

State: ODISHA

Agriculture Contingency Plan for District: SUBARNAPUR (SONAPUR)

1.0 District Agriculture profile					
1.1	Agro-Climatic/Ecological Zone				
	Agro Ecological Sub Region (ICAR)	Gujrat hills, Dandakaranya and Eastern Ghats hot moist sub-humid eco-sub-region(12.1)			
	Agro-Climatic Zone (Planning Commission)	Eastern plateau and hills region (VII)			
	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)	Sonepur, Bolangir, Sambalpur, Bargarh, Jharsuguda			
	Geographic coordinates of district headquarters	Latitude	Longitude	Altitude	
		20 ⁰ 50' 54.10'' N	83 ⁰ 52' 34.40'' E	134 m	
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Regional Research and Technology Transfer Station(RRTTS), Chipilima, Sambalpur, 768025, Odisha			
	Mention the KVK located in the district with address	K.V.K., Sonepur Po- Sonepur, Post bag No- 01, Dist- Subarnapur, 767017, Odisha			
Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro-advisories in the Zone	AMFU, IMD located at RRTTS, Chiplima, Sambalpur-768025. Odisha (100 km from district HQ)				
1.2	Rainfall	Normal RF (mm)	Normal Rainy days (number)	Normal Onset	Normal Cessation
	SW monsoon (June-Sep):	1253.9	50.3	3 rd week of June	1 st week of October
	NE Monsoon(Oct-Dec):	74.5	4.4	-	-
	Winter (Jan- Feb)	45.4	3.5	-	-
	Summer (march-May)	44.7	12.4	-	-
	Annual	1418.5	61.6	-	-

1.3	Land use pattern of the district (latest statistics)	Geographical area	Cultivable area	Forest area	Land under non-agricultural use	Permanent pastures	Cultivable wasteland	Land under Misc. tree crops and groves	Barren and uncultivable land	Current fallows	Other fallows
	Area ('000 ha)	185.4	135.4	12.5	1.02	12.8	7.9	3.5	12.2		7.1

1.4	Major Soils (common names like red sandy loam deep soils (etc.,))*	Area ('000 ha)	Percent (%) of total
	Red & Yellow	90.8	49
	Red & Black	51.9	28
	Black	25.9	14
	Brown forest	9.3	5
	Laterite	7.4	4

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

1.5	Agricultural land use	Area ('000 ha)	Cropping intensity %
	Net sown area	99.5	167.6
	Area sown more than once	67.3	
	Gross cropped area	166.7	

1.6	Irrigation	Area ('000 ha)		
	Net irrigated area	44.1		
	Gross irrigated area	72.8		
	Rainfed area	92.3		
	Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
	Canals		53.1	72.9
	Tanks		5.1	6.9
	Open wells		2.4	3.3
	Bore wells		2.4	3.3
	Lift irrigation schemes		9.8	13.4
	Micro-irrigation		0.1	0.1
	Other sources (please specify)		-	

Total Irrigated Area		72.8	
Pump sets	1424		
No. of Tractors	100		
Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	No. of blocks/ Tehsils	(%) area	Quality of water (specify the problem such as high levels of arsenic, fluoride, saline etc)
Over exploited			
Critical			
Semi- critical			
Safe	06	100	Good & neutral (PHH)
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) (2008-09)

1.7	Major field crops cultivated	Area ('000 ha)							
		<i>Kharif</i>			<i>Rabi</i>			Summer	Grand total
		Irrigated	Rainfed	Total	Irrigated	Rainfed	Total		
Paddy	62.7	34.5	97.2	28.4	-	28.4	-	121.3	
Green gram	0.3	7.7	8.03	1.5	11.7	13.2	-	21.3	
Red gram	0.1	3.9	4.05	-	-	-	-	4.1	
Black gram	0.1	3.4	3.5	0.2	2.3	2.5	-	6.03	
Sesamum	0.03	2.5	2.5	0.04	0.8	0.8	-	3.3	
Ground nut	0.2	0.2	0.3	1.3	-	1.3	-	1.6	
Sunflower	-	-	-	0.2	-	0.2	-	0.2	
Mustard	-	-	-	0.5	2.9	3.4	-	3.4	
Vegetable	0.7	5.6	6.3	9.2	0.2	9.4	-	15.8	
Spices	-	-	0.4	1.08	-	1.08	-	1.5	
Sugarcane	-	-	-	0.2	-	0.2	-	0.2	

	Horticulture crops - Fruits	Area ('000 ha)
		Total
	Mango	3.3
	K. lime	0.4
	Banana	0.6
	Guava	0.4

	Horticulture crops - Vegetables	Total
	Potato	0.01
	Onion	0.9
	Other vegetables	14.6

	Medicinal and Aromatic crops	Total
	Aonla	0.03
	Chillies	0.9
	Garlic	0.2
	Coriander	0.3
	Plantation crops	Total
	Coconut	0.3
	Forestry Crop	8,93,200 (no's)
	Eg., industrial pulpwood crops etc.	
	Fodder crops	Total
	Total fodder crop area	-
	Grazing land	13
	Sericulture etc	-
	Others (cultivable waste)	8
	Barren and uncultivable waste	12
	Current fallow	28
	Other fallow	7

1.8	Livestock	Male ('000)	Female ('000)	Total ('000)
	Non descriptive Cattle (local low yielding)	35.0	65.1	100.1
	Improved cattle	40.7	51.9	92.6
	Crossbred cattle	30.5	39.5	70.0
	Non descriptive Buffaloes (local low yielding)	-	-	-
	Descript Buffaloes	-	-	-
	Goat	30.6	58.2	88.8
	Sheep	12.02	23.9	35.9
	Others (Camel, Pig, Yak etc.)	595	670	1265
	Commercial dairy farms (Number)			

1.9	Poultry	No. of farms	Total No. of birds ('000)
	Commercial	7	54.0
	Backyard	50	25.0

1.10 Fisheries (Data source: Chief Planning Officer)						
A. Capture						
i) Marine (Data Source: Fisheries Department)	No. Of fishermen	Boats		Nets		Storage facilities (Ice plants etc.)
		Mechanized	Non-mechanized	Mechanized (Trawl nets, Gill nets)	Non-mechanized (Shore Seines, Stake & trap nets)	
	-					
ii) Inland (Data Source: Fisheries Department)	No. Farmer owned ponds		No. of Reservoirs		No. of village tanks	
	280		12		4200	
B. Culture						
			Water Spread Area (ha)	Yield (t/ha)	Production ('000 tons)	
i) Brackish water (Data Source: MPEDA/ Fisheries Department)			-	-	-	
ii) Fresh water (Data Source: Fisheries Department)			4570.19	2.1	5001.193 MT	
Others						

