DISTRICT CONTINGENT PLANBOUDH

KVK,BOUDH

KRISHI VIGYAN KENDRA, BOUDH

AT / PO : Pakjhar, Boudh – 762026

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BHUBANESWAR - 751003

State: Odisha

State: Odisha

Agriculture Contingency Plan for District:Boudh

1.0 District Agriculture profile				
1.1	**Agro-Climatic/Ecological Zone**			
	Agro Ecological Sub Region (ICAR)	**Sub-humid to humid Eastern & South eastern upland (12.1)**		
	Agro-Climatic Zone (Planning Commission)	**East coast plain & Hill Region (XI)**		
	Agro Climatic Zone (NARP)	**West Central table Land zone (OR-9)**		
	List all the districts falling under the NARP Zone* (*>50% area falling in the zone)	**Bargarh, Bolangir, Boudh ,Sonepur ,Parts of Sambalpur,Sundargarh,Deogarh&Jharsuguda.**		
	Geographic coordinates of district headquarters	**Latitude**	**Longitude**	**Altitude**
		20^0 43 51.69 to 20^0 45 16.16 N	**84^0 13 52.22 to 84^0 13 56.27E**	**-**
	Name and address of the concerned RRTTS	**RRTTS, ChiplimaAt:-Satupali ,Po:- Chiplima , Dist:- Sambalpur**		
	Mention the KVK located in the district with address	**KVK Boudh At:- Paljhar ,Po:Salunki, Dist:- Boudh, PIN- 762026**		
	Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro-advisories in the Zone	**AMFU,RRTTS, Chiplima At:- Satupali ,Po:- Chiplima , Dist:- Sambalpur**		

1.2	Rainfall	Normal RF(mm)	Normal Rainy days (number)	Normal Onset (specify week and month)	Normal Cessation (specify week and month)
	SW monsoon (June-Sep)	1385.9	54	3rd week of June	3rd week of October
	NE Monsoon(Oct-Dec)	116	6	2rd week of October	2nd week November
	Winter (Jan- Feb)	66.2	4	4thweek of January	1st week February
	Summer (Mar-May)	54.9	4	2nd week May	4th week May
	Annual	1623	87	-	-

1.3	**Land use pattern of the district** (2008-09)	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)	310	85	128	21	17	20	19	12	4	4

Source-Orissa Agriculture Statistic, 2012-13

1. 4	Major Soils (common names like red sandy loam deep soils(etc.,) *	Area ('000 ha)	Percent (%) of total
	1. Red& black soil (light, Loamy)	164.3	53
	2. Black soil (clayey, heavy)	96.1	31
	3. Red soil (light, Sandy)	49.6	16

* (Source: SREP, Boudh)

1.5	Agricultural land use	Area ('000 ha)	Cropping intensity %
	Net sown area	85	164
	Area sown more than once	53	
	Gross cropped area	139	

1.6	**Irrigation**	**Area ('000 ha)**		
	Net irrigated area	40.96(K) and 12.69(R)		
	Gross irrigated area	60.05 (K) and 17.21 (R)		
	Rainfed area	32.35		
	Sources of Irrigation	**Number**	**Area ('000 ha)**	**Percentage of total irrigated area**
	Canals(Major & Medium)	2	31.55	47
	Minor project	52	12.8	19.08
	Tanks	43	1.129	1.683
	Open wells	3892	3.675	5.4
	Bore wells	5	0.01	0.01
	Lift irrigation schemes	192	12.06	17.954
	Micro-irrigation	-	-	-
	Other sources (WHS)	41	5.86	8.738
	Total Irrigated Area	-	67.06	-
	Pump sets	1050	-	-
	No. of Tractors	15	-	-
	Source : District Agriculture Office, Boudh& Directorate of Agriculture & Food Production, Bhubaneswar, Orissa (2008-09)			
	Groundwater availability and use* (Data source: District Agriculture Office, Boudh	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	3	100	-
	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 (as per latest figures) (Specify year eg., 2015-16)

1.7	Sl.No.	Major field crops cultivated	Area ('000 ha)									
			Kharif			Rabi			Summer			Grand total
			Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	
	1	Paddy	39.21	28.07	67.28	1.2	-	1.2	-	-	-	68.48
	2	Maize	-	0.89	0.89	1.0	-	1.0	-	-	-	1.89
	3	Moong	-	3.63	3.63	9.27	-	9.27	-	-	-	12.9
	4	Biri	-	3.77	3.77	1.93	-	1.93	-	-	-	5.7
	5	Sesamum	-	2.93	2.93	1.34	-	1.34	-	-	-	4.27

Source-CDAP,2015-16

Sl. No.	Block	Crop	Area					Production					Yield t/ha		
			Irrigated	%	Rainfed	%	Total	Irrigated	%	Rainfed	%	Total	Irriga-ted	Rain-fed	Average
1	Boudh	Mango	--	--	1370 Ha	100%	1370 Ha			3205.8 MT		3205.8 MT		2.34 MT	2.34 MT
2	Kantamal	Mango			1400 Ha	100%	1400 Ha			3276 MT		3276 MT		2.34 MT	2.34 MT
3	Harabhanga	Mango			1341 Ha	100%	1341 Ha			3137.94 MT		3137.94 MT		2.34 NT	2.34 MT
1	Boudh	Bananana	120 Ha	100%			120 Ha	28 MT				28 MT	0.23 MT		0.23 MT
2	Kantamal	Bananana	75 Ha	100%			75 Ha	17.5 MT				17.5 MT	0.23 MT		0.23 MT
3	Harabhanga	Bananana	100 Ha	100%			100 Ha	23.3MT				23.3MT	0.23 MT		0.23 MT
1	Boudh	Onion	446 Ha	100%			446 Ha	6338 MT				6338 MT	14.21 MT		14.21 MT

2	Kantamal	Onion	150Ha	100%			150Ha	2131 MT				2131 MT	14.20 MT		14.20 MT
3	Harabhanga	Onion	350 Ha	100%			350 Ha	4969 MT				4969 MT	14.19 MT		14.19 MT

1.8	**Livestock**	**Male ('000)**	**Female ('000)**	**Total ('000)**		
	Non descriptive Cattle (local low yielding)	119.136	104.997	224.133		
	Improved cattle	5.161	5.865	11.026		
	Crossbred cattle					
	Non descriptive Buffaloes (local low yielding)	18.579	20.245	38.824		
	Descript Buffaloes	0.276	0.285	0.561		
	Goat	37.789	73.928	111.717		
	Sheep	27.439	42.262	69.701		
	Others (Pig,)	0.469	0.701	1.170		
	Commercial dairy farms (Number)	-	-	-		
1.9	**Poultry**	**No. of farms**	**Total No. of birds ('000)**			
	Commercial	-	9.328			
	Backyard	-	166.577			
	Data source : District Veterinary Office, Boudh					
1.10	**Fisheries**					
	A. Capture					
	i) Marine	**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: Office of ADF, Boudh)	**No. Farmer owned ponds**	**No. of Reservoirs**	**No. of village tanks**		
		513	26	1718		
	B. Culture					

