

State: Orissa

Agriculture Contingency Plan: Nabarangpur District, 2022

1.0 District Agriculture profile				
1.1	Agro-Climatic/ Ecological Zone	Eastern Ghat High Land Zone		
	Agro Ecological Sub Region (ICAR)	Sub-humid to humid eastern and South eastern upland		
	Agro-Climatic Region (Planning Commission)	Eastern plateau & hills region		
	Agro Climatic Zone (NARP)*	Eastern ghat high land zone		
	List all the districts falling under the NARP Zone	Nabarangpur, Koraput, Malkangiri		
	Geographical coordinates of district	Latitude	Longitude	Altitude
		19 ⁰ 9q- 20 ⁰ 5qN	81 ⁰ 52q- 82 ⁰ 53qE	150 . 630 mt.
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	RRTTS, Semiliguda, Koraput		
	Mention the KVK located in the district	KRISHI VIGYAN KENDRA , NABARANGPUR at Umerkote		
	Name & address of the nearest Agromet field unit (AMFU, IMD) for agro-advisories in the zone	CSWCRTI, Sunabeda, Koraput		
1.2	Rainfall	Average (mm)	Normal Onset (specify week and month)	Normal Cessation (specify week and month)
	SW monsoon (June-Sep):	1594.68	2 nd week of June	4 th week of September
	NE Monsoon (Oct-Dec):	26.38	2 nd week October	3 rd week of November
	Winter (Jan-March)	63.46	2 nd week January	1 st week of February
	Summer (Apr-May)	67.42	3 rd week May	4 th week of May
	Annual	1751.94	-	-

* If a district falls in two NARP zones, mention the zone in which more than 50% area falls

1.3	Land use pattern of the district (latest statistics)	Geographical area	Forest area	Land under non-agricultural use	Permanent pastures	Cultivable wasteland	Land under Misc. tree crops and groves	Barren and uncultivable land	Current fallows	Other fallows
	Area (Lakh ha)	5.29	0.669	0.238	0.092	0.015	0.138	0.089	0.406	0.087

1.4	Major Soils (Common names)	Area ('000 ha)	Percent (%) of total
	1. Red laterite	152.52	82
	2. Alluvial	22.32	12
	3. Sandy loam	6.51	3.5
	4. Black	4.65	2.5
	Others (specify): Net cultivated area	186	
1.5	Agricultural land use	Area ('000 ha)	Cropping intensity %
	Net sown area	180	162
	Area sown more than once	112	
	Net irrigated area	58.74	
	Gross cropped area	292	

1.6	Irrigation	Area ('000 ha)	Percent (%)
	Net cultivated area	186.00	35.16 (of geographical area)
	Net irrigated area	26.43	14.2 (of net cultivated area)
	Gross cultivated area	291.94	55.18 (of geographical area)
	Gross irrigated area	46.76	16.0 (Of gross cultivated area)

	Rainfed area	159.57	85.79 (of net cultivated area)	
	Source of irrigation	Number	Area ('000 ha)	% area
	Canals	-	8.5	32.16
	Tanks	-	0.53	2.02
	Open wells	-	0.8	3.02
	Bore wells	-	2.3	8.70
	Lift irrigation	-	14.3	54.10
	Other sources	-		
	Total irrigated area	-	26.43	14.2 (of net cultivated area)
	Pumpsets	-		
	No. of tractors	55		
	Groundwater availability and use	No. of blocks	% area	Quality of water
	Over exploited	NIL		
	Critical	NIL		
	Semi-critical	3	50	
	Safe	7	100	
	Wastewater availability and use	1	-	
	Ground water quality	-	-	-

*over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%

Area under major field crops & horticulture etc. as per latest figure

1.7		Field crops-	Total area('000 ha)	Irrigated('000 ha)	Rainfed('000 ha)
	1	Paddy	164.33	7.53	156.80
	2	Maize	40.67	12.4	28.27
	3	Ragi	7.89	0.05	7.84
	4	Green Gram	1.16	-	1.16
	5	Black Gram	10.17	-	10.17
	6	Arhar	4.58	-	4.58

7	Cowpea	2.76	-	2.76
8	Niger	3.90	-	3.90
9	Linseed	2.79	-	2.79
10	Sugarcane	5.06	5.06	-
	Horticulture crops- Fruits	Total area('000 ha)	Irrigated('000 ha)	Rainfed('000 ha)
1	Mango	5.07	N.A.	N.A.
2	Guava	0.94	N.A.	N.A.
3	Cashew	1.0	N.A.	N.A.
4	Citrus	0.46	N.A.	N.A.
5	Banana	0.52	N.A.	N.A.
6	Papaya	0.02	N.A.	N.A.
7	Litchi	0.02	N.A.	N.A.
8	Pineapple	0.01	N.A.	N.A.
9	Coconut	0.23	N.A.	N.A.
10	Others	1.54	N.A.	N.A.
	Horticulture crops- Vegetables	Total area('000 ha)	Irrigated('000 ha)	Rainfed('000 ha)
1	Potato	0.23	N.A.	N.A.
2	Onion	0.50	N.A.	N.A.
3	Chilli	1.84	N.A.	N.A.
4	Garlic	0.08	N.A.	N.A.
5	Turmeric	0.09	N.A.	N.A.
6	Ginger	0.13	N.A.	N.A.
7	Sweet Potato	0.13	N.A.	N.A.
8	Brinjal	1.50	N.A.	N.A.
	Medicinal and Aromatic crops	Total area('000 ha)	Irrigated('000 ha)	Rainfed('000 ha)
1				
2	N.A.	N.A.	N.A.	N.A.
3				
	Plantation crops	Total area('000 ha)	Irrigated('000 ha)	Rainfed('000 ha)
1				

	2				
	3				
		Fodder crops	Total area('000 ha)	Irrigated('000 ha)	Rainfed('000 ha)
	1	N.A.	N.A.	N.A.	N.A.
	2				
		Total fodder crop area			
		Grazing land	8000 ha.		
		Sericulture etc.	N.A.		
		Others (specify)			

*If break-up data (irrigated, rainfed) is not available, give total area

1.8	Livestock	Number ('000)		
	Non-descriptive cattle(local cows)			
	Improved cattle	384.006		
	Crossbred cattle			
	Non . descriptive Buffaloes	78.459		
	Descriptive buffalo			
	Commercial dairy farms	N.A.		
	Goat	98.425		
	Sheep	82.689		
	Others (Camel, Pig, Yak etc.)	N.A.		
1.9	Poultry			
	Commercial	25.771		
	Backyard	610.818		
1.10	A. Capture			
	Marine	No. of fishermen	Boats	Nets
				Storage facility
	Marine fisheries not available			
	Inland	No. farmer owned ponds	No. of reservoir	No. of village tanks
		4283	29	900