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

1.11	Name of crop	Kharif		Rabi		Summer		Total		Crop residue as fodder ('000 tons)
		Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	
Major Field crops (Crops to be identified based on total acreage)										
	Rice	156.8	2408	89.9	4721	-	-	246.7	2931	
	Green gram	3.7	466	6.5	488	-	-	10.2	480	
	Black gram	1.9	545	1.02	408	-	-	2.9	488	
	Arhar	2.7	664	-	-	-	-	2.7	664	
	Sesamum	1.3	503	0.4	440	-	-	1.6	488	
	Groundnut	0.5	1705	2.9	2218	-	-	3.4	2119	
Major Horticultural crops (Crops to be identified based on total acreage)										
	Onion	-	-	9.2	9882	-	-	9.2	9882	
	Chilli	0.3	775	0.5	868	-	-	0.8	828	
	Sweet potato	2.05	8542	0.3	8333	-	-	2.3	8518.8	
	Other veg.	67.9	11146	110.6	13064	-	-	178.6	12261	

1.12	Sowing window for 5 major field crops	Paddy	Greengram	Redgram	Blackgram	Sesamum
	Kharif- Rainfed	June 15-July 25	June 15- July 10	June 15- July 15	June 15- July 10	June 20 – July 15
	Kharif-Irrigated	June 15-July 25	June 15- July 10	June 15- July 15	June 15- July 10	June 20 – July 15
	Rabi- Rainfed	-	December 15 –January 15	-	November 15 – December 15	December
	Rabi-Irrigated	January-February	December 15 –January 15	-	November 15 – December 15	January

1.13	What is the major contingency the district is prone to? (Tick mark)	Regular	Occasional	None
	Drought	√		
	Flood		√	
	Cyclone			√
	Hail storm		√	
	Heat wave	√		
	Cold wave		√	
	Frost		√	
	Sea water intrusion			√
	Pests and disease outbreak (specify) Swarming caterpillar		√	
	Others (specify) paddy Stem Borer, Blast	√		

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	Normal Crop / Cropping system	Change in crop / cropping system including variety	Agronomic measures	Remarks on Implementation
Delay by 2 weeks (July 1 st week)	Plain land Rainfed <u>Sub situations</u> Up land, medium rainfall, Black soil	Rice-fallow	Paddy (Khardagiri , Pathara, Hira, Jhu, Bandana) & adoption of intercropping •Paddy-Arhar •Paddy- Maize •Paddy- Black gram •Paddy-Green gram	Apply FYM @ 5 t/ha, closer spacing and 20 % higher seed rate	Seeds to be supplied through NFSM, OSSC

		Pulse	<ul style="list-style-type: none"> • Arhar (Upas-120) • Black gram (TU-94-2, PU30, Sarada). 	<ul style="list-style-type: none"> • Sowing behind the plough/ Broadcasting • Inoculation with rhizobium 	
			<ul style="list-style-type: none"> • Green gram(K-851, Dhauli) 		
		Cotton	Hybrid cotton (Bunny, Sri Tulasi, Gabbar, Dhanno, etc) intercropping with arhar	<ul style="list-style-type: none"> • Line sowing(8:2 ratio) • Application of FYM @ 5 t/ha 	Techn. Support from OUAT, Agril. Dept., NFSM
Medium land, medium rainfall, black soil	Paddy- fallow	<ul style="list-style-type: none"> • Paddy (Lalat, Manaswini, MTU-1010, Surendra, Konark) 	<ul style="list-style-type: none"> • Paddy- green gram (tarm-1, PDM-54) 	<ul style="list-style-type: none"> • Apply FYM, closer spacing and 20 % higher seed rate • Growing of nursery near water source • Direct seeding of paddy 	RKVY / ISOPOM/ NFSM
		<ul style="list-style-type: none"> • Paddy- green gram (tarm-1, PDM-54) 			
	Paddy-Greengram	<ul style="list-style-type: none"> • -do- 	<ul style="list-style-type: none"> -do- 		
Unbunded Upland, medium rainfall, sandy loam, red & yellow, acid soil	Paddy-Fallow	Intercropping of	<ul style="list-style-type: none"> • Arhar + rice (2:5) • Arhar + groundnut (2:6) • Arhar + sesame (2:4) • Arhar+ green gram/ black gram (2:3) • Agri-Horti system (Mango) 	<ul style="list-style-type: none"> • Plough and sow the crops across the slope for moisture conservation. • Mechanization for timely and precise operations. • liming @ 5 q/ha mixed with FYM @ 1.0 t/ha in furrows before sowing • Intercropping of cowpea in mango 	Seeds & lime to be supplied through NFSM/ OSSC/ RKVY/ATMA/NHM
	Arhar/ Greengram/ Sesame (Local) - Fallow	<ul style="list-style-type: none"> • Arhar (ICPL- 85063, UPAS-120) • Green gram (Durga, PDM-11, Dhauli) • Sesame (Uma, GT-2) 	<ul style="list-style-type: none"> • Plough and sow the crops across the slope for moisture conservation. • Mechanization for timely and precise operations. • liming @ 5 q/ha mixed with FYM @ 1.0 t/ha in furrows before sowing 		

		Vegetables- Fallow	<ul style="list-style-type: none"> •Brinjal (Utkal keshari, Blue star, Pusa purple long) •Tomato (Utkal raja, BT-10) 	<ul style="list-style-type: none"> • Raising of seedlings under protected nursery • Seedling root dip with fungicide/ bactericide • liming @ 5 q/ha mixed with FYM @ 1.0 t/ha in furrows before sowing 	
	Medium land, medium rainfall, sandy loam, red & yellow, acid soil	Paddy – Fallow	<ul style="list-style-type: none"> •Paddy (Lalat, Manaswini, MTU-1010, Surendra, Konark) •Sowing of Horse gram (Urmi) after paddy in available moisture 	<ul style="list-style-type: none"> • Plough and sow the crops across the slope for moisture conservation. • Mechanization for timely and precise operations. • liming @ 5 q/ha mixed with FYM @ 1.0 t/ha in furrows before sowing • Water harvesting (digging ponds and lining) in 10-12% area 	Seeds & lime to be supplied through NFSM/ OSSC/ RKVY/ATMA
	Low land, medium rainfall, clay loam, red & yellow soil	Paddy – Greengram/Blackgram	<ul style="list-style-type: none"> • Paddy (Swarna, Pratikshya, Raneedhan, CR-1009) • Green gram (PDM-54, TARM-1, Dhauri, Durga) • Black gram(Sarala, PU-30) 	<ul style="list-style-type: none"> • Application of FYM @ 5 t/ha in kh. paddy • Adopt Paira cropping with green gram/black gram • Construction of percolation tanks to recharge the soil profile and for supplemental irrigation 	
		Paddy – Linseed/ Lathyrus	<ul style="list-style-type: none"> • Paddy (Swarna, Pratikshya, Raneedhan, CR-1009) • Lin seed (Mukta) • Grow Blackgram in place of Lathyrus 	-do-	
	Undulated sub-mountainous tract,	Paddy –	•Paddy (Swarna, Pratikshya,	-do-	

	medium rainfall, brown forest soil	Greengram/Blackgram	Raneedhan, CR-1009)		
			•Greengram (PDM-54, TARM-1, Dhauli, Durga)		
			•Blackgram (Sarala, PU-30)		