		Water Spread Area (ha)	Yield (t/ha)	Production ('000 tons)
	i) **Brackish water**	-	-	-
	ii) **Fresh water** (Data Source: Fisheries Department)	1020	2	2.04
	Others			

Land Utilisation Statistics (Year 2017-18, 2018-19, 2019-20) (Areainhectares)

Block	Year	Geographical area	Forest Area	Land Under Non-agril.	Cultivable waste	Permanent pastures	Land under miscellaneous tree crops and groves	Current Fallows	Other Fallows	Net sown area	Gross cropped area	Cropping intensity (%)
Boudh	2017	106496	6296	262	40	213	246	2	188	3236	46468	143
	2018	106496	6296	262	40	213	246	2	188	3236	46696	144
	2019	106496	6296	262	37	213	246	2	188	3239		
Harabhanga	2017	125076	50816	2385	3357	10692	4450	34	14921	25173	39811	158%
	2018	125076	50816	2385	3357	10692	4450	34	14921	25173	39662	157
	2019	125076	50816	2385	3323	10692	4450	34	14921	25207		
Kantamal	2017	125720	69213	3428	3649	3427	2500	1300	15626	27540	38160	138%
	2018	125720	69213	3428	3649	3427	2500	1300	15626	27540	38198	139
	2019	125720	69213	3428	3612	3427	2500	1300	15626	27577		
Total (District)		357292	182995	8438	7307	16255	9415	99	32431	85180	124439	146%

1.11 Production and Productivity of major crops (2019-20)

1.11	Name of crop	Kharif		Rabi		Summer		Total		Crop residue as fodder (ó000 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	262.05	3895	4.03	3373	-	-	266.08	3886	-
Crop 2	Green gram	1.74	480	4.75	512	-	-	6.49	503	-
Crop 3	Black gram	1.75	465	0.92	479	-	-	2.67	468	-
Crop 4	Maize	1.28	1438	0.18	1606	-	-	1.46	1460	-
Crop 5	Sesamum	1.2	408	0.55	414	-	-	1.75	410	-
Major Horticultural crops (Crops to be identified based on total acreage)										
Crop 1	**Onion**	-	-	12.0	13910	-	-	12.0	13910	-
Crop 2	**Potato**	-	-	3.02	14610	-	-	3.02	14610	-
Crop 3	**Chilli**	0.84	870	-	-	-	-	0.84	870	-
Crop 4	**Sweet potato**	3.06	8500	0.12	4000	-	-	3.18	8154	-
Crop 5	**Vegetables**	86.66	11433	108.01	157.22	-	-	194.67	13476	-

(Source:Orissa Agril.Statistics,2012-13

1.12	**Sowing window for 5 major field crops** (start and end of normal sowing period)	1.Paddy	2.Arhar	3.Grengram	4.Black gram	5.Sesamum
	Kharif- Rainfed	3rd week of June to 4th week of July	3rd week of June to 2nd week of Aug	3rd week of June to 2nd week of Aug	3rd week of June to 2nd week of Aug	3rd week of July to 4th week of Aug

	Kharif-Irrigated	1st week of July to 1st week of August	-	-	-	-
	Rabi- Rainfed	-	-	2nd week of Nov 1st week of Dec	2nd week of Nov to 1st week of Dec	-
	Rabi-Irrigated	1st week Jan to 2nd week of Feb.	-	4th week of Dec to 2nd week of Jan.	4th week of Dec to 2nd week of Jan.	3rd week of Jan to 2nd week of Feb

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 (Aphids, Thrips&YMV infection in Pulses, Stem borer,Swarming caterpillar & incidence of Blast, Bacterial. Leaf blight in paddy, Wilt in Tomato .YMV in Cucurbits ,fruit & shoot borer &fruit rot in brinjal.	√		
	Others (specify)			

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

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 (July 1st week) **(REFER TO THE MATRIX TABLE)**	Plain land irrigated-**Upland**	Sole crops • Paddy • Sesamum • Arhar • Green gram • Black gram • Kharif Veg. - Brinjal -Okra	• Varietal substitution with draught tolerant rice variety like Khandagiri,JHU,Hira,CR-310,311 • Sesamum variety like Uma,Usha,Prachi, Nirmala • Arhar variety like ICPL-85063, UPAS-120, PRG-176 • Greengram variety like OUM-11-5,PDM-11,PDM-54 • Blackgram variety like Prasad, Ujala • Groundnut variety like Smruti,Devi, TAG-24 • Brinjal variety like UtkalAnushree,UtkalTarini, Blue star • Cow Pea variety like UtkalManika • Okra variety like ArkaAnamika, UtkalGourav • Intercropping of Arhar + G.nut (2:6) Maize + Cowpea (2:2) Arhar + G gram/ B.Gram (2:3)	• In-situ Rain water conservationthrough summer ploughing& inter cultural operation. • Bunding of unbunded upland • Closure row & plant spacing • Application of full dose of P & K and 20% of N fertilizer along with FYM for moisture conservation • Sowing of seeds across the slope	• Supply of seeds through OSSC,ATMA, NFSM • Supply of agricultural implements through OAIC, RKVY. • Rearing of Goatery& poultry for livelihood (Through veterinary department) • Mushroom cultivation &Vermicomposting through KVK, ATMA and Horticulture Department • Composite Pisciculture and Integrated farming system through NREGS.

	2) Plain land irrigated ï **Medium land**	Paddy-Greengram/Blackgram	• Choosing short duration to medium duration paddy variety like Lalata,Manaswini, Konark,Jogesh, Surendra, MTU-1001,Naveen • G.Gram variety: PDM-11,PDM-54, OUM-11-5,TARM-1, Sujata • B.Gram variety: Ujala, Prasad,PU-19, PU-30, Sarala	• Application of full dose of P & K and 20% of N fertilizer • In-situ Rain water conservation • Weeding and interculture • Lifesaving irrigation	• Supply of seeds through OSSC, ATMA, NFSM • Supply of agricultural implements through OAIC, RKVY.
	Plain landIrrigated-**Low land**	Paddy Cropping system 1 Paddy-Greengram/ Black gram Cropping System 2 Paddy-Lathyrus	• Swarna, Pratikshya. Ranidhan • Medium ï late duration paddy variety:Pratikshya, Ranidhan, Pooja, Swarna • Greengram variety: PDM-11,PDM-54, OUM-11-5, TARM-1, Sujata • Blackgramvariety:Ujala, Prasad, PU-19, PU-30, Sarala • Medium ï late duration paddy variety:Pratikshya, Ranidhan, Pooja, Swarna	• Application of full dose of P & K and 20% of N fertilizer • In-situ Rain water conservation	• Supply of seeds through OSSC,ATMA, NFSM • Supply of agricultural implements through OAIC, RKVY. • Feed and disease management by Fishery department
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 4	Plain land irrigated-	Sole crops	• Varietal substitution with draught tolerant rice variety	• Insitu- water conservation	• Supply of seeds through OSSC,