B. Culture				
Inland Fisheries		Area (ha)	Yield (MT/ha)	Production (in MT)
Brackish water		-	-	-
Fresh water		4811.35	0.73	3529.64
Others				

1.11 Production and Productivity of major crops (Av. of last Five Years)

1.11	Production and Productivity of major crops	Kharif		Rabi		Summer		Total	
		Major field crop	Production (₹000 t)	Productivity (kg/ha)	Production (₹000 t)	Productivity (kg/ha)	Production (₹000 t)	Productivity (kg/ha)	Production (₹000 t)
Crop 1	Paddy	324.58	1984	258.28	2177	2.02	2767	551.88	2068
Crop 2	Maize	115.83	3015	8.76	3895	-	-	124.59	3064
Crop 3	Ragi	6.90	880	0.07	1290	-	-	6.97	880
Crop 4	Green Gram	0.07	545	0.43	410	-	-	0.5	431
Crop 5	Black Gram	3.59	355	0.01	250	-	-	3.6	354
Crop 6	Arhar	4.4	960	-	-	-	-	4.4	960
Crop 7	Groundnut	1.12	1300	1.23	1500	-	-	2.35	1399
Crop 8	Castor	0.05	426	0.69	480	-	-	0.74	477
Crop 9	Niger	1.01	258	-	-	-	-	1.01	258
Crop 10	Sugarcane	-	-	220.23	43523	-	-	220.23	43523
Major Horticultural crops									
Crop 1	Potato	-	-	2.03	8650	-	-	2.03	8650
Crop 2	Onion	-	-	4.55	9100	-	-	4.55	9100
Crop 3	Chilli	0.82	1093	0.75	688	-	-	1.57	853
Crop 4	Garlic	-	-	0.25	3125	-	-	0.25	3125
Crop 5	Ginger	0.23	1769	-	-	-	-	0.23	1769
Crop 6	Sweet Potato	0.43	8568	0.6	7500	-	-	1.03	7923
Others	Misc.vegetable	94.68	11035	82.18	14596	-	-	176.86	12446

	Sea water inundation	-	-	-	-	-	-	NONE
	Pests and diseases (specify)	Fruit & shoot borer , leaf curl virus in vegetables	Red rot in Sugarcane, Maize stem borer	Termite, Mango hopper, Fruit flies,	Swarming caterpillar in Aug/sept., BPH in Paddy	BLB in Paddy	Root knot nematode	-

1.14	Include Digital maps of the district for	Location map of district with in States as Annexure 1	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	Major Farming situation ^a	Crop/cropping system ^b	Suggested Contingency Measures		
			Change in crop/cropping system ^c	Agronomic measures ^d	Remarks on Implementation ^e
Early season drought (delayed onset)					
Delay by 2 weeks (June 4 th week)* (REFER TO THE MATRIX TABLE)	1.Low rainfall Shallow Lateritic soil	a) Upland rice-fallow based b) Maize	Paddy : Swarna, Masuri, Khandagiri, Ajay, US-312, Sahabhagi, MTU-1001/1010, Lalat Intercropping like rice + pigeonpea, rice + blackgram, Composite maize variety Navjot, Shakti, QPM maize Short duration hybrid maize Kalinga raj,	1)Resowing for nursery/ Delayed raising of nursery 2) Conservation of moisture by not ploughing 3) Intercropping(2:1 & 4:1 ratio) 4) Sowing of maize seeds when soil is warm	Supply of seeds through OSSC , through NFSM

	3. Shallow Black soil & rainfed	<p>a)Vegetable-fallow</p> <p>b)Niger- local</p> <p>c) Blackgram- local</p>	<p>Growing of short duration vegetable like cucumber, okra, Cowpea in bunds of upland paddy</p> <p>Niger- Utkal Niger-150, Deomali</p> <p>Blackgram . Azad Urd-1, PU-31,PU-30, PU-26, TU-94-2</p>	<p>Ridge and furrow methods of sowing. at closer plant-to-plant distance with wider inter-row spacing. Strengthen the field and contour bunds for in-situ moisture conservation. Use of mulch with locally available materials. Broadcasting at first shower of rainfall, thinning Closer spacing, broadcasting, conservation furrows</p>	<p>Seeds from RKVY, OSSC, OUAT Supply of seeds from RRTTS, OUAT</p>
	4. Low rainfall shallow Sandy loam soil	<p>Maize- Vegetable Maize :Kalinga Raj ,Pioneer, Kaveri, DKC-9126, pinnacle, CP, Hishell Vegetable: Brinjal local Chilli local, Tomato BT-10</p>	<p>Maize hybrids of shorter duration, Intercropping of maize with Cowpea(Utkal Manik) in 1:2 ratio or Maize+Arhar in 2:1 ratio to manage water Shortage Brinjal- Utkal Anooshree, Chilli-Utkal ava, Tomato-Arka Samrat, Arka Rakshyak,</p>	<p>Wider spacing at 60x45 cm, split application of fertilizer reduced to two times</p> <p>Transplanting older seedlings with wider spacing than recommendation, Thinning, Mulching with paddy straw</p>	<p>Seed drill under RKVY, Supply of seeds from OSSC Supply of seeds through NFSM</p>

Condition			Suggested Contingency Measures		
Early season drought (delayed onset)	Major Farming situation ^a	Crop/cropping system ^b	Change in crop/cropping system ^c	Agronomic measures ^d	Remarks on Implementation ^e
<p>Delay by 4 weeks (July 2nd week)*</p> <p>(REFER TO THE MATRIX TABLE)</p>	<p>1.Low rainfall Shallow Lateritic soil</p>	<p>a) Upland rice-fallow based</p> <p>b) Maize</p>	<p>Low water requiring crops like blackgram, groundnut, greengram, cowpea, pigeonpea etc. Double cropping in upland can be done through maize-horsegram/sesamum rotation.</p> <p>The legume based intercropping system like groundnut + pigeonpea, groundnut + blackgram, groundnut + greengram, groundnut + cowpea in the ratio of 4:1 was proved as successful.</p> <p>Some of the suitable varieties of non rice crop in upland are:</p> <p>Maize (Hybrids) : Pioneer, Kaveri, DKC-9126, Ganga-5, Daccan-103, KH 510, KH 101; Maize (Composites) : Shakti-1,</p>	<p>1) Delayed raising of nursery 2) Conservation of moisture 3) Intercropping(2:1 & 4:1 ratio) 4) Splitting nutrient application 5) Thinning to retain one seedling at 30 cm 6) soaking of seeds in water overnight before sowing</p>	<p>Supply of seeds through OSSC , through NFSM</p>