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delay by 4 weeks (July 3rd week)	Plain land Rainfed <u>Sub situations</u> Up land, medium rainfall, Black soil	Rice-fallow	Paddy (Khardagiri , Pathara, Hira, Jhu, Bandana, kalinga-III, Mandakini) & adoption of intercropping •Paddy-Arhar •Paddy- Maize •Paddy- Black gram •Paddy-Green gram •Agri- Silvi system (Planting of <i>A. angium</i> , <i>A. auriculiformis</i> in bund) •Mushroom cultivation, goatery, poultry	<ul style="list-style-type: none"> Apply FYM, closer spacing and 20 % higher seed rate Store rain water through on farm water harvesting structures to use as life saving irrigation Intercropping of maize/cowpea/g.gram/ B.gram/ sesame in Agri-silvi system 	Seeds to be supplied through NFSM, OSSC/NREGS/DRDA
		Pulse	<ul style="list-style-type: none"> Arhar (UPAS-120) Blackgram (TU-94-2, PU30, Sarada). Greengram (K-851, Dhauli) 	<ul style="list-style-type: none"> Sowing behind the plough/ Broadcasting Inoculation with rhizobium 	Seeds to be supplied through NFSM, OSSC
		Cotton	Hybrid cotton (Bunny, Sri Tulasi, Gabbar, Dhanno, etc) intercropping with arhar	<ul style="list-style-type: none"> Line sowing (8:2 ratio) Application of FYM @ 5t/ha 	Techn. Support from OUAT, Agril. Dept., NFSM
	Medium land, medium rainfall, black soil	Paddy- fallow	<ul style="list-style-type: none"> Paddy (Lalat, Manaswini, MTU-1010, Surendra, Konark) 	<ul style="list-style-type: none"> Apply FYM, closer spacing and 20 % higher seed rate Growing of nursery near water source 	RKVY / ISOPOM/ NFSM/NREGS/DRDA

			<ul style="list-style-type: none"> • Paddy- Greengram (TARM-1, PDM-54) 	<ul style="list-style-type: none"> • Direct seeding of paddy • Diverting 10% of the cultivable area for storing excess • rain water 	
		Paddy-green gram	<ul style="list-style-type: none"> • Paddy (Lalat, Manaswini, MTU-1010, Surendra, Konark) • Paddy- Greengram (TARM-1, PDM-54) 	<ul style="list-style-type: none"> • Apply FYM, closer spacing and 20 % higher seed rate • Growing of nursery near water source • Direct seeding of paddy 	RKVY / IS0POM/ NFSM
Un bunded upland, medium rainfall, sandy loam, red & yellow, acid soil	Paddy-fallow	<ul style="list-style-type: none"> • Intercropping of • Arhar + Rice (2:5) • Arhar + Groundnut (2:6) • Arhar + Sesame (2:4) • Arhar+ Greengram/ Black gram (2:3) • Agri-Horti system (Mango and Guava) • Planting fruit trees 	<ul style="list-style-type: none"> • Plough and sow the crops across the slope for moisture conservation • Moisture conservation through mulching • Mechanization for timely and precise operations. • Liming @ 5 q/ha mixed with FYM @ 1.0 t/ha in furrows before sowing • Intercropping of cowpea in mango 	Seeds & lime to be supplied through NFSM/ OSSC/ RKVY/ATMA/NHM	
	Arhar/ Greengram/ Sesame (Local) - fallow	<ul style="list-style-type: none"> • Arhar (ICPL- 85063, UPAS-120) • Green gram (Durga, PDM-11, Dhauri) • Sesame (Uma, GT-2) 	<ul style="list-style-type: none"> • Plough and sow the crops across the slope for moisture conservation. • Mechanization for timely and precise operations. • Liming @ 5 q/ha mixed with FYM @ 1.0 t/ha in furrows before sowing 	Seeds & lime to be supplied through NFSM/ OSSC/ RKVY/ATMA	
	Vegetables- fallow	<ul style="list-style-type: none"> • Brinjal (Utkal keshari, Blue star, pusa purple long) • Tomato (Utkal raja, BT-10) 	<ul style="list-style-type: none"> • Raising of seedlings under protected nursery • Seedling root dip with fungicide/ bactericide. • Liming @ 5 q/ha mixed with FYM @ 1.0 t/ha in furrows before sowing 		

	Medium land, medium rainfall, sandy loam, red & yellow, acid soil	Paddy - fallow	<ul style="list-style-type: none"> • Paddy (Lalat, Manaswini, MTU-1010, Surendra, Konark) • Sowing of Horse gram (Urmi) after paddy in available moisture 	<ul style="list-style-type: none"> • Plough and sow the crops across the slope for moisture conservation. • Mechanization for timely and precise operations. • Liming @ 5 q/ha mixed with FYM @ 1.0 t/ha in furrows before sowing • Water harvesting (digging ponds and lining) in 10-12% area 	
	Low land, medium rainfall, clay loam, red & yellow soil	Paddy – Greengram/Black gram	<ul style="list-style-type: none"> • Paddy (Swarna, Pratikshya, Raneedhan, CR-1009) • Green gram (PDM-54, TARM-1Dhauri, Durga) • Black gram(Sarala, PU-30) 	<ul style="list-style-type: none"> • Application of FYM @ 5 t/ha in kh. paddy • Adopt Paira cropping with green gram/black gram • Construct ion of percolation tanks to recharge the soil profile and for supplemental irrigation • Growing of community nursery near water source 	
		Paddy – lin seed/ lathyrus	<ul style="list-style-type: none"> • Paddy (Swarna, Pratikshya, Raneedhan, CR-1009) • Lin seed (Mukta) • Grow black gram in place of lathyrus 	-do-	Seeds to be supplied through NFSM/ OSSC/ RKVY/ ATMA
	Undulated sub-mountainous tract, medium rainfall, brown forest soil	Paddy – Greengram/Black gram	<ul style="list-style-type: none"> •Paddy (Swarna, Pratikshya, Raneedhan, CR-1009) •Green gram (PDM-54, TARM-1, Dhauri, Durga) •Black gram(Sarala, PU-30) 	-do-	