weeks (July 3rd week)	upland	• Paddy • Sesamum • Arhar • Green gram • Black gram • Kharif Veg. - Brinjal -Okra	like Jogesh, Sidhanta, Khandagiri, Hira,Pathara, • Sesamum variety like Uma,Usha, Prachi, Nirmala • Arhar variety like ICPL-85063,UPAS-120 • Greengram variety like OUM-11-5, PDM-11 • Blackgram variety like Prasad, Ujala • Groundnut varieties like Smruti,Devi, TAG-24 • Brinjal variety like UtkalAnushree,UtkalTarini, Blue star • Cow pea variety like UtkalManikaa • Okra variety like Arkaanamika, Utkalgourav • Intercropping of Arhar + G.nut (2:6) Maize + Cowpea (2:2) Arhar + G gram/ B.Gram (2:3)	measures through intercultural operations • Bundingofunbunded upland • Growing of short duration and low water requiring crops like Greengram, Blackgram, Sesamum, Cowpea and vegetables	ATMA, NFSM • Supply of agricultural implements through OAIC, RKVY.
	2) Plain land irrigated and medium land	• Paddy Paddy-Greengram/Blackgram	• Choosing medium duration paddy variety like Lalata,Manoswani, Konark,Jogesh, Surendra, MTU-1001,Naveen • Greengram variety:.PDM-11,PDM-54, OUM-11-5,TARM-1, Sujata • B.Gram var. Ujala, Prasad,PU-19, PU-30, Sarala	• Application of organic manure for moisture conservation • Use of tractor and power tiller for quick puddling • Growing of community nursery • Transplanting by transplanter • Cultivation of paddy through SRI method	• Seed supply through OSSC • Supply of tractor, power tiller and Transplanter through RKVY
	(3) Plain land irrigated-**Low land**	Paddy	• Swarna, Pratikshya. Ranidhan,Pooja, ,	• Selection of medium late duration paddy variety like Pratikshya,	• Seed supply through OSSC • Supply of tractor, power

		Cropping system 1 Paddy-Greengram/ Black gram Cropping System 2 Paddy-Lathyrus Composite Pisciculturein the farm fond	• Medium ï late duration paddy variety ,Pratikshya, Ranidhan, Pooja, Swarna • Greengram variety : PDM-11,PDM-54, OUM-11-5,TARM-1, Sujata • Blackgramvariety :Ujala, Prasad,PU-19, PU-30, sarala • Medium ï late duration paddy variety :Pratikshya, Ranidhan, Pooja, Swarna • Indian major carps-Rohu, Mrigal, Catla, Silver carp and Grass carp	Ranidhan, Pooja, Swarna • Application of organic manure for moisture conservation • Use of tractor and power tiller for quick puddling • Grow community nursery • Transplanting by transplanter • Cultivation of paddy through SRI method	tiller and transplanter through RKVY

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 6 weeks (August 1st week)	1) Plain land irrigated-upland	Sole crops • Paddy • Sesamum • Arhar • Green gram • Black gram • Kharif Veg.	• Growing of non-paddy crops like sesamum, blackgram, greengram, cowpea , okra, • Sesamumvariety: Uma, Usha, Prachi, Bimala • Greengram: PDM-11,PDM-54, OUM-11-5,TARM-1, Sujata • Blackgramvariety:Ujala, Prasad,PU-19, PU-30, Sarala	• Apply full P_2O_5 , K & 20 % of N_2 as basal along with FYM • Early hoeing and weeding • Application of weedicide pendimethaline @ 2.5 l/ha • Spraying of 2 %	• Supply of herbicide and insecticide through NFSM

		- Brinjal -Okra	• Cowpea: UtkalManika • Okra: UtkalGourav, ArkaAnamika	KCl and 1% Boron in blackgram • Foliar application of 2% urea at pre-flowering stage I Greengram • Spraying of 1% urea in vegetable crops • Spraying of Rogor @1l/ha to control aphids and Mealybugs	
	2) Plain land irrigated and midland	• Paddy Paddy-Greengram/Blackgram	• Cultivation of short-medium duration paddy variety Khandagiri, Lalata, Manaswini • Vegetables like Okra: UtkalGourav, ArkaAnamika • Brinjal variety like UtkalAnushree,UtkalTarini, Blue Star	• Close drainage hole and checking of seepage loss in direct sown paddy • Puddling through tractor and power tiller for quick transplanting	
	3) Plain land irrigated and lowland	Paddy Cropping system 1 Paddy-Greengram/ Black gram Cropping System 2 Paddy-Lathyrus	• Growing medium-late durationpaddy variety like Lalata, Pratikshya, Ranidhan, Pooja, Swarna	• Use of tractor and Power tiller for quick land preparation • Need based pesticide application against stem borer and blast • Closer planting of 4-5 seedlings per hill • Apply full P,K and 50% N at the time of transplanting • Close the drainage hole and check the seepage loss	• Supply of pesticide through NFSM

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 (Aug 3rd week)	1) Plain land irrigated-upland	Sole crops • Paddy • Sesamum • Arhar • Green gram • Black gram • Kharif Veg. - Brinjal -Okra	• Growing of non-paddy crops like Sesamum, Blackgram, greengram, cowpea, okra, • Sesamum: Uma, Usha, Prachi, Bimala • Greengram: PDM-11, PDM-54, OUM-11-5, TARM-1, Sujata • B.Gram variety : Ujala, Prasad,PU-19, PU-30, Sarala • Cowpea: UtkalManik • Okra: UtkalGourav, ArkaAnamika,	• Apply full P_2O_5, K_2O& 20 % of N_2 as basal along with FYM • Early hoeing and weeding • Application of Weedicide Pendimethalin @ 2.5 l/ha • Apply life saving irrigation when needed • Spraying of 2 % KCl and 1% Boron in Blackgram • Foliar application of 2% urea at pre-flowering stage ofGreengram • Spraying of 1% urea in vegetable crops • Spraying of Rogor @1 lit /ha to control aphids and Mealybugs	• Supply of herbicide and insecticide through NFSM
	2) Plain land irrigated and midland	• Paddy Paddy-Greengram/Blackgram	• Growing of short duration paddy variety like Khandagiri, Yogesh, Vandana,	• Close drainage hole and checking of seepage loss in direct sown paddy • Puddling through tractor and power tiller for quick transplanting	
	3) Plain land irrigated and lowland	Paddy	• Selection of medium duration paddy variety like Lalata, Manaswini, Konark, MTU-1010	• Use of tractor and Power tiller for quick land preparation	

		Cropping system 1 Paddy-Greengram/ Black gram Cropping System 2 Paddy-Lathyrus Composite Pisciculture in the farm fond		• Need based pesticide application against stem borer and blast • Closer planting of 4-5 seedlings per hill • Apply full P,K and 50% N at the time of transplanting • Close the drainage hole and check the seepage loss	

