X 200m)	Seed supply undre RKVY.
			Closerans Planting of average seedlings	1. Closer spacing 2. Heavy dose of NPK.	
	Lowland clay soil.	Transplanting of averaged Seedlings of long duration Varieties hybrids.	Rice : Naveen, Sahbhagi, Vandana, PAC-807, Abhishek, Uday-111		

Condition	Major Farming situation ^a	Normal Crop/cropping system ^b	Suggested Contingency measures		
			Crop management ^c	Soil nutrient & moisture conservation measues ^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.	Upland	Maize + Pigeon Pea Maize + Blackgram Pigeon Pea + Sesame Maize + Groundnut Pigeon Pea + Groundnut Finger millet	Re sowing Maize (Birsa Vikas Makka-2 Birsa Arhar – 1 Sesame – Kanke safed Groundnut : Birsa Bold	Sprinkler system or irrigation by lifting the water from rivers	Supply of sprinkler system under RKVY. Supply of seeds of pulses under NFSM (Pulses)
			Hoing of Maize + Pigeon Pea	Hoing to break the capillarity	
			Thinning replanting		
	Medium deep Medium land.	Rice soil	Direct sowing of Naveen, Shabhagi, Vandana.	Irrigation of crop by lifting the water from ponds, wells.	Supply of Pipe – Pumps under RKVY.
	Low land deep clay soil.	Rice crop		Irrigation of crops by lifting the water from well of Ponds	

Condition			Suggested Contingency measures		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	Major Farming situation ^a	Normal Crop/cropping system ^b	Crop management ^c	Soil nutrient & moisture conservation measures ^d	Remarks on Implementation ^e
At vegetative stage	Uplands	Maize + Pigeon Pea / Blackgram Pigeon Pea + Sesame Maize + Groundnut/Cowpea Finger millet	1. Supply of life saving irrigation. 2. Weeding cum – hoeing to break capillarity. 3. Finger millet has better drought tolerance capacity (Area extension) 4. weeding and weed mulching of the field	1. Application of compost to enhance the water holding capacity of soil. 2. Judicious land of P for better penetration of root system 3. Weeding and weed mulching of the field.	
	Medium land	Rice – IR – 36, IR – 64, Saryu – 52	1. Life saving irrigation through Pumps and sprinkler.	Presonig application of compost and Judicious land of P&K for better water holding and root growth.	Supply of Pumps (Sprinkler) sets under RKVY
			2. Area extension under Shabhagi Dhan.		
Low land	Low lands mostly covered under hybrids with stand 2 – 3 weeks long stress PHB – 71, A – 801, Arize 6444, Rupali, Sonam	Life saving irrigation through Pumps			

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 measures ^d	Remarks on Implementation ^e
At flowering/ fruiting stage	Upland shall one red soils	Maize + Arhar (Pigeon Pea) Maize + Blackgram Pigeon Pea + Sesame	Life saving irrigation through sprinkler system Weed – cum – hoeing and weed mulching	Intercultivation(soil mulching)	Supply of seeds through D.A.O. Supply seeds

		Maize + Groundnut Pigeon Pea + Groundnut Finger millet		Conservation Furrow	through N.F.S.M.
	Medium land medium deep sandy clay loom.	Rice : IR – 36 , IR - 64	Life irrigation by lifting the water from ponds/ wells		Supply of irrigation devices under RKVY.
	Low land deep heavy clay soil.	Rice : Varieties and Hybrids Sonam, Rupali, Arize – 6444, PHB – 71	Life saving irrigation through Pumps/Ponds/wells.		

Condition			Suggested Contingency measures		
Terminal drought (Early withdrawal of monsoon)	Major Farming situation^a	Normal Crop/cropping system^b	Crop management^c	Rabi Crop planning^d	Remarks on Implementation^e
	Upland shall one red soils	Maize + Pigeon Pea / Blackgram/ Groundnut/Cowpea Pigeon Pea + Sesame Finger millet	Life saving irrigation Harvesting of pods of Cowpea and Blackgram for vegetable purpose and fodder.	Niger, Mustard, Chickpea, Linseed.	Supply of Pumps (Sprinkler) sets under RKVY
	Medium land	Rice	Supply of life saving irrigation lifting the water from ponds wells.		
	Low land	Long duration rice varieties and hybrids.	Life saving irrigation Crop protection measures		Ponds/wells under MNREGS and RKVY.

2.1.2 Drought - Irrigated situation

Condition			Suggested Contingency measures		
	Major Farming situation^f	Normal Crop/cropping system^g	Change in crop/cropping system^h	Agronomic measuresⁱ	Remarks on Implementation^j
Delayed release of water in canals due to low rainfall	Medium land sandy/clay looms	Medium land rice – IR – 36, IR – 64.	Aerobic rice var. Naveen, Shabhagi, Vandana.	Limited irrigation by the sprinklers.	Seed through RKVY, NFSM (Pigeon Pea)
			Maize + Arhar (Pigeon Pea)	Irrigation through drip or alternate row	
			Arhar + Sesame		

Condition	Major Farming situation ^f	Normal Crop/cropping system ^g	Suggested Contingency measures		Remarks on Implementation ^j
			Change in crop/cropping system ^h	Agronomic measures ⁱ	
			Vegetable – Tomato, Chillis	irrigation.	
			Treated Cucurbits		