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Early season drought (delayed onset) Delay by 6 weeks (August 1 st week)	Plain land Rainfed <u>Sub situations</u> Up land, medium rainfall, Black soil	Rice-fallow	<ul style="list-style-type: none"> • Substitution of paddy with maize and cowpea intercropping • Sole cropping of Green gram (Durga/jyoti/ TARM-1) and Black gram(Sarala) • Agri- Silvi system (Planting of <i>A. angium</i>, <i>A. auriculiformis</i> in bund) • Mushroom cultivation, goatery, poultry 	<ul style="list-style-type: none"> • Apply FYM @ 5 t/ha • Store rain water through on farm water harvesting structures to use as life saving irrigation • Intercropping of maize/cowpea/g.gram/ B.gram/ sesame in Agri-silvi system • Insitu moisture conservation by contour bunding,terracing. • Mulching in the inter row space in maize bu using local available material. • Mechanization for timely and precise operations 	Seeds to be supplied through NFSM, OSSC/NREGS/DRDA
		Pulse	<ul style="list-style-type: none"> •Blackgram (TU-94-2, PU30, Sarada). •Greengram(K-851, Dhauli) 	<ul style="list-style-type: none"> • Sowing behind the plough/ Broadcasting • Inoculation with rhizobium. • Mulching in the inter row space in maize by using local available material. • Mechanization for timely and precise operations 	Seeds to be supplied through NFSM, OSSC
		Cotton	Hybrid cotton (Bunny, Sri Tulasi, Gabbar, Dhanno, etc) intercropping with arhar	<ul style="list-style-type: none"> • Line sowing(8:2 ratio) • Application of RDF with plant protection measures 	Techn. Support from OUAT, Agril. Dept., NFSM
	Medium land, medium rainfall, black soil	Paddy- fallow	<ul style="list-style-type: none"> •Paddy (Khandagiri,Annada,Sidhanta, Mandakini) •Paddy- green gram (TARM-1, PDM-54) 	<ul style="list-style-type: none"> • Apply FYM @ 5 t/ha, closer spacing and 20 % higher seed rate • Growing of nursery near water source • Direct seeding of sprouted paddy • Diverting 10% of the cultivable area for storing excess rain water 	RKVY / ISOPOM/ NFSM/NREGS/DRDA

		Paddy-Greengram	<ul style="list-style-type: none"> •Paddy (Khandagiri, Annada, Sidhanta, Mandakini) •Paddy- green gram (TARM-1,PDM-54) 	<ul style="list-style-type: none"> • Apply FYM, closer spacing and 20 % higher seed rate • Growing of nursery near water source • Direct seeding of sprouted paddy 	RKVY / IS0POM/ NFSM
Unbunded Upland, medium rainfall, sandy loam, red & yellow, acid soil		Upland Paddy-fallow	<ul style="list-style-type: none"> • Agri-Horti system (Mango and guava) • Planting fruit trees • Substitution of paddy with maize and cowpea intercropping • Sole cropping of Green gram (Durga/jyoti/Tarm-1) and Black gram(Sarala) 	<ul style="list-style-type: none"> • Plough and sow the crops across the slope for moisture conservation • Moisture conservation through mulching • Mechanization for timely and precise operations. • liming @ 5 q/ha mixed with FYM @ 1.0 t/ha in furrows before sowing • Intercropping of cowpea in mango 	Seeds & lime to be supplied through NFSM/ OSSC/ RKVY/ATMA/NHM
		Arhar/ Greengram/ Sesame (Local) - Fallow	<ul style="list-style-type: none"> •Green gram (Durga, PDM-11, Dhauli) 	<ul style="list-style-type: none"> • Plough and sow the crops across the slope for moisture conservation. • Mechanization for timely and precise operations. • Liming @ 5 q/ha mixed with FYM @ 1.0 t/ha in furrows before sowing 	Seeds & lime to be supplied through NFSM/ OSSC/ RKVY/ATMA
			<ul style="list-style-type: none"> •Sesame (Uma, GT-2) •Agri-Horti system (Mango and guava) •Planting fruit trees 		
Medium land, medium rainfall,		Vegetables- fallow	<ul style="list-style-type: none"> •Brinjal (Utkal keshari, blue star, pusa purple long) •Tomato (Utkal raja, BT-10) • 	<ul style="list-style-type: none"> • Raising of seedlings under protected nursery • Seedling root dip with fungicide/ bactericide. • Liming @ 5 q/ha mixed with FYM @ 1.0 t/ha in furrows before sowing 	Seeds & lime to be supplied through NFSM/ OSSC/
			Paddy - fallow		

	sandy loam, red & yellow, acid soil		<ul style="list-style-type: none"> • Sowing of Horse gram (Urmi) after paddy in available moisture 	<ul style="list-style-type: none"> • Mechanization for timely and precise operations. • liming @ 5 q/ha mixed with FYM @ 1.0 t/ha in furrows before sowing • Water harvesting (digging ponds and lining) in 10-12% area. 	RKVY/ATMA
Low land, medium rainfall, clay loam, red & yellow soil	Paddy – Greengram/ Blackgram	<ul style="list-style-type: none"> •Paddy (MTU-1001, Pratikshya, surendra, Tejaswini) 	<ul style="list-style-type: none"> • Application of FYM @ 5 t/ha in kh. paddy • Adopt Paira cropping with green gram/black gram • Construct ion of percolation tanks to recharge the soil profile and for supplemental irrigation. • Direct sowing of sprouted seed 		
		<ul style="list-style-type: none"> •Green gram (PDM-54, TARM-1, Dhauri, Durga) 			
<ul style="list-style-type: none"> •Black gram(Sarala, PU-30) 					
Undulated sub-mountaineous tract, medium rainfall, brown forest soil	Paddy –Linseed/ lathyrus	<ul style="list-style-type: none"> •Paddy (MTU-1001, Pratikshya, surendra, Tejaswini) 	-do-		
		<ul style="list-style-type: none"> •Lin seed (Mukta) 			
		<ul style="list-style-type: none"> •Grow black gram in place of lathyrus 			
Undulated sub-mountaineous tract, medium rainfall, brown forest soil	Paddy – green gram/black gram	<ul style="list-style-type: none"> • Paddy (MTU-1001, Pratikshya, surendra,Tejaswini) 	<ul style="list-style-type: none"> • Green manuring with Dhanicha if unseasonal rain receives earlier. • Application of FYM @ 5 t/ha in kh. paddy • Adopt Paira cropping with green gram/black gram • Construct ion of percolation tanks to recharge the soil profile and for supplemental irrigation 		
		<ul style="list-style-type: none"> • Green gram (PDM-54, TARM-1, Dhauri, Durga) 			
		<ul style="list-style-type: none"> • Black gram(Sarala, PU-30) 			