Condition			**Suggested Contingency measures**		
Early season drought **(Normal onset)**	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Soil nutrient &moisture conservation measues[d]**	**Remarks on Implementation[e]**
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	1) Plain land irrigated- upland	Sole crops • Paddy • Sesamum • Arhar • Green gram • Black gram • Kharif Veg. - Brinjal -Okra	• Use short duration vars. Of sole crops • Re-sowing of crop if there > 50 % mortality of plant • Gap filling is done if there is less than 50% of plant mortality • Cultivation of vegetable like cowpea, guar, okra, brinjal • Intercropping with arrowroot, yam in fruit orchard • Cultivation of Ragi, Biri, Moong, Sesamum, Castor	• Hoeing, weeding,earthing up at 20 DAS for moisture conservation • Conserve rain water • Application of lime and FYM in acid soil as per recommended dose.	
	2. Plain land irrigated and midland	• Paddy	• Re-sowing of rice by punji method if plant population is less than 50% and cover it with FYM • Higher seed rate 100- 120	• Cover sown seed with a mixture of FYM & SSP 10:1 ratio • Closing holes of	

		Paddy-Greengram/Blackgram	kg / ha • Sprouted seeds may be directly seeded or fresh seedling transplanted • Weeding &khelua operation is carried out if there < 50 % mortality of plant	bunds for checking water loss	
	3. Plain land irrigated and lowland	Paddy Cropping system 1 Paddy-Greengram/ Black gram Cropping System 2 Paddy-Lathyrus	• Sheath rot and sheath blight in rice is more common and control it by application of validamycin (0.3%) • Raising of community nursery • Gap filling using same age of seedling	• Apply greenleaf manure & FYM for water conservation	

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 measues[d]**	**Remarks on Implementation**
At vegetative stage	1. Plain land irrigated-upland	Sole crops • Paddy • Sesamum • Arhar	• Postemergence application of Quizalfopethyle @ 1 lit / ha to control weeds in ground nut • Complete hoeing ,weeding in non-paddy crop	• Mulching with dry grass • Thinning of excess plant to optimize plant population to reduce transpiration • Ridge and furrow	

		• Green gram • Black gram • Kharif Veg. - Brinjal -Okra	• Leaf miner in groundnut can be controlled by spray of Triazophus @ 2ml/ltr. • Spray of 1 % urea in vegetables • Spray of Planfix @ 10 ppm to control fruit drop in brinjal • Plant protection for mealy bug &mites in brinjal by application of Dicofol 2ml/lit. • Foliar application of 2% urea at pre-flowering stage in Greengram to mitigate drought • Termite control can be done by basal application of Chloropyriphos dust @ 25kg/ha. • YMV can be controlled by spray of Rogor @ 2ml/ltr. • Leaf blight in cucurbits can be controlled by application of Dithane M 45@ 3g/ltr.	method of irrigation • Spray of Kaolinetoreduce transpiration loss of water • Inter cultivation • Conservation furrow • Compartmental bunding. • Follow strip cropping in rolling topography for moisture conservation.	
	2) Plain land irrigated medium land	• Paddy Paddy-Greengram/Blackgram	• Weeding &gapfilling using seedling of same age • Grasshoppers is controlled by application of chlorpyriphos dust @ 20 kg/ha. • Mealybugs can be controlled by spray of metasystox 2ml/l. • Blast is controlled by application of Tricyclozole @ 300g/ha.	• Close drainage hole to preventseepage loss • Measures to reduce runoff forgroundwaterrecharge • Provide lifesaving irrigation	

			• Avoid topdressing of N fertilizer till receipt of rain fall		
	3) Plain land irrigated ï lowland	Paddy Cropping system 1 Paddy-Greengram/ Black gram Cropping System 2 Paddy-Lathyrus Composite Pisciculture in the farm fond	• No Beushaning if crop is more than 45 days • Transplanting of rice seedling of 45 to 60 days can be done without affecting yield • Use of puddler for quick puddling to save time	• Withhold N supply till rain starts • Foliarapplication of 2% urea may be done • Strengthen field bund and close drainage hole • Provide lifesaving 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	1) Plain land irrigated- upland	Sole crops • Paddy • Sesamum • Arhar • Green gram • Black gram • Kharif Veg. - Brinjal -Okra	• Foliar spray of 2 % urea at pre-flowering & post-flowering stageingreengram • Spry of Planofix @ 20 ppm to reduce flower & fruit drop in Blackgram • Harvesting of Blackgram and greengram at physiological maturity • Downy mildew in cucurbits can be controlled by	• Spray of 2 %KCl&0.1 ppm Boron in Blackgram to overcome drought • Provide irrigation at critical stages i.e at flowering and grain filling • Soil moisture conservation measures may be followed • Harvesting at	

			application of Ridomil 2g/lit. • Bacterial wilt in brinjal can be controlled by soil drenching with Plantomycin 1g/lit.	physiological maturity stage	
	2)Plain land irrigated-medium land	• Paddy Paddy-Greengram/Blackgram	• Provision of keeping standing water in the rice field during milking stage	• Apply Potash fertilizer basing on soil moisture	
	4) Plain land irrigated- low land	Paddy Cropping System 1 Paddy-Greengram/ Black gram Cropping System 2 Paddy-Lathyrus Composite Pisciculturein the farm fond	• Weeding & plant protection measure for Blast can be undertaken • Provision of keeping standing water in the rice field during milking stage • Spraying of Malathion 1lit/ha to control Gundhibug • Dusting of Chloropyriphos dust @ 25 kg/ha to control cut worm	• Apply Potashfertilizer basing on soil moisture • Strengthening of field bund to avoid loss of water	

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]**
	1) Plain land irrigated- upland	Sole crops • Paddy	• Harvesting at physiological maturity stage • Sprinkling of water for uprooting groundnut		

		• Sesamum • Arhar • Green gram • Black gram • Kharif Veg. - Brinjal -Okra	• Cowpea, maize may be harvested for fodder purpose • Provide irrigation at critical stages of crops		
	2. Plain land irrigated- medium land	• Paddy Paddy-Greengram/Blackgram	• Provision of keeping standing water at panicle initiation & grain filling stage • Horse gram, castor, niger, black gram can be grown in residual moisture	• Planning for pre-rabi crop • Check loss of water to recharge ground water • Greengram (PDM-54), Blackgram (Prasad)	Seed supply through OSSC and Agriculture deptt.
	3. Plain land irrigated-lowland	Paddy Cropping System 1 Paddy-Greengram/ Black gram Cropping System 2 Paddy-Lathyrus Composite Pisciculture in the farm fond	• Follow relay cropping or paira cropping • Provide lifesavingirrigation, fromharvested rain water at reproductive stage • Harvesting at physiological maturity stage of crop	• Check loss of water • Conserve moisture • Planning for Pre-Rabi crop with residual moisture • Utilization of residual moisture for early sowing of pre-Rabi crops like Greengram (PDM-54), Blackgram (Prasad)	

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 measures[i]**	**Remarks on Implementation[j]**
Delayed release of water in canals due to low rainfall	Plain land irrigated1) Lift irrigated upland	Vegetables	• Cultivation of deep rooted vegetables like Brinjal • Choosing indeterminate variety of tomato • Cultivation of short	• Irrigation in alternate furrows • Mulching with dry leaves	• Supply of vegetable seeds through horticulture department