		C) Niger- local	<p>Novjyot.</p> <p>Groundnut : Devi, Dharani, TMV-2, Smruti, AK-12-24.</p> <p>Pigeonpea : UPAS-120, Prabhat, PRG-176KPL 151, T21, KPH-8.</p> <p>Blackgram : Azad Urd -1, PU30, Sarada.</p> <p>Greengram : TARM-1, Pusa Baisakhi K-851, Dhauri.</p> <p>Horsegram : Urmil, Madhu.</p> <p>Sesame : Kanak, Konika, Gujarat-1.</p> <p>Niger . Utkal Niger 150No-71, deomali</p>		
2. Scarce rainfall Alluvial rainfed	Medium land paddy		<p>Direct sowing is not recommend after 10th July but transplanting can be done from previously sown nursery.</p> <p>Medium land rice: Kalyani II, Kalinga III, Sneha, Heera,</p>	<p>Maintain more plant population for direct seeded rice.</p> <p>Nursery can be raised for transplanting after 21 days</p> <p>Emphasis should be given In-situ rain</p>	

			Dhala Heera	water conservation, harvesting of excess runoff for recycling and ground water recharge.	
3. Shallow Black soil & rainfed	a)Vegetable-fallow	Growing of short duration vegetable like cucumber,bittergourd,country bean, okra, Cowpea in bunds of upland paddy		Sowing in pits with little weeding, Mulching	Seeds from NHM Supply of seeds from OSSC, OUAT Seeds may be procured from NFSM
	b)Niger- local	Niger- Deomali		Dry sowing 8-10 days before rains with 15% higher seed rate	
	c) Blackgram- local	Blackgram . TU-94-2		Broadcasting with 1 st shower of rain	
4. Low rainfall shallow Sandy loam soil	Maize- Vegetable Maize : pinnacle, CP, Hishell Vegetable: Brinjal local Chilli local, Tomato BT-10	Maize hybrids of shorter duration, Intercropping of maize with Cowpea(Utkal Manik) in 1:2 ratio or Maize+Arhar in 2:1 ratio to manage water Shortage Brinjal- Utkal Anooshree, Chilli- Utkal ava, Tomato- Utkal Raja		Wider spacing at 60x45 cm, split application of fertilizer reduced to two times	
				Transplanting older seedlings with wider	

				spacing than recommendation, Thinning, Mulching with paddy straw	
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Condition		Suggested Contingency Measures			
Early season drought (delayed onset)	Major Farming situation ^a	Crop/cropping system ^b	Change in crop/cropping system ^c	Agronomic measures ^d	Remarks on Implementation ^e
Delay by 6 weeks (July 4 th week)* (REFER TO THE MATRIX TABLE)	1.Low rainfall Shallow Lateritic soil	a) Upland rice-fallow	In the event of late arrival of southwest monsoon the pulses like cowpea, blackgram, greengram can be grown upto last week of July but pigeonpea, groundnut, maize are not recommended to be sown after 20 th July.	Seed treatment and proper plant protection measures should be taken to avoid any germination failure because sowing has already got delayed because of late onset of monsoon. In-situ rain water conservation, harvesting of excess runoff for recycling and ground water recharge. The recommended dose of nitrogen application should be reduced by 40 %	Supply of seeds through OSSC , through NFSM

		b) Maize hybrids	<p>Short duration improved varieties of vegetables like Tomato, Okra, Cucumber, Amaranthes, country bean etc</p>	<p>in rainfed situation and should be applied, as basal and full-recommended dose of P and K should be placed as basal.</p> <p>The field should be free of weeds for utilization of water and nutrients by the late sown crops. Furrow sowing of kharif crops at closure plant-to-plant distance with wider inter-row spacing. Use of bulky organic manures is recommended.</p> <p>Sowing of seeds in ridges, pits with proper seed treatment to avoid mortality,</p>	
2.Scarce rainfall Alluvial rainfed			<p>Shifting from traditional crops/varieties to short duration low water requiring crops in upland, by substituting rice totally. Rice varieties like Kalinga II,</p>	<p>In-situ rain water conservation, harvesting of excess runoff for recycling and ground water recharge.</p>	

			<p>Kalyani II, Sneha, Heera are suitable.</p>	<p>Seed treatment and proper plant protection measures should be taken to avoid any germination failure because sowing has already got delayed because of late onset of monsoon.</p> <p>The recommended dose of nitrogen application should be reduced by 40 % in rainfed situation and should be applied, as basal and full-recommended dose of P and K should be placed as basal.</p> <p>The field should be free of weeds for utilization of water and nutrients by the late sown crops. Furrow sowing of kharif crops at closure plant-to-plant distance with wider inter-row spacing. Use of bulky organic manures is</p>	
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				recommended.	
	3. Shallow Black soil & rainfed	<p>a)Vegetable-fallow</p> <p>b)Niger- local</p> <p>c) Blackgram- local</p>	<p>Growing of short duration vegetable like cucumber,bittergourd,country bean, okra, Cowpea in bunds of upland paddy</p> <p>Niger- Utkal Niger 150Deomali</p> <p>Blackgram . Azad Urd-1, PU-31, PU-30</p>	<p>Sowing in pits with little weeding, Mulching</p> <p>Dry sowing 8-10 days before rains with 15% higher seed rate Broadcasting with 1st shower of rain</p>	<p>Seeds from NHM Supply of seeds from OSSC, OUAT</p> <p>Seeds may be procured from NFSM</p>
	4. Low rainfall shallow Sandy loam soil	<p>Sunflower, Cowpea, Niger</p> <p>Sunflower- local, Cowpea-local, Niger- local</p>	<p>Sunflower- Jwalamukhi</p> <p>Cowpea- Ramba, Utkal Manik</p> <p>Niger-Utkal Niger 150 Deomali</p>	<p>Wider spacing at 60x45 cm, split application of fertilizer reduced to two times</p> <p>Transplanting older seedlings with wider</p>	

		Vegetable - fallow	Other vegetables of short duration	spacing than recommendation, Thinning, Mulching with paddy straw Ridge & furrow method of sowing & staking	
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Condition		Suggested Contingency Measures			
Early season drought (delayed onset)	Major Farming situation ^a	Crop/cropping system ^b	Change in crop/cropping system ^c	Agronomic measures ^d	Remarks on Implementation ^e
Delay by 8 weeks (August 2 nd week)* (REFER TO THE MATRIX TABLE)	1.Low rainfall Shallow Lateritic soil	Upland rice-fallow based	Shifting from traditional crops/varieties to short duration low water requiring crops like cowpea, blackgram, greengram by substituting rice totally. If the main crop is failed cultivation or re-sowing with fodder is the best option. Fodders can be harvested at any stage keeping in view sowing of the next <i>rabi</i> season crop	The recommended dose of nitrogen application should be reduced by 40 % in rainfed situation and should be applied, as basal and full-recommended dose of P and K should be placed as basal. Furrow sowing of crops at closure plant-to-plant distance with wider inter-row spacing is recommended.	Supply of seeds through OSSC , through NFSM