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Early season drought (delayed onset) Delay by 8 weeks (August 3 rd week) August – September	Plain land Rainfed Sub situations Up land, medium rainfall, Black soil	Rice-fallow	Paddy should be replaced with maize (Short duration hybrid maize Hishell, proagro, Bio-9681), cowpea, blackgram (T-9, Pant-U-19, Pant-U-30, Ujala and Sarala), sesame (Uma), pumpkin <ul style="list-style-type: none"> Adoption of intercropping of maize with cowpea Agri-Silvi system (Planting of <i>A. angium</i>, <i>A. auriculiformis</i> in bund) Mushroom cultivation, goatery, poultry 	<ul style="list-style-type: none"> Apply FYM, closer spacing and 20 % higher seed rate Store rain water through on farm water harvesting structures to use as life saving irrigation Intercropping of Maize/Cowpea/Greengram/Bengalgram/ Sesame in Agri-silvi system Application of pre-emergence herbicide pendimethalin/ pretilachlor/ oxydiargyl in paddy 	Seeds to be supplied through NFSM, OSSC/NREGS/DRDA
		Pulse	<ul style="list-style-type: none"> Blackgram (TU-94-2, PU30, Sarada). 	<ul style="list-style-type: none"> Sowing behind the plough/ Broadcasting Inoculation with rhizobium 	Seeds to be supplied through NFSM, OSSC
			<ul style="list-style-type: none"> Greengram (K-851, Dhauri) 		
	Cotton	Diversification of Cotton with Maize and cow pea intercropping	<ul style="list-style-type: none"> Plough and sow the crops across the slope for moisture conservation Moisture conservation through mulching Mechanization for timely and precise operations. 	Techn. Support from OUAT, Agril. Dept., NFSM	
Medium land, medium rainfall, black soil	Paddy- fallow	<ul style="list-style-type: none"> Paddy (Lalat, Manaswini, MTU-1010, Surendra, Konark) 	<ul style="list-style-type: none"> Apply FYM, closer spacing and 20 % higher seed rate Growing of nursery near water source/Direct sowing of sprouted paddy Diverting 10% of the cultivable area for storing excess rain water 	RKVY / ISOPOM/ NFSM/NREGS/DRDA	
		<ul style="list-style-type: none"> Paddy- Greengram (TARM-1, PDM-54) 			

		Paddy-green gram	<ul style="list-style-type: none"> • Paddy (Mandakini, Yogesh , Sidhant) • Paddy- Greengram (TARM-1, PDM-54) 	<ul style="list-style-type: none"> • Apply FYM, closer spacing and 20 % higher seed rate • Growing of nursery near water source/Direct sowing of sprouted paddy 	RKVY / ISOPOM/ NFSM
Unbunded Upland, medium rainfall, sandy loam, red & yellow, acid soil	Paddy-fallow	Intercropping of	<ul style="list-style-type: none"> •Maize+ Cowpea •Groundnut (sole crop) •Sesame (Uma, GT-2) 	<ul style="list-style-type: none"> • Plough and sow the crops across the slope for moisture conservation • Moisture conservation through mulching • Mechanization for timely and precise operations. • Liming @ 5 q/ha mixed with FYM @ 1.0 t/ha in furrows before sowing • Intercropping of cowpea in mango • Application of pre-emergence herbicide pendimethalin@1200 ml/ha 	Seeds & lime to be supplied through NFSM/ OSSC/ RKVY/ATMA/NHM
			<ul style="list-style-type: none"> •Greengram(K-851, Sujata)/ •Blackgram (T-9, PU-30) 		
			<ul style="list-style-type: none"> •Agri-Horti system (Mango and guava) 		
			<ul style="list-style-type: none"> •Planting fruit trees 		
	Arhar/ green gram/ sesame (Local) - fallow	-do-	-do-	-do-	
	vegetables- fallow	<ul style="list-style-type: none"> •Cluster bean / cow pea (utkal manic)/Radish/Runner bean/okra 	<ul style="list-style-type: none"> • Plough and sow the crops across the slope for moisture conservation • Moisture conservation through mulching • Mechanization for timely and precise operations. • Liming @ 5 q/ha mixed with FYM @ 1.0 t/ha in furrows before sowing • Follow proper plant protection measures 	Seeds & lime to be supplied through NFSM/ OSSC/ RKVY/ATMA	
Medium land, medium rainfall, sandy loam, red &	Paddy - fallow	<ul style="list-style-type: none"> • Paddy (Khandagiri, Mandakini, Sidhant, Nabeen) 	<ul style="list-style-type: none"> • Apply FYM, closer spacing and 20 % higher seed rate • Growing of nursery near water source/Direct sowing of 		

	yellow, acid soil		<ul style="list-style-type: none"> Sowing of Horse gram (Urmi) after paddy if moisture is available 	<p>sprouted paddy</p> <ul style="list-style-type: none"> Diverting 10% of the cultivable area for storing excess rain water 	
	Low land, medium rainfall, clay loam, red & yellow soil	Paddy – Greengram/Black gram	<ul style="list-style-type: none"> Paddy (Surendra, Lalat, Konark) 	<ul style="list-style-type: none"> Application of FYM @ 5 t/ha in kharif paddy Adopt Paira cropping with green gram/black gram Construction of percolation tanks to recharge the soil profile and for supplemental irrigation Seed treatment/ spraying of endosulfan/ chloropyrifos Application of pre-emergence herbicide Pendimethalin/ Pretilachlor/ Oxydiargyl in paddy 	Seeds to be supplied through NFSM/ OSSC/ RKVY/ATMA
			<ul style="list-style-type: none"> Green gram (PDM-54, Dhauri, Sujata) Black gram(Sarala, PU-30) 		
			<ul style="list-style-type: none"> 		
		Paddy – lin seed/ lathyrus	<ul style="list-style-type: none"> Paddy (Surendra, Lalat, Konark) 	-do-	
			<ul style="list-style-type: none"> Lin seed (Mukta) Grow black gram in place of lathyrus 		
	F.S.- 2 : Undulated sub-mountainous tract, medium rainfall, brown forest soil	Paddy – Greengram/Black gram	<ul style="list-style-type: none"> Paddy (Surendra, Lalat, Konark) 	-do-	
			<ul style="list-style-type: none"> Green gram (PDM-54, TARM-1, Dhauri, Durga) 		
			<ul style="list-style-type: none"> Black gram(Sarala, PU-30) 		