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]**
			duration vegetables e.g.Cowpea,Okra		
	2) Canal irrigated Medium land	Rice-Greengram	• Selection of medium duration paddy variety like Lalata, Manaswini, Konark, MTU-1010	• Lifesaving irrigation when needed	
		Rice-Water melon	• Selection of medium duration paddy variety like Lalata, Manaswini, Konark, MTU-1010 • Transplanting of watermelon seedlings raised in Polybag	• Transplanting watermelon in ridge and furrow method	
		Rice -Sunflower	• Selection of medium duration paddy variety like Lalata, Manaswini, Konark, MTU-1010 • Ridge and furrow method of planting for sunflower		
	3) Canal irrigated low land	Rice ï Rice	• Selection of medium-late duration paddy variety like Swarna, Pooja, Pratikshya, Ranidhan • Rabi rice area should be diverted to non-paddy crops		

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]**
Limited release of water in canals due to low rainfall	Plain land irrigated1) Lift irrigated upland	Vegetables	• Cultivation of short duration vegetables e.g.Cowpea,Okra	• Irrigation in alternate rows • Mulching with dry leaves	

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]**
	2) Canal irrigated Mid land	Rice-Greengram	• Selection of medium duration paddy variety like Lalata, Manaswini, Konark, MTU-1010	• Irrigation at flowering & pod setting stage	
		Rice-Water melon	• Selection of medium duration paddy variety like Lalata, Manaswini, Konark, MTU-1010 • Transplanting of watermelon seedlings raised in polybag	• Irrigation at critical stages • Moisture conservation measures	
		Rice -Sunflower	• Selection of medium duration paddy variety like Lalata, Manaswini, Konark, MTU-1010 • Ridge and furrow method of planting	• Irrigation at critical stages • Moisture conservation measures	
	3.Canal irrigated low land	Rice-Rice	• Selection of medium-late duration paddy variety like Swarna, Pooja, Pratikshya, Ranidhan • Rabi rice area should be diverted to non-paddy crops	• Irrigation at critical stages • Check the loss of water from the rice field	

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	Plain land irrigated 1) Lift irrigated upland	Vegetables	• Cultivation of short duration vegetables e.g.Cowpea,Okra	• Irrigation in alternate rows • Mulching with dry leaves	
	2) Canal irrigated Mid land	Rice-Greengram	• Cultivation of short duration pulses and vegetables	• Irrigation at critical stages • Moisture conservation	

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]**
				measures may be followed	
		Rice-Water melon	• Cultivation of short duration pulses and vegetables		
		Rice -Sunflower	• Cultivation of short duration pulses and vegetables	• Irrigation at critical stages • Moisture conservation measures	
	3.Canal irrigated low land	Rice -Rice	• Cultivation of short and medium duration paddy • Rabi rice area should be diverted to non-paddy crops	• Irrigation at critical stages • Moisture conservation measures	

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]**
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	1) Lift irrigated upland	Vegetables	• Cultivation of short duration vegetables e.g.Cowpea,Okra	• Irrigation at critical stages Moisture conservation measures may be followed	
	2) Canal irrigated Medium land	Rice-Greengram	• Cultivation of short duration pulses and vegetables	• Irrigation at critical stages • Moisture conservation measures may be followed	
		Rice-Water melon	• Cultivation of short duration pulses and vegetables	• Irrigation at critical stages • Moisture conservation measures may be	

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]**
				followed	
		Rice -Sunflower	• Cultivation of short duration pulses and vegetables	• Irrigation at critical stages • Moisture conservation measures may be followed	
	3) Canal irrigated low land	Rice -Rice	• Cultivation of short and medium duration paddy • Rabi rice area should be diverted to non-paddy crops	• Irrigation at critical stages • Moisture conservation measures may be followed	

2.2 Unusualrains (untimely, unseasonal etc)(for both rain-fed and irrigated situations)

Condition	Suggested contingency measure			
Continuous high rainfall in a short span leading to water logging	**Vegetative stage[k]**	**Floweringstage[l]**	**Crop maturitystage[m]**	**Post harvest[n]**
Rice	• Drainage of excess water	• Drainage of excess amount of water	• Harvesting at 80 to 85 % grain maturity • Drain out of excess water	• Prevent wetting of grains to avoid germination • Store after drying to safer moisture content • Shifting of produce to half cover threshing floor and other safer places for post harvest operation
Greengram	• Provide drainage	• Provide drainage • Spraying of chlorpyriphos @ 1l/ha to control Podborers	• Drain out excess water, harvest at physiological maturity	• Shifting of produce to half cover threshing floor and other safer places for post harvest operation • cover the crop to protect from moisture absorption
Black gram	• Provide drainage	• Provide drainage • Spraying of chlorpyriphos @ 1l/ha to control Podborers	• Drain out excess water, harvest at physiological maturity	• Shifting of produce to half cover threshing floor and other safer places for post harvest operation • cover the crop to protect from moisture absorption
Arhar	• Provide drainage	• Provide drainage • Sprayingofchlorpyriphos@ 1l/ha to control Podborers	• Drain out excess water, harvest at physiological maturity	• Shifting of produce to half cover threshing floor and other safer places for post-harvest operation • cover the crop to protect from moisture absorption
Sesamum	• Provide drainage	• Provide drainage • Spraying of chlorpyriphos@ 1lt./ha to control capsule borers	• Drain out excess water, harvest at physiological maturity	• Shifting of produce to half cover threshing floor and other safer places for post harvest operation • cover the crop to protect from moisture absorption
Horticulture				
Brinjal,	• Drainage of excess water	• Drainage of excess water	• Drainage of excess water	• Cleaning, washing& wiping of produce to avoid losses
Tomato,	• Drainage of excess water	• Drainage of excess water	• Drainage of excess water	• Cleaning, washing& wiping of produce to avoid losses

Okra,	• Drainage of excess water	• Drainage of excess water	Drainage of excess water	
Chilli	• Provide drainage	• Soil drenching with Bavistin&Plantomycin • Spray of Planofix to reduce flower drop (1ml in 4.5 l)	• Harvesting in rain free dry weather to reduce post-harvest loss Harvesting at proper maturity	• Cleaning ,washing& wiping of produce to avoid losses
Heavy rainfall with high-speed winds in a short span[2]				
Crop1				
Crop2				
Crop3				
Crop4				
Crop5				
Horticulture				
Crop1 (specify)				
Crop2				
Crop3				
Crop4				
Crop5				
Outbreak of pests and diseases due to unseasonal rains				
Rice	• Spray of Tricyclazole to control Blast • Spraying of validamycin @ 1.5 l/ha to control sheath blight • Spraying of Chloropyriphos @ 1.0 l/ha to control swarming caterpillar	• Spray of Tricyclazole to control neck Blast • Spraying of Malathion @ 1.0 l /ha to control Gundhibugs	• Spraying of @Chloropyriphos 1.0 l /ha during evening hour to control cutworm	• Sun drying of paddy seed & storing in air tight polybags