	<p>2. Scarce rainfall Alluvial rainfed</p>	<p>Medium land rice-fallow based</p>	<p>Shifting from traditional crops/varieties to short duration rice. Rice varieties like Kalinga III(90 days), Kalyani II(90days), Heera, Snha (90 days) are useful in this situation.</p> <p>If the main crop is failed re-sowing with pre-rabi crops like horse gram, sesamum will give good return. Winter maize can be grown for the purpose of green cob.</p>	<p>In-situ rain water conservation, harvesting of excess runoff for recycling and ground water recharge. Seed treatment and proper plant protection measures should be taken to avoid any germination failure because sowing has already got delayed because of late onset of monsoon.</p> <p>The recommended dose of nitrogen application should be reduced by 40 % in rainfed situation and should be applied, as basal and full-recommended dose of P and K should be placed as basal.</p> <p>The field should be free of weeds for utilization of water and nutrients by the late sown crops. Furrow sowing of kharif crops at closure plant-to-</p>	<p>Supply of seeds through OSSC , through NFSM</p>
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				plant distance with wider inter-row spacing. Use of bulky organic manures is recommended.	
	3. Shallow Black soil & rainfed	a)Vegetable-fallow b)Niger- local c) Blackgram- local	Growing of short duration vegetable like cucumber,bittergourd,country bean, okra, Cowpea in bunds of upland paddy Niger- Utkal Niger 150, Deomali Blackgram . Azad Urd-1, PU-31,PU-30,PU-26	Sowing in pits with little weeding, Mulching Dry sowing 8-10 days before rains with 15% higher seed rate Broadcasting with 1 st shower of rain	Seeds from NHM Supply of seeds from OSSC, OUAT Seeds may be procured from NFSM
	4. Low rainfall shallow Sandy loam soil	Vegetable-fallow	Growing short duration vegetable like cucumber, okra, Cowpea in bunded upland	Ridge and furrow methods of sowing and staking. The field should be free of weeds for utilization of water and nutrients by the late sown crops. Furrow sowing of kharif crops at closure plant-to-	

				plant distance with wider inter-row spacing. Use of bulky organic manures is recommended	
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*Matrix for specifying condition of early season drought due to delayed onset of monsoon (2,4,6&8 weeks) compared to normal onset (2.1.1)

Normal onset (Month and week)	Month and week for specifying condition of early season drought due to delayed onset of monsoon			
	Delay in onset of monsoon by			
	2 wks	4 wks	6 wks	8 wks
June 1 st wk	June 3 rd wk	July 1 st wk	July 3 rd wk	Aug 1 st wk
June 2 nd wk	June 4 th wk	July 2 nd wk	July 4 th wk	Aug 2 nd wk
June 3 rd wk	July 1 st wk	July 3 rd wk	Aug 1 st wk	Aug 3 rd wk
June 4 th wk	July 2 nd wk	July 4 th wk	Aug 2 nd wk	Aug 4 th wk
July 1 st wk	July 3 rd wk	Aug 1 st wk	Aug 3 rd wk	Sep 1 st wk
July 2 nd wk	July 4 th wk	Aug 2 nd wk	Aug 4 th wk	Sep 2 nd wk

Condition			
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Early season drought (normal onset)	Major Farming situation ^a	Crop/cropping system ^b	Crop management	Soil nutrient & moisture conservation measure	Remarks on Implementation ^e
<p>Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/ crop stand etc.</p>	<p>1. shallow lateritic soil</p>	<p>Upland rice- fallow</p> <p>Upland Maize</p> <p>Arhar- UAS-1</p>	<p>In upland, rice will be damaged very quickly, result poor crop stand. The land may re-sowed with low water requiring non-rice crops rather than allowing sub-optimal poor rice plant stand to persist.</p> <p>Maize should be resown as germinated seeds fail to sustain</p> <p>The field should be free of weeds for utilization of water and nutrients by the late sown crops</p> <p>A shorter duration variety like UPAS-120, ICPL-87 may be resown</p>	<p>Ridge and furrow methods of sowing may be adopted as in-situ soil moisture practices.</p> <p>Mulching should be practiced in between crop rows using locally available mulch material.</p> <p>Light irrigation during evening hours</p>	

	2.Alluvial rainfed	Medium land rice . Fallow	<p>Direct seeded rice should be re-sown because sprouting drought will damage substantial rice area. But re-sowing of direct seeded rice should be avoided till sufficient rains have been received. Raising community nurseries of rice is recommended for transplanted rice. If sufficient good quality seed is not available, locally available seeds from adjoining areas should be used after proper germination check. Seeds treatment with Thiram or Captan @</p>	<p>Strengthen the field and contour bunds for in-situ moisture conservation.</p> <p>About 11-37 % run-off is generated even by the delayed monsoon and should be stored in the farm ponds or tanks. These will recharge ground water during normal or excessive rainfall year.</p>	

		Medium land maize	2-2.5 g/kg seed and other recommended plant protection measures. Resowing of maize with short duration varieties		
	3.shallow black soil	Maize- vegetable	Resowing of maize , Short duration high yielding vegetables like Tomato, Brinjal, Chilli, Kharif Onion(bhima red), Crucifer vegetables	Thinning, conservation furrow Wherever economically viable, mulching should be practiced in between crop rows using locally available mulch material	
	4.Shallow sandy loam	Vegetable - fallow	The land may re-sowed with low water requiring non-rice crops rather than allowing sub-optimal plant population. For anticipating prolonged dry spells the practices of inter-row cropping help in risk sharing. This can be achieved by including a companion crop like green gram, cowpea than the main crops.	Wherever economically viable, mulching should be practiced in between crop rows using locally available mulch material.	

Condition	Major Farming situation ^a	Crop/cropping system ^b	Suggested Contingency Measures		
			Crop management	Soil nutrient & moisture conservation measure	Remarks on Implementation ^e
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)					

At vegetative stage	1. shallow lateritic soil	Upland rice-fallow based Maize Arhar	Crops should be suitably thinned out. In-situ rain water conservation, harvesting of excess runoff for re-use and ground water recharge. Conserve rainwater by increasing bund height Top dressing of fertilizers may be postponed till rainfall/ foliar application of nutrients	Wherever economically viable, mulching should be practiced in between crop rows using locally available mulch material. Application of weedicide on broad leaf weeds to minimize competition for water	
	2.Alluvial rainfed	Medium land rice-fallow based Maize	In-situ rain water conservation, harvesting of excess runoff for re-use and ground water recharge. Conserve rainwater by increasing bund height Application of fertilizer through foliar spray	Small and marginal farmers may be employed under NREGA for creating rain water conservation and storage structures to enhance productivity of their limited land.	
	3.shallow black soil	Maize- vegetable	Application of light irrigation to avoid soil cracking Postponement of top dressing	Economically viable, mulching should be practiced in between crop rows using locally available mulch material.	