Condition			Suggested Contingency measures		
Early season drought (Normal onset)	Major Farming situation	Normal Crop/cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	Plain land Rainfed	Rice-fallow	<ul style="list-style-type: none"> When there is more than 50% mortality, resow the crop up to July after receipt of sufficient rain water Sowing of green gram / Horse gram / Cow pea are encouraged 	<ul style="list-style-type: none"> If mortality is less than 50%, the crops may be top dressed with 40 kg N/ha after receiving rain as tillering fertilizer. Ploughing across the slope. 	RKVY, ATMA
	<u>Sub situations</u> Up land, medium rainfall, Black soil	Pulse	<ul style="list-style-type: none"> Re-sowing behind the plough after available of moisture if crop stand is < 50% in furrow and ridge method across the slope 	<ul style="list-style-type: none"> Inoculation with rhizobium 	Seeds to be supplied through NFSM, OSSC
		Cotton	<ul style="list-style-type: none"> Gap filling of seedlings raised in pie nursery 	<ul style="list-style-type: none"> Hoeing, weeding followed by ridging to the base of the crop rows at 20 days after sowing for <i>in-situ</i> moisture conservation. Spraying with neem formulation to manage early infestation by insect pests 	Technical Support from OUAT, Agril. Dept., NFSM
	Medium land, medium rainfall, black soil	Paddy- fallow	<p>When there is more than 50% mortality, resow the crop up to July after receive of sufficient rain water If mortality is less than 50%, the crops may be gap filled.</p>	<p>1) Application of FYM @ 1 t/ha Ploughing across the slope.</p>	<ul style="list-style-type: none"> Seeds to be supplied through NFSM, OSSC Mass campaigning
		Paddy-Greengram	<p>Re sowing of paddy (Var – Lalat, Konark, Manaswini)</p> <ul style="list-style-type: none"> Sow the seeds at 5-6 cm depth by <i>punji</i> method (6 - 8 seeds at one point) at a spacing of 20 cm x 10 cm and cover it with FYM to avoid seedling mortality due to moisture stress. Use a seed rate of 100 to 120 	<p>Storing excess rain water in refuges in medium land has been standardized by devoting 10% of the cultivable area</p>	

			kg per ha to maintain 400 - 600 plants/m ² .		
Unbunded Upland, medium rainfall, sandy loam, red & yellow, acid soil	Paddy-fallow	<ul style="list-style-type: none"> • Re sowing of paddy (Var – Pathara, JHU, Kalinga-III Vandana) or crop 	<ul style="list-style-type: none"> • Plough and sow the crops across the slope for moisture conservation. • Mechanization for timely and precise operations. • Liming @ 5 q/ha mixed with FYM @ 1.0 t/ha in furrows before sowing • Follow ridge and furrow method of sowing 	Seeds to be supplied through NFSM/ OSSC/ RKVY/ATMA	
		<ul style="list-style-type: none"> • substitution with Green gram (TARM-1, PDM-54, Sujata) 			
		<ul style="list-style-type: none"> • Agri-Horti System(Plantation of mango) 			
	Arhar/ Greengram/ sesame (Local) - fallow	<ul style="list-style-type: none"> • Resowing of crop if crop stand is < 50% • Agri-Horti System(Plantation of mango) 	<ul style="list-style-type: none"> • Cover with FYM after sowing of seed • Mechanization for timely and precise operations. • liming @ 5 q/ha mixed with FYM @ 1.0 t/ha in furrows before sowing • Follow ridge and furrow method of sowing 		
	Vegetables- fallow	<ul style="list-style-type: none"> • Cultivate vegetables-cowpea, guar, radish, runner bean, okra, cauliflower, brinjal, tomato wherever possible 	<ul style="list-style-type: none"> • Complete hoeing, weeding followed by ridging to the base of the crop • Follow ridge and furrow method of sowing • Mulching the inter row space with weeded plants 		
Medium land, medium rainfall, sandy loam, red & yellow, acid soil	Paddy - fallow	<ol style="list-style-type: none"> 1) Re sowing of paddy (Var – lalat, konark, Manaswini) 2) Crop substitution with sesamum, ground nut etc. 	<ul style="list-style-type: none"> • Plough and sow the crops across the slope for moisture conservation. • Mechanization for timely and precise operations. • liming @ 5 q/ha mixed with FYM @ 1.0 t/ha in furrows before sowing • Follow ridge and furrow method of sowing 		
Low land, medium rainfall, clay loam,	Paddy –	<ul style="list-style-type: none"> • If rice population is less than 50%, resow the crop, 	<ul style="list-style-type: none"> • If the rice population is more than 50% carry out 	Seeds to be supplied through NFSM/ OSSC/	

	red & yellow soil	Greengram/Blackgram	re sowing of paddy (Var MTU-7029, Puja, Raneedhan, Tejaswini) <ul style="list-style-type: none"> • Raise community nursery of rice for transplanting at a reliable water source to save time for further delay 	weeding and adjust the plant population by <i>Khelua</i> and top dressed with 40 kg N/ha as tillering fertilizer.	RKVY/ATMA
		Paddy – lin seed/ lathyrus	<ul style="list-style-type: none"> • If rice population is less than 50%, resow the crop, re sowing of paddy (Var MTU-7029, Puja, Raneedhan, Tejaswini) • Sowing of black gram after paddy(Sarala, PU-30) • Paira cropping may be followed • Raise community nursery of rice for transplanting at a reliable water source to save time for further delay 	<ul style="list-style-type: none"> • If the rice population is more than 50% carry out weeding and adjust the plant population by <i>Khelua</i> (removing and redistributing the hills) and clonal propagation. 	
	Undulated sub-mountainous tract, medium rainfall, brown forest soil	Paddy – green gram/black gram	<ul style="list-style-type: none"> • If rice population is less than 50%, re sowing of paddy (Var MTU-7029, Puja, Raneedhan, Tejaswini) • Raise community nursery of rice for transplanting at a reliable water source to save time for further delay 	-do-	

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Crop management	Soil nutrient & moisture conservation measues	Remarks on Implementation
(long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	Plain land Rainfed <u>Sub situations</u> Up land, medium rainfall, Black soil	Rice-fallow	Reduce plant population by 25% than the recommended no.	<ul style="list-style-type: none"> • Weeding of the plot and mulching by the wooded plant. • Spraying of potash fertilizer @ 2% 	ISOPOM,ATMA,IWDP RKVY