Greengram	• Spraying of rogor @ 1 lit/ha to control aphids • Dusting of Chloropyriphosdust @ 25 kg/ ha to control hairy caterpillar	• Spraying of Imidachloropid@ 5ml/ 15 lit water to control borers		• Sun drying of seed & storing in air tight poly bags with dried neem leaves
Black gram	• Spraying of rogor @ 1 lit./ha to control aphids • Dusting of Chloropyriphosdust @ 25 kg/ ha to control hairy caterpillar	• Spraying of chlorpyriphos@ 1.0 l/ha to control borers		• Sun drying of seed & storing in air tight poly bags with dried neem leaves
Arhar	• Spraying of Triazophos @ 1.0 l/ha to control leaf eater	• Sprayingofchlorpyriphos@ 1.0 l/ha to control borers	• Spraying of Malathion @ 1.0 l /ha to control Bruchid	• Sun drying of seed & storing in air tight poly bags with dried neem leaves
Sesamum	• Spraying of Chloropyriphos@ 1.0 l/ha to control leaf roller andjassids	• Spraying of Chloropyriphos@ 1 lit./ha to control leaf roller and capsule borer		• Sun drying of seed & storing in air tight poly bags
Horticulture				
Brinjal	• Soil drenching with Bavistin&Plantomycin to control wilt	• Apply Blitox-50 @ 1.5 kg./ha for control of fruit rot in Brinjal	• Spraying of Triazophos@ 1lt. /ha to control fruit & shoot borer	• Cleaning ,washing& wiping of produce to avoid losses
Tomato	• Soil drenching with Bavistin&Plantomycin to control wilt	• Apply Blitox-50 @ 1.5 kg / ha for control of fruit rot	• Spraying of Endosulfan@ 1ltr. /ha to control fruit borer	• Cleaning ,washing& wiping of produce to avoid losses
Okra	• Spraying of Rogor@ 1.0 ltr/ha to control YMV infection	• Spraying of carbaryl @ 2.5 kg./ha to control fruit borer		
Chilly	• Spraying of rogor	• Spraying of rogor		• Cleaning ,washing& wiping of produce to

	@ 1.0 l/ha to control aphids and thrips	@ 1.0 ltr/ha to control aphids and thrips • Apply Blitox-50 @ 1.5 kg / ha for control of dieback		avoid losses

2.3 Contingent strategies for Livestock, Poultry & Fisheries

2.3.1 Livestock

	Suggested contingency measures		
	Before the event[s]	**During the event**	**After the event**
Drought			
Feed and fodder availability	1. Awareness of farmer to stock feed and fodder 2. Encourage perennial fodder production 3. Village gaucher lands should be developed 4. On boundaries of agricultural field trees or shrubs like Sesbania, Subabul planted 5. It is essential to establish fodder bank near forest areas. 6. Excess fodder in flush season can be preserved as hay/silage. 7. Explore the possibilities of alternative feed 8. Organizing training Programmeof persons connected with Animal Husbandry 9. Livestock insurance	1. Dry stray and feed to be given 2. Utilizing fodder from perennial trees 3. Transporting excess fodder from adjoining districts. 4. Utilizing the existing crops which fail to grow adequately due to failure of monsoon for feeding of animals. 5. Use of unconventional livestock feed such as sugarcane top, bagasse & banana plant 6. Improving poor quality roughages by ammonia treatment, urea treatment & feeding them. 7. Supplementation of mineral mixtures and vitamin	1. Hay and silage to be given 2. Supplementary feeding of remaining livestock and the replacement stock.
Drinking water	1. Stocking of water in vat 2. Preserving water in community tanks	Supply of clean drinking water	Supply of clean drinking water
Health and disease management	Stocking of DNS,salt and molasses	1. Supply of RN-tose,DNS,Vit-B 2. Conducting animal health camps	1. Rehydrate animals,common salt and molasses may be given

		and treating the affected animals.	2. Proper disposal of dead animals
Floods			
Feed and fodder availability	1. Sensitization of farmer to stock and protect feed and fodder 2. Training to the farmers about care of their animals preparation and distribution of leaflets on livestock disaster.	1. Supply of crushed maize,ricebran,wheat bran etc. 2. Procured feeds and fodder should be fed to all animals 3. Straws and stoves that got soaked during floods can be fed to animals as long as rotting or fungal growth has not set.	1. Supply of crushed maize,ricebran,wheat bran etc. 2. Provision of supplementary feeding with vitamin and minerals
Drinking water	Stocking of clean drinking water	1. Arrangement for clean drinking water 2. Drinking water be made available to the animals in clean container	Chlorination of water and treatment with halogen tablets
Health and disease and shelter management	1. Vaccination 2. Prior construction of animal shelters in disaster prone areas. 3. Temporary relief camps can be set up to provide shelter 4. Keep the emergency service kit like Cotton wool, Bandages, surgical gauze, Disinfectants like Potassium permanganate, Dettol, Antibiotic 5. Temporary camps may be started for 25-50 animals in each group. 6. If no trees or sheds are available shelter the animals under a tent / tarpaulins	1. Treatment of sick animal 2. There should be one veterinarian with 3 to 4 village to work 3. The team should be well equipped with contingent items like bandages 4. Keep the animals loose in paddock (sheltered or unsheltered) 5. Releasing animals from the unnatural and harmful position or situation stopping bleeding, binding broken limbs	1. De-worming 2. Prompt and appropriate attention to injured by providing necessary medicine 3. Vaccination campaign against common endemic disease 4. Improving shed hygiene especially in the farmers household through cleaning and disinfection
Cyclone			
Feed and fodder availability			
Drinking water			
Health and disease management			
Heat wave			
Shelter/environment management	1. Awareness creation 2. Green cover of trees	Shelter animal at cold windy and shaddy place	-

	3. Proper sheltering / housing with white painting outside 4. Washing / wallowing / sprinkling or showering 5. Provision of cool drinking water 6. Cooling devices like fan, wet curtains and air cooler		
Health and disease management	Stocking of DNS,salt and molasses	Care of affected animal and should be over feed	1. Rehydrate animals 2. Common salt and molasses may be given
Feed management	1. Feeding green fodder / silage/hay 2. Provision for night feeding 3. Graze early in the morning and late in the afternoon		

[s] based on forewarning wherever available, (Source: CDVO, Boudh)

2.3.2 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	Ensure procurement of feed ingredients	Feed supplementation will be made	Attempt will be made for available of feed ingredient or compound feed to the farmers	-
Drinking water	Check water source for ensuring sufficient water	Attempt will be made to provided sanitized drinking water	Availability of water will be ensured by digging of bore well	
Health and disease management	Procurement of vaccines and medicines and antistress drugs, antibiotics	Continue feeding of antistress drugs		
Floods				
Shortage of feed ingredients	Awareness of farmers to stock poultry feed	Supply of poultry feed	Supply of poultry feed	Govt.Reliefprogramme
Drinking water	Chlorination of water	Chlorination of water	Chlorination of water	-