	4. Shallow sandy loam	Vegetable-fallow	Light irrigation Thinning & pruning of vegetables Life saving irrigation from harvested rainwater, wherever feasible, adopt micro-irrigation to save water.	Irrigating the crop in the root zone Sub-soil moisture conservation through minimum tillage Irrigate on ridge and irrigate every alternate furrow on rotation	
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Condition	Major Farming situation ^a	Crop/cropping system ^b	Suggested Contingency Measures		
			Crop management	Soil nutrient & moisture conservation measure	Remarks on Implementation ^e
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)					
At reproductive stage	1. shallow lateritic soil	Upland rice-fallow based	Crops should be suitably thinned out Life saving irrigation if possible. Irrigate on ridge and irrigate every alternate furrow on rotation.	If fertilizers are to be applied, foliar application is recommended. Wherever economically viable, mulching should be practiced in between crop rows using locally available mulch material	

	2.Alluvial rainfed	Medium land rice-fallow based Maize-Arhar	Life saving irrigation from harvested rainwater. Reduction of conveyance losses while irrigating the light textured soils. Spread a polythene sheet in the field channel before irrigating the field and then roll it back for irrigating the other field.	If fertilizers are to be applied, foliar application is recommended.	
	3.shallow black soil	Maize- vegetable	-do-	If fertilizers are to be applied, foliar application is recommended	
	4.Shallow sandy loam	Vegetable-fallow	Light & frequent (if possible) irrigation to prevent flower drop Plucking vegetables for marketing	Spraying of anti-transpirants to check evapo-transpiration Mulching with crop trashes	

Condition	Major Farming situation ^a	Crop/cropping system ^b	Suggested Contingency Measures		
			Crop management ^c	Rabi Crop planning ^d	Remarks on Implementation ^e
Terminal drought					

	1. shallow lateritic soil	Upland rice-fallow based Arhar	Life saving irrigation from harvested rainwater, wherever feasible, adopt micro-irrigation to save crop. May be harvested for vegetable purpose Harvesting at physiological maturity	Cowpea, Sunflower, Field bean, Horsegram, Blackgram, Linseed for month of October	Farm ponds from NREGS, RKVY Seeds from NHM, OSSC
	2.Alluvial rainfed	Medium land rice-fallow based Maize-Arhar	Reduction of conveyance losses while irrigating the light textured soils. Spread a polythene sheet in the field channel before irrigating the field and then roll it back for irrigating the other field. Harvesting of rice at physiological maturity will realize 80-85% of normal yield. Harvesting of plants for fodder purpose if cob formation hampered	Raise Brinjal seedlings for Rabi, being a hardy plant it may withstand moisture stress condition Cowpea, Sunflower, Field bean, Horsegram, Blackgram, Linseed for month of October Crucifer vegetables & other high yielding Solanaceous vegetables	Farm ponds through IWSM programme Supply of intercultural implements through RKVY

	3.shallow black soil	Maize- vegetable	Harvesting of plants for fodder purpose if cob formation hampered Vegetables approaching maturity may be harvested for marketing	Cowpea,Carrot, Sunflower, , Horsegram, Blackgram, Linseed for month of October	Farm ponds through IWSM programme Seeds from NHM Supply of intercultural implements through RKVY
	4.Shallow sandy loam	Vegetable-fallow	Harvesting of plants for fodder purpose if cob formation hampered Vegetables approaching maturity may be harvested for marketing	Plan for short duration high yielding oilseed especially Mustard/Toria & pulse crops Vegetables like potato, carrot. Radish, & other crucifers.	Farm ponds through IWSM programme Supply of intercultural implements through RKVY Seeds from NHM

2.1.2 Drought- Irrigated situation

Condition			Suggested Contingency Measures
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Delayed/ limited release of water in canals due to low rainfall	Major Farming situation^a	Crop/cropping system^b	Change in crop/cropping system^c	Agronomic measures^d	Remarks on Implementation^e
	1. Upland tubewell Irrigated canal laterite soil	Upland rice-fallow based Hybrid Maize Sugarcane	Vegetable, Maize, Oilseed, pulses	Limited & life saving irrigation Alternate furrow irrigation Drip irrigation Planting in deep furrows/Pit method of planting	Seeds through OSSC, NFSM, NHM Intercultural implements through NHM, ATMA,
	2. Medium land Canal irrigated Alluvial soil	Medium land rice-fallow based Maize	Maize, vegetable(Chilli, Tomato, Brinjal, Okra, Cauliflower)	Limited & life saving irrigation Alternate furrow irrigation Drip irrigation Mulching, Irrigation in root zone	Seeds through OSSC, NFSM, NHM Intercultural implements through NHM, ATMA,
	3. Tube well/ pond irrigated Shallow sandy loam soil	Vegetable	High yielding varieties with short duration	Delayed raising of nursery for delayed planting Limited & life saving irrigation Alternate furrow irrigation Drip irrigation	Seeds through OSSC, NFSM, NHM Intercultural implements through NHM, ATMA,

Condition			Suggested Contingency Measures
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Lack of inflows due to insufficient/delayed onset of monsoon	Major Farming situation ^a	Crop/cropping system ^b	Change in crop/cropping system ^c	Agronomic measures ^d	Remarks on Implementation ^e
	1. Upland tubewell Irrigated canal laterite soil	Upland rice-fallow based	<p>Rice area during rabi should be reduced. Instead, low water requiring oilseeds and pulses like groundnut, green gram, black gram, sunflower, sesamum are preferred options.</p> <p>Use of early duration variety like MTU-1010q (115 days) is well suited in rabi.</p>	<p>Irrigate the kharif rice with groundwater during dry spells only, if dry spell comes before release of canal water. Reduction of conveyance losses while irrigating the light textured soils. Spread a polythene sheet in the field channel before irrigating the field and then roll it back for irrigating the other field.</p> <p>Harvesting of kharif rice at physiological maturity will realize 80-85% of normal yield.</p> <p>Irrigate the rabi rice at critical stages only with groundwater.</p>	

	2. Medium land Canal irrigated Alluvial soil	Medium land rice-fallow based Maize	Low water requiring oilseeds and pulses like groundnut, green gram, black gram, sunflower, sesamum	Same as above for kharif rice	
	3. Tube well/ pond irrigated Shallow sandy loam soil	Vegetable -fallow	High yielding varieties with short duration	Delayed raising of nursery for delayed planting Limited & life saving irrigation Alternate furrow irrigation Drip irrigation	