		Pulse	Foliar application of 2% urea at pre-flowering and flowering stage of green gram is helpful to mitigate drought.	<ul style="list-style-type: none"> • Complete hoeing and weeding in non paddy crop fields to provide dust mulch. • Spray 2% KCl + 0.1 ppm boron to black gram to overcome drought situations. 	Seeds to be supplied through NFSM, OSSC
		Cotton	<ul style="list-style-type: none"> • Spray 2% KCl + 0.1 ppm boron to overcome drought situations. • Spraying with bio-pesticide formulation to manage infestation by insect pests 	<ul style="list-style-type: none"> • Complete hoeing and weeding in non paddy crop fields to provide dust mulch. • Foliar application of 2% urea at pre-flowering and flowering stage is helpful to mitigate drought • Spray planofix or celmone 10 ppm (2 ml in 9 litre of water) at 45 days and 20 ppm (4 ml in 9 litre of water) 10 days later to prevent boll shedding in cotton 	Technical Support from OUAT, Agril. Dept., NFSM
	Medium land, medium rainfall, black soil	Paddy- fallow	<ul style="list-style-type: none"> • Do not practice <i>beushaning</i> (blind cultivation) in rice, if the crop is more than 45 days old. • Weed out the field without waiting for rainfall. • Go for gap filling using seedling of same age or clonal tillers to have a uniform distribution of plant. <p>If transplanting is delayed by 20 days follow</p> <ul style="list-style-type: none"> • Close spacing • 25 % more N as basal • 4-5 seedlings/hill 	<ul style="list-style-type: none"> • Strengthen the field bunds and close the holes to check seepage loss. • Withhold N fertilizer application up to receipt of rainfall. • Remove the weeds and follow plant protection measures against blast in the nursery ie. Tricyclazole @ 0.06 % 	ISOPOM,ATMA,IWDP RKVY,IWDP
		Paddy-green gram	-do-	<ul style="list-style-type: none"> • Strengthen the field bunds and close the holes to check seepage loss. • Withhold N fertilizer application up to receipt of rainfall. 	ISOPOM,ATMA,IWDP RKVY,IWDP

				<ul style="list-style-type: none"> • Spray 2% KCl + 0.1 ppm boron to black gram to overcome drought situations. • Foliar application of 2% urea at pre-flowering and flowering stage of green gram is helpful to mitigate drought. 	
Unbunded Upland, medium rainfall, sandy loam, red & yellow, acid soil	Paddy-Fallow	<ul style="list-style-type: none"> • Reduce population by 25% than the recommended no. • Agri-Horti System(Plantation of mango) 	<ul style="list-style-type: none"> • Weeding of the plot and mulching by the weeded plant. • Spraying of potash fertilizer @ 2% 	RKVY, ATMA, NFSM	
	Arhar/ Greengram/ Sesame (Local) - Fallow	<ul style="list-style-type: none"> • Foliar application of 2% urea at pre-flowering and flowering stage of green gram is helpful to mitigate drought. • Agri - Horti System (Plantation of mango) • Spray 2% KCl + 0.1 ppm boron to black gram to overcome drought situations 	<ul style="list-style-type: none"> • Complete hoeing and weeding in non paddy crop fields to provide dust mulch. 	ISOPOM,ATMA,IWDP RKVY,IWDP	
	Vegetables- Fallow	<ul style="list-style-type: none"> • Cultivate vegetables- cowpea, guar, runner bean, okra, brinjal, tomato wherever possible • Spray 2% KCl + 0.1 ppm boron to overcome drought situations. • Foliar application of 2% urea at pre-flowering and flowering stage is helpful to mitigate drought 	<ul style="list-style-type: none"> • Complete hoeing and weeding in non paddy crop fields to provide dust mulch. • Spraying with bio-pesticide formulation to manage infestation by insect pests 	RKVY, ATMA, NFSM	
Medium land, medium rainfall, sandy loam, red & yellow, acid soil	Paddy - fallow	<ul style="list-style-type: none"> • Do not practice <i>beushaning</i> (blind cultivation) in rice, if the crop is more than 45 days old. • Weed out the field without waiting for rainfall. • Go for gap filling using 	<ul style="list-style-type: none"> • Strengthen the field bunds and close the holes to check seepage loss. • Withhold N fertilizer application up to receipt of rainfall. • In-situ rain water 	ISOPOM,ATMA,IWDP RKVY,IWDP Small and marginal farmers may be employed under NREGA for creating rain water conservation and storage structures to enhance	

			seedling of same age or clonal tillers to have a uniform distribution of plant. If transplanting is delayed by 20 days follow	conservation, harvesting of excess run off for re-use and ground water recharge. • Conserve rainwater by increasing bund height	productivity of their limited land
	Low land, medium rainfall, clay loam, red & yellow soil	Paddy – Greengram/black gram	<ul style="list-style-type: none"> • Do not practice <i>beushaning</i> (blind cultivation) in rice, if the crop is more than 45 days old. • Weed out the field without waiting for rainfall. • Go for gap filling using seedling of same age or clonal tillers to have a uniform distribution of plant. If transplanting is delayed by 20 days follow <ul style="list-style-type: none"> • Close spacing • 25 % more N as basal • 4-5 seedlings/hill • Remove the weeds and follow plant protection measures against blast in the nursery 	-do-	ISOPOM,ATMA,IWDP RKVY,IWDP
		Paddy – Linseed/ lathyrus	-do-	-do-	ISOPOM,ATMA,IWDP RKVY
	Undulated sub-mountainous tract, medium rainfall, brown forest soils	Paddy – Greengram/black gram	-do-	-do-	ISOPOM,ATMA,IWDP RKVY,IWDP

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	Major Farming situation	Normal Crop/cropping system	Crop management	Soil nutrient & moisture conservation measure	Remarks on Implementation
At flowering/ fruiting stage	Plain land Rainfed <u>Sub situations</u> Up land, medium rainfall, Black soil	Rice-fallow	<ul style="list-style-type: none"> • Crops should be suitably thinned out. 	<ul style="list-style-type: none"> • In-situ rain water conservation, harvesting of excess run off for re-use and ground water recharge. • Conserve rainwater by increasing bund height • Application of weedicide on broad leaf weeds to minimize competition for water 	Supply of seeds through OSSC/NFSM/RKVY
		Pulse	-do-	-do-	-do-
		Cotton	-do-	-do-	-do-
	Medium land, medium rainfall, black soil	Paddy- fallow	<ul style="list-style-type: none"> • Check surface run off in the low lying areas. • Provide protective irrigation through recycling of harvested rain water. • Provide irrigation at critical stages such as flowering, grain filling, etc. in alternate furrows in wide spaced crops. • Under situation of complete failure of <i>kharif</i> crop dismantle it. In such situation or where land is remaining fallow, sow (dibble) the pre-rabi crops. • The ideal pre-rabi crops with residual moisture condition are horsegram, blackgram and sesame in uplands and well drained medium lands. 	<ul style="list-style-type: none"> • In rice the mealy bug attack will be more can be controlled by spraying with dimethoate or methyl demeton @ 1 lit/ha in 500 lit of water • The problem of termites will be seen in rice can be tackled by soil drenching with chlorpyrifos 20 EC @ 4-5 ml/litre of water or by adding chlorpyrifos 1.5% dust @ 20 – 25 kg/ha before final land preparation. 	ISOPOM,ATMA,IWDP RKVY,IWDP