Health and disease management	Vaccination	Treatment of sick Bird	De-worming	Govt.ReliefProgramme
Cyclone				
Heat wave and cold wave				
Shelter/environment management	1. Covering windows with wet gunny bag and thatching roof with straw 2. Putting curtains on open sides of the shed. Procurement of electrical accessories Providing shed to poultry houses, Providing proper ventilation	1. Covering windows with wet gunny bag and thatching roof with straw 2. Attempt will be made for cooling of poultry shed 3. Thickness of litter should be reduced 4. Ventilation to the house should be increased by ceiling fans exhaust fan	1. Covering windows with wet gunny bag and thatching roof with straw 2. Provision should be made to ensure proper ventilation	-
Health and disease management	1. Vaccination 2. Procurement of Antistress drugs	1. Treatment of sick Bird 2. Supplementation of Antistress drug	1. Deworming 2. Vaccination of birds against RD	Govt.ReliefProgramme
Feed resources	1. Procurement of high protein and low energy diet 2. Procurement of medicine, Antistress drugs and vitamin C and E.	Feeding during cooler hour of the day. Supplementation of vitamin E and C, Antistress drugs with water	Feeding will be continued with high protein and low energy till heat waves ends	
Water resources	Provision should be made for continuous available of water	Sufficient cool drinking water with sodium bicarbonate or electrolytes.	Availability of cold water will be made for some days	

(Source: CDVO, Boudh)

2.3.3 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	1. Reduction in stocking density,regulation of out flow of water 2. Restricted release of water from reservoir. 3. Supplementary water harvesting structures like ponds and tanks has to be developed. 4. Renovation and maintenance of existing water harvest structures.	Harvesting table sized fish	Restocking with yearlings
(ii)Changes in water quality	1. Stocking of herbivorous fish and steps to minimize pollution 2. Prepare to release water into the habitat.	1. Harvesting table sized fish 2. Mixing of water from the water harvest structure like ponds and tanks into the fish habitat.	1. Restocking with yearlings 2. Monitoring the water quality and health of aquatic organisms.
(iii)Any other	-	-	-
B.Aquaculture			
(i)Shallow water in ponds due to insufficient rains/inflow	1. Advised for production of yearling 2. Building deep ditches in culture ponds for shelter of the fish to overcome high temperature	1. Yearlings can be transferred to culture tank 2. Recharge the ponds with bore well water 3. Partial harvesting of the stock	Pond preparation for yearling culture in next year
(ii)Impact of salt load build up in ponds / change in water quality	Application of organic manure in culture system	1. Provision for aeration and water sanitation 2. Recharge the ponds with bore well water	1. Feeding and manuring as usual 2. Application of organic manure
(iii)Any other			
2) Floods			
A.Capture			

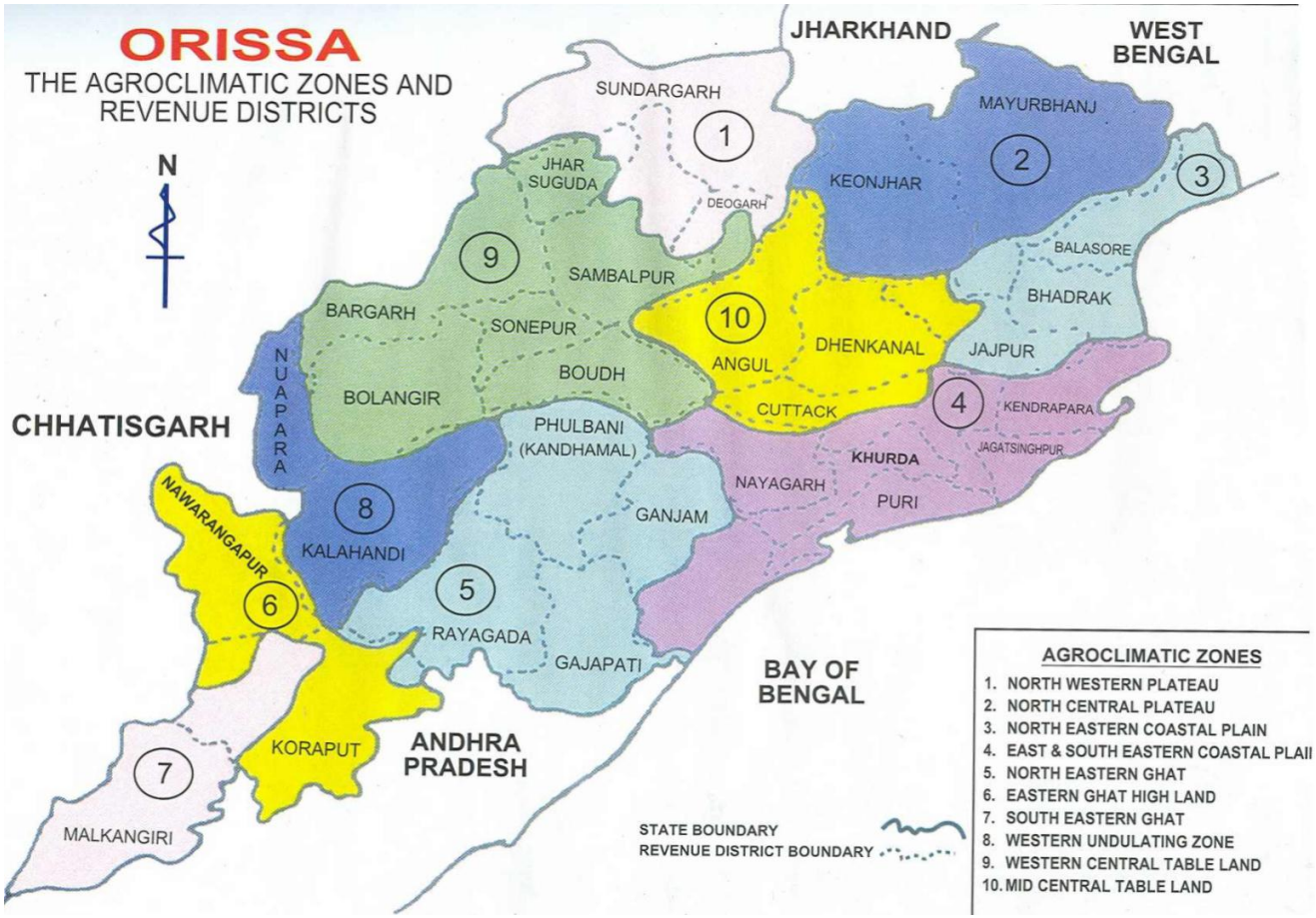
Marine	-	-	-
Inland			
(i)No. of boats / nets/damaged	1. Flood warning to fisherman,repairing of dykes 2. Non operation of fixed bag nets in streams and rivers. 3. Insurance coverage for nets and boats.	1. Advice the fisher man not to venture for fishing and take care of the implements 2. Checking of the safety of the boats / nets 3. Number of crew and load should be much below the marked tonnage.	1. Assessment of the damage and report to higher quarters 2. Maintenance of nets
(ii)No.of houses damaged	Insurance coverage for houses.	-	Settlement of insurance
(iii) Average compensation paid	1. Storage of sand filled bags for emergency use 2. Repair and maintenance of bunds 3. Preparedness for relief	1. Timely broadcast and telecast of danger level with respect to water level 2. Relief operation	1. Relief operation will continue 2. Financial support to other people
(iv) Loss of stock			1. Assessment of stock and replenishment 2. Habitat restoration for the stock remaining
(v)Changes in water quality	-	-	Application of lime
(vi) Health and diseases	Water quality management and prophylactic treatment	Mass treatment and isolation of diseased fish	1. Restocking with yearling 2. Observation of the health status of fish and accordingly control measure should be taken. 3. Control on transport of brooders and seeds
B.Aquaculture			
(i)Inundation with flood water	1. Strengthening of dykes inlet and out let system 2. Outlet and inlet facility should be their	Net enclosure should be provided over the dyke to prevent the escape of fish from pond.	1. Incase of loss of stock restocking with yearlings or fingerlings 2. Repairing and strengthening of dyke
(ii)Water contamination and changes in water quality	Application of lime	Steps to drain out excess water	Application of Geolites, lime, Alum, $KMnO_4$
(iii) Health and diseases	Water quality management and prophylactic treatment	Mass treatment and isolation of diseased fish	1. Application of Geolites, lime, Alum, $KMnO_4$ 2. Assessment of the health status of