Condition	Major Farming situation ^f	Normal Crop/cropping system ^g	Suggested Contingency measures		Remarks on Implementation ^j
			Change in crop/cropping system ^h	Agronomic measures ⁱ	
		Rice	Aerobic rice / transplanted rice var. Naveen, Shabhagi, Vandana.		
			Pigeon Pea + Sesame Maize + Pigeon Pea Tomato Chillies		
	Medium land	Medium maturing rice varieties	Direct sown (Aerobic) Rice var. Naveen Shabhagi, Vandana, IR - 64		
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					
Insufficient groundwater recharge due to low rainfall					

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				
Rice	Bunding to store water in medium lands	Water restoring in medium lands	Draining out	Shifting to safer place and drying
Pigeon Pea / cultivated in uplands which is undulated, self drainage occur therefore .	Draining out	Draining out application of plant protection chemicals	Provided drainage	Shifting to safer place and drying
Maize	Provided drainage	Provided drainage	Provided drainage	Shifting to safer place and drying
Wheat	Draining out	Draining out	Draining out	Shifting to safer place and drying
Groundnut	Draining out followed by hoeing the field	Draining out followed by hoeing	Draining out	Shifting to safer place and drying
Horticulture				
Potato	Provided drainage and plant protection		Drainage and diggiout	Shifting to safer place and drying
Brinjal	Provided drainage and plant protection	Provided drainage and Plant Protection	Provided drainage	Shifting to safer place and drying
Tomato	Provided drainage and plant protection	Provided drainage and Plant Protection	Drainage and Picking up fruits	Value addition
Cucurbit	Provided drainage and plant protection	Proper drainage	Drainage and Picking up fruits	Value addition
Chillies	Provided drainage and plant protection	Drainage and Plant protection	Drainage and Picking up fruits	Storage or drying or value addition
Heavy rainfall with high speed winds in a short span²				
Rice	Water restoring in medium land		Immediate drainage and harvesting crop	Drying on safer place
Pigeon Pea	Draining and earthingup	Drainage and erecting the Plants	Drainage and erecting the Plants	Drying safer place

Maize	Draining and earthing up	Drainage and erecting the Plants	Drainage and harvesting at physiological maturity	Piling at safe place
Wheat	Drainage	Drainage	Drainage	Drying safer place
Pulses (Rabi)	Drainage and hoeing	Drainage and hoeing	Drainage	Drying safer place
Horticulture				
Potato	Drainage and Plant protection	Drainage and Plant protection	Drainage	Shade drying and store in cold storage
Brinjal	Drainage and Plant protection	Drainage and Plant protection	Drainage	Sail
tomato	Drainage and Plant protection	Drainage and Plant protection	Drainage	Value addition
Cucurbit	Drainage and Plant protection	Drainage and Plant protection	Drainage	Value addition
Chillies	Drainage and Plant protection	Drainage and Plant protection	Drainage	Preservation and drying
Outbreak of pests and diseases due to unseasonal rains				
Rice	Need based plant protection measure IPM or IDPM for field crop			
Pigeon Pea	-do-			
Maize	-do-			
Pulses (Rabi)	-do-			
Rye – Mustard	-do-			
Horticulture				

2.3 Floods

Condition	Suggested contingency measure ^o			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Transient water logging/ partial inundation ¹				
Horticulture				

Continuous submergence for more than 2 days²				
Horticulture				
Sea water intrusion³				

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 (loo)				
Wheat	-	-	Maintaining soil moisture by irrigation	
Pigeon Pea	-	-	Maintaining soil moisture by irrigation	
Rye	-	-	Maintaining soil moisture by irrigation	
Lentil and gram	-	-	Maintaining soil moisture by irrigation	
Rice	Maintaining soil moisture	-	Maintaining soil moisture by irrigation	
Horticulture				
Okra	Moisture management	Maintaining wind breaks and soil moister	Wind breaks and irrigation	
Chillies	Moisture management	Maintaining wind breaks and soil moister	Wind breaks and irrigation	
Cucurbits	Moisture management			
Cold wave^q				
Pigeon pea	N.A.	Spray of fungicide and IPM	Before initiation of flower use of IPM Which include fungicide + insecticide	
Pea		Spray of fungicide and IPM	Watering of plant	
Lentil		Spray of fungicide and IPM	Smoking at 3 to 4 am in the morning	
Rabi Maize				
Horticulture				
Potato	-	Proper moisture mgt.		
Tomato	-	Proper moisture mgt.		

Chilli	-	Proper moisture mgt.		
Frost				
Horticulture				
Hailstorm				
Horticulture				
Cyclone				
Horticulture				

2.5 Contingent strategies for Livestock, Poultry & Fisheries

2.5.1 Livestock

	Suggested contingency measures		
	Before the event ^s	During the event	After the event
Drought			
Feed and fodder availability			
Drinking water			
Health and disease management			
Floods			
Feed and fodder availability			
Drinking water			
Health and disease management			
Cyclone			
Feed and fodder availability			
Drinking water			
Health and disease management			

Heat wave and cold wave			
Shelter/environment management			
Health and disease management			

^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				
Drinking water				
Health and disease management				
Floods				
Shortage of feed ingredients				
Drinking water				
Health and disease management				
Cyclone				
Shortage of feed ingredients				
Drinking water				
Health and disease management				

Heat wave and cold wave				
Shelter/environment management				
Health and disease management				

^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			
(ii) Impact of salt load build up in ponds / change in water quality			
(iii) Any other			
2) Floods			
A. Capture			

Marine			
Inland			
(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			
(ii) Water contamination and changes in water quality			
(iii) Health and diseases			
(iv) Loss of stock and inputs (feed, chemicals etc)			
(v) Infrastructure damage (pumps, aerators, huts etc)			
(vi) Any other			
3. Cyclone / Tsunami			
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			
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