Condition	Major Farming situation ^a	Crop/cropping system ^b	Suggested Contingency Measures		
			Change in crop/cropping system ^c	Agronomic measures ^d	Remarks on Implementation ^e
Insufficient ground water recharge due to low rainfall					
	1. Upland tubewell Irrigated canal laterite soil	Upland rice-fallow based	Rice area during rabi should be reduced. Instead low water requiring oilseeds and pulses like groundnut, green gram, black gram, sunflower, sesamum are preferred options.	Irrigate the kharif crops during dry spell with harvested rain water. Harvesting of kharif rice at physiological maturity will realize 80-85% of normal yield. About 11-37 % run-off is generated even by the delayed monsoon and should be stored	

				in the farm ponds or tanks. These will recharge ground water during normal or excessive rainfall year. Rainwater stored in self sealing or lined ponds can be used for irrigation if there is long break in the rainfall or for pre-sowing of the <i>rabi</i> crops to ensure proper germination.	
	2. Medium land Canal irrigated Alluvial soil	Medium land rice-fallow based Maize	Low water requiring oilseeds and pulses like groundnut, green gram, black gram, sunflower, sesamum	Limited & life saving irrigation Alternate furrow irrigation Drip irrigation	
	3. Tube well/ pond irrigated Shallow sandy loam soil	Vegetable -fallow	Low water requiring oilseeds and pulses like groundnut, green gram, black gram, sunflower, sesamum	Limited & life saving irrigation Alternate furrow irrigation Drip irrigation	

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

Condition	Suggested contingency measures			
	Vegetative stage ^k	Flowering stage ^l	Crop maturity	Post harvests ⁿ
Continuous high rainfall in a short span leading to water logging				

			stage^m		
Crop1	Maize + Arhar	Provide drainage	Provide drainage	Drain water for drying Harvest at physiological maturity stage	Shifting to a safer place Dry in shade in a well ventilated space
Crop2	Paddy	No substantial problem as uplands donot maintain water logging condition for long time	Provide drainage If possible	Drain water for drying Harvest at physiological maturity stage	Shifting to a safer place Dry in shade in a well ventilated space
Crop3	Arhar	Provide drainage	Provide drainage	Drain water for drying Harvest for vegetable purpose	Safe storage against pest & diseases
Crop4	Cowpea	Provide drainage	Provide drainage	Drain water for drying Harvest for vegetable purpose	Shifting to a safer place Dry in shade in a well ventilated space Safe storage against pest & diseases
Crop5	Sugarcane	Provide drainage Maintain ridge & furrow method	Provide drainage Maintain ridge & furrow method	Harvest at physiological maturity stage	Extraction of jaggery
Horticulture					
Crop1	Fruits(Mango, Citrus etc)	Provide drainage Earthing up of plant base/root zone	Provide drainage Earthing up of plant base/root zone	Provide drainage Earthing up of plant base/root zone In case of established tree, no problem	Dry the fruits, Keep at safer place, may be sold at green stage

Crop2	Banana, Papaya	Raising seedlings in sunken bed method	Provide drainage Earthing up of plant base/root zone	Harvested at green stage or table purpose, No problem for marketing as it has buyers preference	Store for ripening in closed godowns for marketing
Crop3	Cucurbit vegetables	Seedling in raised nursery beds, drainage,	Vines should be staked along elevated frames	Ensure drainage Harvesting at tender stages	Ensure drainage Harvesting at tender stages
Crop4	Solanaceous/ cruciferous vegetables	Seedling in raised nursery beds, drainage,	Provide drainage Application of hormones to induce more flowering	Provide drainage	<i>Ensure drainage Harvesting at tender stages</i>
Heavy rainfall with high speed winds in a short span²					
Crop1	Paddy	Drainage if waterlogging persists Small seedlings withstand the problem	Drainage if waterlogging persists Small seedlings withstand the problem	Lodged panicles may be harvested at physiological maturity stage	<i>Ensure drainage Harvesting at tender stages</i>
Crop2	Sugarcane	Drainage if waterlogging persists Small seedlings withstand the problem	Bundling of canes And drainage	Lodged canes may be harvested for extraction of juice	Lodged canes may be harvested for extraction of juice & jiggery
Horticulture					
Crop1					
Crop2					
Outbreak of pests and diseases due to unseasonal rains					
Crop1	Paddy	Spray tricyclazole against blast, Chloropyriphos against stem borer, Monocrotophos against	Spray tricyclazole against blast, Chloropyriphos against stem borer,	Malathion spray against Gundhy bug	Sun drying / disinfection of gunny bags with malathion or

		Swarming caterpillar	Monocrotophos against Swarming caterpillar & leaf folder		heat treatment to manage stored grain pests
Crop2	Maize	Phorate granules in the whorls & spray of Endosulfan against maize stem borer	Spraying of Dimethoate against aphid	Wrapping of cobs against bird damage	Store in clean godown, disinfection of gunny bags / storage structure with malathion
Crop3	Arhar	Removal of infested tips to manage leaf webber	Hand picking & destruction of blister beetles	Spray of Ekalux against pod borer	Store in clean godown, disinfection of gunny bags / storage structure with malathion
Crop4	Blackgram/Greengram	Application of Triazophos against YMV	Application of malathion against Flea beetle	Spray of Nuvan against pod borer	Disinfection of storage structure to manage stored grain pests
Horticulture					
Crop1	Solanaceous vegetables	Spraying malathion against hadda beetle, hand collection of egg mass Soil drenching of COC & streptocycline against wilting	Application of Neem oil & tryozophos alternatively against brinjal fruit & shoot borer/ leaf curl virus,	Spraying of Profenophos against fruit borer Metalaxyl against Anthracnose	Segregation of infested fruits & destruction
Crop2	Cucurbit vegetables	Spraying of Ekalux against Red pumpkin beetle, Collection & destruction of eggs/grubs, Soil drenching of COC & streptocycline against wilting	Spraying Endosulfan against leaf eating caterpillars Metalaxyl against Powdery mildew, Carbendazim against leaf spot & blight	Poison baiting with Malathion & Jaggery against fruit fly	Destruction of overripe & infested fruits

2.3 Floods

Condition	Suggested contingency measures ^o			
Transient water logging/ partial inundation ¹	Seedling/ nursery stage	Vegetative stage	Reproductive stage	At harvest
Crop1 Paddy	Drainage of the Nursery bed, If not possible go for resqwing	<p>Wet seeding of sprouted seeds (@75-80 kg/ha) of medium duration varieties (Lalat (120 days), Parijat (100 days), Konark (125 days), Surendra (135 days)).</p> <p>50% N and 50% K₂O + full P may be applied as basal and rest 50% N + 50% K₂O as top dressing during the tillering stage.</p> <p>In partially damaged field gap filling may be done by redistributing the tillers.</p> <p>Management of pests & diseases</p>	<p>If flood comes during reproductive stage, , emphasis should be given on forthcoming rabi crops.</p> <p>Supply of seeds and other agro-inputs of <i>rabi</i> crops at subsidized rate, provision of bank loan etc</p> <p>Wet seeding of short duration varieties (Heera (60 days), Kalinga . III (90 days)) or medium duration varieties (Lalat (120 days), Parijat (100 days), Konark (125 days), Surendra (135 days) during forthcoming rabi season .</p> <p>Utilization of residual soil moisture and use of recharged soil</p>	<p>If flood comes during reproductive stage, , emphasis should be given on forthcoming rabi crops</p> <p>Supply of seeds and other agro-inputs of <i>rabi</i> crops at subsidized rate, provision of bank loan etc</p> <p>Wet seeding of short duration varieties (Heera (60 days), Kalinga . III (90 days)) or medium duration varieties (Lalat (120 days), Parijat (100 days), Konark (125 days), Surendra (135 days) during forthcoming rabi season .</p>