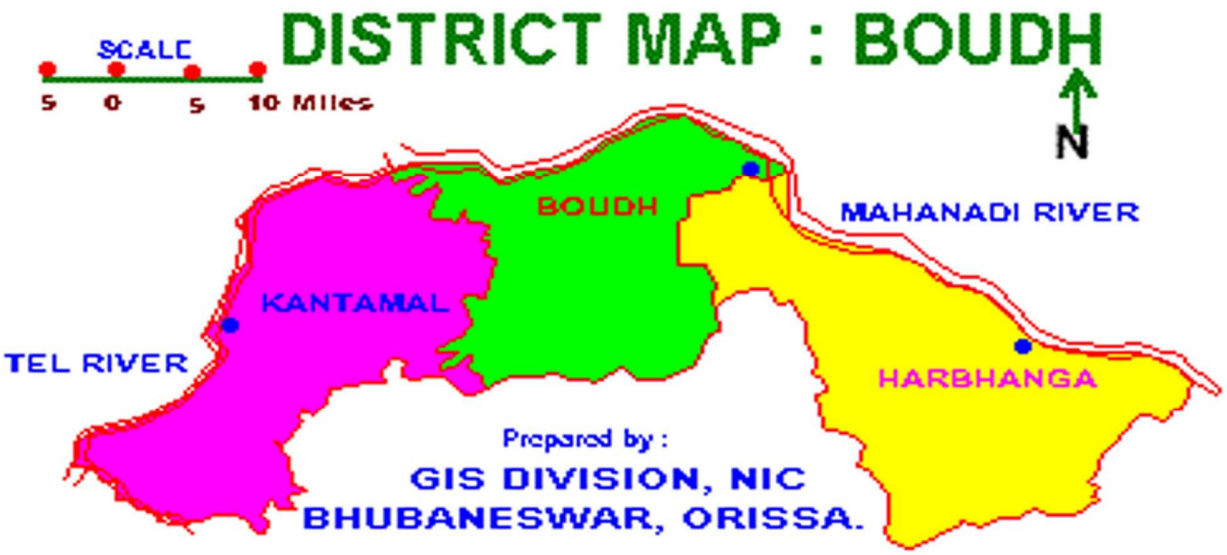
			fish 3. Control on transport of brooders and seeds
(iv) Loss of stock and inputs (feed, chemicals etc)	1. Strengthening of dykes and keeping the inputs in safe 2. Before flood the tock should be harvested 3. Construction of flood shelter for pumps, aerators etc. 4. Transport of feed and chemicals to safer place. 5. Purchase of feeds and chemicals	1. Not to allow any fish to escape out with suitable means. 2. Net enclosure shouldbeprovided over the dyke to prevent the escape of fish 3. Water shouldbediveredfrom the main stream. 4. Sand bagscambeused for protection of dykes. 5. Storing of feed and chemicasl to safer place	1. Stock assessment and restocking 2. Repairing of dykes 3. Assessment of quality of feed
(v) Infrastructure damage (pumps, aerators, hutsetc)	Keeping all the implements in safer place		Repairingofpumps, aerators& damagedhut
(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	-	-	-
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/hutsetc)			
(vi) Any other			
4. Heat wave and cold wave			
A. Capture			
Marine	-	-	-
Inland	-	1. During hot waves night fishing should be done 2. Preservation by cold chain should be increased during hot waves.	-
B. Aquaculture			
(i) Changes in pond environment (water quality)	1. Maintaining the water label to optimum 2. During hot waves adequate water depth should be maintained.	1. Provision for aeration and water sanitation 2. During hot waves mixing of water with fresh water 3. The culture system should be provided with aeration 4. Partial harvesting can be done	Provision for aeration and water sanitation
(ii) Health and Disease management	1. Water quality management and prophylatic treatment 2. Application of lime and turmeric	1. Mass treatment and isolation of diseased fish 2. Feeding should be stopped	Restocking with yearling
(iii) Any other			

Source-Asst.Director Fishery Office,Boudh

ANNEXURE-1 (a)


ORISSA
THE AGROCLIMATIC ZONES AND REVENUE DISTRICTS
N
JHARKHAND
WEST BENGAL
CHHATISGARH
ANDHRA PRADESH
BAY OF BENGAL
SUNDARGARH
DEOGARH
JHAR SUGUDA
SAMBALPUR
BARGARH
SONEPUR
BOLANGIR
BOUDH
NUAPARA
PHULBANI (KANDHAMAL)
KALAHANDI
NAWARANGAPUR
RAYAGADA
GAJAPATI
GANJAM
KORAPUT
MALKANGIRI
MAYURBHANJ
KEONJHAR
BALASORE
BHADRAK
JAJPUR
DHENKANAL
ANGUL
CUTTACK
KENDRAPARA
JAGATSINGHPUR
KHURDA
PURI
NAYAGARH
1
2
3
4
5
6
7
8
9
10
STATE BOUNDARY
REVENUE DISTRICT BOUNDARY
AGROCLIMATIC ZONES
1. NORTH WESTERN PLATEAU
2. NORTH CENTRAL PLATEAU
3. NORTH EASTERN COASTAL PLAIN
4. EAST & SOUTH EASTERN COASTAL PLAII
5. NORTH EASTERN GHAT
6. EASTERN GHAT HIGH LAND
7. SOUTH EASTERN GHAT
8. WESTERN UNDULATING ZONE
9. WESTERN CENTRAL TABLE LAND
10. MID CENTRAL TABLE LAND


DISTRICT MAP : BOUDH
SCALE
5 0 5 10 Miles
N
BOUDH
MAHANADI RIVER
KANTAMAL
TEL RIVER
HARBHANGA
Prepared by :
GIS DIVISION, NIC
BHUBANESWAR, ORISSA.

Soil map of Boudh District