			profile for growing pulses Growing of vegetables after receding flood water and adoption of integrated farming system to obtain more income and to compensate the loss during kharif.	Utilization of residual soil moisture and use of recharged soil profile for growing pulses Growing of cucurbits after receding flood water
Crop2 Maize	Drainage, If damping off then resowing	Ensure drainage, Make ridge & furrows	Ensure drainage, Make ridge & furrows	Harvest the cobs as soon as possible
Horticulture	NOT A FEATURE OF FARMING SITUATION WHERE VEGETABLE IS GROWN			
Crop1				
Crop2				
Continuous submergence for more than 2 days²	NOT A FEATURE OF THE DISTRICT			
Crop1				
Horticulture				
Crop1				
Sea water inundation³	NOT A FEATURE OF THE DISTRICT DUE TO DISTANCE FROM SEA MORE THAN 300 KM			
Crop1				

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

NOT EXPERINCED / NOT ENCOUNTERED

Extreme event type	Suggested contingency measures ^r			
	Seedling/ nursery stage	Vegetative stage	Reproductive stage	At harvest
Heat Wave^p				
Crop1 (specify)				
Horticulture				
Crop1 (specify)				
Cold wave^q				
Crop1				
Horticulture				
Crop1 (specify)				
Frost				
Crop1				
Horticulture				
Crop1 (specify)				
Hailstorm				
Crop1				
Horticulture				
Crop1 (specify)				
Cyclone				
Crop1				
Horticulture				
Crop1 (specify)				

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	Livestock insurance, Encourage fodder cultivation in village grazing lands & near rivers, On boundaries of agricultural field trees or shrubs like Sesbania, Subabul, Neem etc should be planted, Excess fodder may be stored as hay/silage, Establish fodder bank near forest areas, Training & awareness camp among extension personnels for needful at time of exigencies.	Utilizing fodder from perennial trees and fodder bank reserves. Transporting excess fodder from adjoining districts. Utilizing the existing crops which fail to grow adequately due to failure of monsoon for feeding of animals. Use of unconventional livestock feed such as sugar cane top, suar cane bagasse, banana gplant Crop residues such as water hyacinth and other like tree pods and seeds etc. Improving poor quality roughages by ammonia treatment, urea treatment, urea molasses mineral block etc and feeding them.	Avail crop insurance, Supplementary feeding of remaining livestock and the replacement stock
Drinking water	Preserve water in community tanks, ponds etc with sanitization, Wells or dug wells may be constructed in advance, Training & awareness camp among extension personnels	Water sources from Temples, Masjids, Churches may be used in case of shortfall of exiting potable warer, Animals not to be exposed to outside rather they should be community fedded	Plan accordingly for next year
Health and diseases management	Veterinary preparedness with vaccines & medicines, Training & awareness camp among extension personnels	Conducting animal health camps and treating the affected animals, Supplementation of mineral and vitamin mixtures	Culling of unproductive livestock, Proper disposal of dead animals
Floods			
Feed and fodder availability	Livestock insurance, Encourage	Priorities animals as suckling	Provision of supplementary

	<p>fodder cultivation in village grazing lands & near rivers, On boundaries of agricultural field trees or shrubs like Sesbania, Subabul, Neem etc should be planted, Excess fodder should be stored as hay/silage, Establish fodder bank with dry straw & dry feed for at least 15 days, Training & awareness camp among extension personnels for needful at time of exigencies.</p>	<p>animals, suckling animals along with their nursing mothers, producing and working animals, sick and old animals, adult open and non-producing animals as the feed and water may be in short supply. Procured feeds and fodders should be fed to all animals on the order of priority of animals. Straws and stoves that got soaked during floods need not be thrown away out right. They can be fed to animals as long as rotting or fungal growth has not set in. Partial drying choffing and sprinkling concentrate mixture can improve intake and utility.</p>	<p>feeding (concentrate / Roughage) with vitamin & minerals.</p>
Drinking water	<p>Preserve safe drinking water in community tanks which is not prone to seepage of rain or flood water, Arrange chlorine tablets for sanitization of water and bleaching powder for disinfection of habitats & shelter places, Training & awareness camp among extension personnels</p>	<p>Drinking water be made available to the animals in any kind of clean container available with the farmer.</p>	<p>Provision of clean drinking water.</p>
Health and diseases management	<p>Prior construction of shelter places in elevated points, Vaccination of livestock Keep the emergency service kit (first Aid Requisites) ready always containing Cotton wool, Bandages, Surgical gauze, old cotton sheets, Rubber tubing (for</p>	<p>There should be one veterinarian with 3 to 4 village to work with the help of local volunteers. The team should be well equipped with contingent items like bandages, tourniquet ropes, drugs including painkillers, antiseptics, antibiotics, anti-venom</p>	<p>Prompt and appropriate attention to injuries by providing necessary medicines to the livestock owners. Vaccination campaign against common endemic diseases of the areas (like H.S. B.Q, Anthrax etc.) must be taken up urgently. Necessary steps should be taken</p>

	<p>torniquet), Surgical scissors . Curved and made of stainless steel, Forceps, Splints or Split bamboos (for fractures), Clinical thermometers, Potassium permanganate, Acriflavin, Dettol, Savlon, Tannic acid powder (for poisons) and Jelly (for burns) Antibiotic eye drops, Epsom salts, copper sulphate, Treacle, oil of turpentine (for bloat), Obstetric ropes, chains and hooks, Tincture of iodine, tincture of Benzoin Co.(for wounds), Cotton rope, halters (for restraint) & the like.</p>	<p>and anti-shock drugs etc.. Keep the animals loose in paddock (sheltered or unsheltered) Releasing animals from the unnatural and harmful position or situation, binding broken limbs, administering painkillers, anti-poison and anti-shock drugs, Performing euthanasia on hopelessly injured and suffering animals with the consent of their owners</p>	<p>for the control of non-specific digestive and respiratory infections in consultation of local veterinary personals.</p> <p>Improving shed hygiene especially in the farmers household through cleaning and disinfection</p>
Cyclone	NOT PREVALENT		
Feed and fodder availability			
Drinking water			
Health and diseases management			
Heat wave and cold wave	NOT PREVALENT		
Shelter/ environment management			
Health and diseases management			

2.5.2 Poultry

	Suggested contingency measures		
	Before the event ^a	During the event	After the event
Drought			
Feed and fodder availability	<p>Insurance of Poultry farms</p> <p>Ensure procurement of feed ingredients sufficient ahead</p> <p>Establish feed serve bank</p>	<p>Feed utilisation from feed bank</p> <p>Feed supplementation will be made to the farms</p>	<p>Availing insurance</p> <p>Attempt will be made for available of feed ingredient or compound feed to the farmers</p>
Drinking water	<p>Check water source for ensuring sufficient potable water during draught</p>	<p>Attempt will be made to provide sanitized drinking water</p>	<p>Availability of water will be ensured by digging of bore well</p>
Health and diseases management	<p>Procurement of vaccines and medicines and antistress agent.</p> <p>Feeding antibiotics</p> <p>Procurement of litter materials</p>	<p>Administration of vaccines</p> <p>Continue feeding of antistress agent</p>	<p>Culling of affected birds</p>
Floods			
Feed and fodder availability	<p>Ensure procurement of feed ingredients / compound feed sufficient ahead as feed supply to the farm will hamper due to submergence of the connecting roads</p>	<p>Supply the compound feed to the poultry farm under submerged area</p>	<p>Supply will continued till the situation is under control</p>
Drinking water	<p>Protect the water sources from submergence</p>	<p>Attempt will be made to provide sanitized drinking water</p>	<p>Water sources will sanitized with bleaching powder or any water sanitizer</p>
Health and diseases management	<p>Procurement of vaccines and</p>	<p>Continue feeding antibiotics</p>	<p>Disinfection of the farm premises.</p>

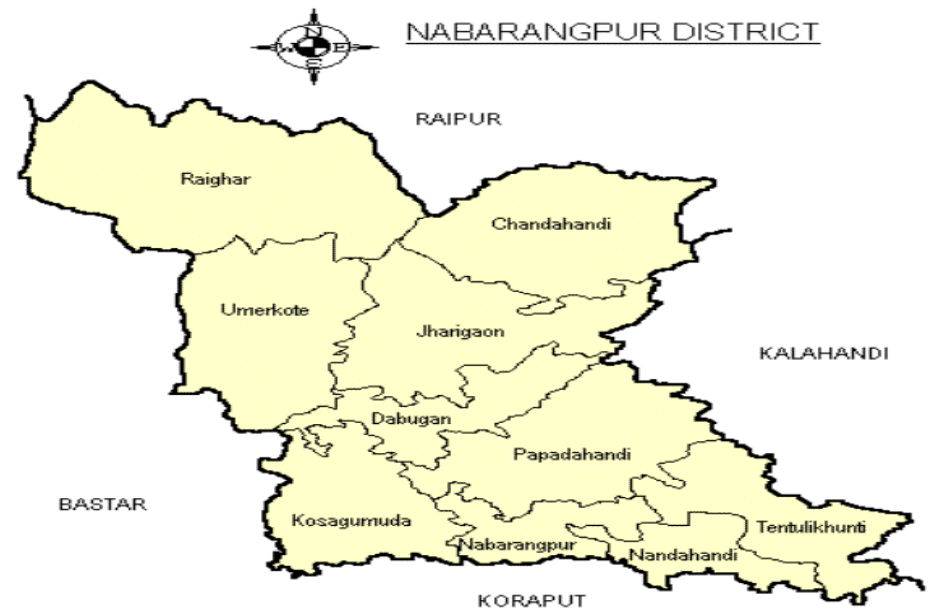
	<p>medicines.</p> <p>Feeding antibiotics</p> <p>Procurement of litter materials</p>	<p>Prevent entrance of flood water to the shed</p> <p>Replace wet litter</p> <p>Proper disposal of dead birds if any</p>	<p>Feeding antibiotics And deworming.</p> <p>Replace wet litter</p> <p>Disinfection of sheds. Proper disposal of dead birds if any</p>
Cyclone	NOT P R E V A L E N T		
Feed and fodder availability			
Drinking water			
Health and diseases management			
Heat wave and cold wave	NOT P R E V A L E N T		
Shelter/ environment management			
Health and diseases management			

2.5.3 Fisheries

	Suggested contingency measures		
	Before the event^a	During the event	After the event
Drought			
Shallow water in ponds due to insufficient rains/inflow	<ol style="list-style-type: none"> 1. Restricted release of water from reservoir. 2. Supplementary water harvest structures like pond and tanks has to be developed. 3. Renovation and maintenance of existing water harvest structures 	<ol style="list-style-type: none"> 1. Restrict lifting of water for irrigation purpose of crops 2. Catch the stock, market the produce to reduce the density of population in ponds. 	<ol style="list-style-type: none"> 1. Excavate the ponds to increase the depth. 2. Try to release water into the pond if it rains in off-season
Impact of heat & salt load build up	<ol style="list-style-type: none"> 1. Prepare to release water 	<ol style="list-style-type: none"> 1. Mixing of water from the water 	<ol style="list-style-type: none"> 1. Monitoring the water quality

in ponds / change in water quality	into the habitat	harvest structure like ponds and tanks into the fish habitat.	and health of aquatic organisms
Floods			
Inundation with flood waters	<ol style="list-style-type: none"> 1. Construction of humane shelter. 2. Storage of sand filled bags for emergency use. 3. Repair and maintenance of bundhs. 4. Preparedness for relief 5. Insurance coverage provision for life and property 	<ol style="list-style-type: none"> 1. Timely broadcast and telecast and other types of announcement warning about the danger level with respect to water level. 2. Evacuation of people to flood shelter areas. 3. Relief operation. 	<ol style="list-style-type: none"> 1. Relief operation will continue. 2. Care of health of affected people 3. Settlement of insurance. 4. Financial support to other people.
Water contamination & change in BOD	Take appropriate measures to check seepage into pond e.g. Raising bunds to prevent entry of water	Check the water quality & take appropriate action	<ol style="list-style-type: none"> 1. Application of lime and geolite. 2. Application of Alum. 3. Application of KmnO4
Health and diseases management	Stock preventive medicines, vaccines	<p>Prevent influx of diseased fish from outside source, Check through nets</p> <p>Administer medicines through random catch</p> <p>Disinfect water by lime , KMnO4</p>	<ol style="list-style-type: none"> 1. Application of lime and KmnO4. 2. Assessment of the health status of fish and accordingly control measure should be taken. 3. Control on transport of brooders and seeds.

Cyclone	NOT PREVALENT		
Overflow/ Flooding of ponds			
Change in fresh/brackish water ratio			
Health and diseases management			
Heat wave and cold wave	NOT PREVALENT		
Management of pond environment			
Health and diseases management			





STATE MAP OF ORISSA
DISTRICT NABARANGPUR IN ORISSA

Sd/-

Yours faithfully

*Senior Scientist & Head
KVK, Nabarangpur*