		Paddy-Greengram	-do-	-do-	ISOPOM,ATMA,IWDP RKVY,IWDP
Unbunded Upland, medium rainfall, sandy loam, red & yellow, acid soil	Paddy-fallow	<ul style="list-style-type: none"> • Crops should be suitably thinned out. • In-situ rain water conservation • Harvesting of excess run off for re-use and ground water recharge. • Conserve rainwater by increasing bund height 		Application of weedicide on broad leaf weeds to minimize competition for water	
	Arhar/ Greengram/ Sesame (Local) - Fallow	-do-		Wherever economically viable, mulching should be practiced in between crop rows using locally available material.	
	Vegetables- fallow	-do-		-do-	-do-
Medium land, medium rainfall, sandy loam, red & yellow, acid soil	Paddy - fallow	<ul style="list-style-type: none"> • Check surface run off in the low lying areas. • Provide protective irrigation through recycling of harvested rain water. • Under situation of complete failure of <i>kharif</i> crop dismantle it. In such situation or where land is remaining fallow, sow (dibble) the pre-rabi crops. • The ideal pre-rabi crops with residual moisture condition are horsegram, blackgram and sesame in uplands and well drained medium lands. 		<ul style="list-style-type: none"> • In rice the mealy bug attack will be more can be controlled by spraying with dimethoate or methyl demeton @ 1 lit/ha in 500 lit of water • The problem of termites will be seen in rice can be tackled by soil drenching with chlorpyriphos 20 EC @ 4-5 ml/litre of water or by adding chlorpyriphos 1.5% dust @ 20 – 25 kg/ha before final land preparation. 	
Low land, medium rainfall, clay loam, red & yellow soil	Paddy – green gram/black gram	-do-		-do-	ISOPOM,ATMA,IWDP RKVY,IWDP
	Paddy – lin seed/ lathyrus	-do-		-do-	-do-
Undulated sub- mountainous tract,	Paddy – Green gram/ Back gram	do-		-do-	

	medium rainfall, brown forest soil			<ul style="list-style-type: none"> • In green gram, black gram, the spread of YMV by insect vector may increase. Therefore, regular surveillance in the fields is essential. Manage the crop from insect vectors by spraying of dimethoate 1 lit/ha or imidacloprid 125 ml/ha at 10-15 days interval 	
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Condition		Suggested Contingency measures			
Terminal drought (Early withdrawal of monsoon)	Major Farming situation	Normal Crop/cropping system	Crop management	Rabi Crop planning	Remarks on Implementation
	Plain land Rainfed <u>Sub situations</u> 1) Up land, medium rainfall, Black soil	Rice-fallow	<ul style="list-style-type: none"> • Harvest at physiological maturity • Provide life saving irrigation if possible 	-	IWDP/DRDA
		Cotton	Foliar spray of KCL @ 2%	-	IWDP/DRDA
	Medium land, medium rainfall, black soil	Paddy- Fallow	<ul style="list-style-type: none"> • Spraying of 'K' fertilizer@2% • Harvest at physiological maturity 	-	IWDP/DRDA
		Paddy-Greengram	<ul style="list-style-type: none"> • Spraying of 'K' fertilizer@2% • Harvest at physiological maturity • Early sowing of greengram after harvest at physiological maturity 	Soaking of green gram seeds for 2 hrs prior to sowing Partial mechanization to save time and moisture	Technological support of KVK, OUAT
	Unbunded Upland, medium rainfall, sandy loam, red & yellow, acid soil	Paddy-fallow	<ul style="list-style-type: none"> • Harvest at physiological maturity • Provide life saving irrigation if possible 	-	IWDP/DRDA

		Arhar/ Greengram/ Sesame (Local) - Fallow	<ul style="list-style-type: none"> • Harvest at physiological maturity • Provide life saving irrigation if possible • Spraying of 'K' fertilizer@2% 		
		Vegetables- fallow	<ul style="list-style-type: none"> • Mulching in inter-row space • Harvest at green stage prior to maturity 		
	Medium land, medium rainfall, sandy loam, red & yellow, acid soil	Paddy - fallow	<ul style="list-style-type: none"> • Harvest at physiological maturity • Provide life saving irrigation if possible • Spraying of 'K' fertilizer@2% 	-	
	Low land, medium rainfall, clay loam, red & yellow soil	Paddy – Greengram/Black gram	<ul style="list-style-type: none"> • Harvest at physiological maturity • Provide life saving irrigation if possible • Spraying of 'K' fertilizer @ 2% 	<ul style="list-style-type: none"> • Soaking of green gram seeds for 2 hrs prior to sowing • Partial mechanization to save time and moisture • Paira cropping of green gram/lathyrus/ black gram 	IWDP/DRDA/RKVY
		Paddy – lin seed/ lathyrus	-do-	-do-	
	F.S.- 2 : Undulated sub- mountaineous tract, medium rainfall, brown forest soilss	Paddy – Green gram/Black gram	<ul style="list-style-type: none"> • Harvest at physiological maturity • Provide life saving irrigation if possible 	<ul style="list-style-type: none"> • Soaking of green gram seeds for 2 hrs prior to sowing • Partial mechanization to save time and moisture • Paira cropping of green gram/lathyrus/ black gram 	

2.1.2 Drought- Irrigated situation

Condition	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Suggested Contingency Measures	
				Agronomic measures	Remarks on Implementation
Delayed/ limited release of water in canals due to low rainfall	Plain land irrigated <u>Sub situations</u> Canal irrigated medium land	Rice-rice	<ul style="list-style-type: none"> • Taking of medium duration rice var. like lalat, konark, monaswini, surendra etc in place of long duration var. • If delayed by more than one month than Non paddy crops like Sesamum, sunflower may be taken up. High value vegetables may also be taken. 	<ul style="list-style-type: none"> • Wet bed /dapog method of nursery should be followed • SRI method may be followed. • Rabi paddy may be taken little earlier by taking comparatively longer duration paddy. • Emphasis should be given for application of bulky organic manures. 	<ul style="list-style-type: none"> • Seeds may be supplied through OSSC, NFSM, NHM • Intercultural implements through NHM, ATMA,
	Canal irrigated low land	Rice – Rice	<ul style="list-style-type: none"> • Take short duration var. depending upon the duration of water availability. • If delayed by more than one month than Non paddy crops like Sesamum, sunflower may be taken up. High value vegetables may also be taken. 	<ul style="list-style-type: none"> • Emphasis should be given for application of bulky organic manures. • Wet bed /dapog method of nursery should be followed • SRI method may be followed. 	<ul style="list-style-type: none"> • Seeds through OSSC, NFSM, NHM • Intercultural implements through NHM, ATMA,

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency Measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Lack of inflows due to insufficient/delayed onset of monsoon	Plain land irrigated <u>Sub situations</u>	Rice-rice	<ul style="list-style-type: none"> 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. Use of early duration variety like 'MTU-1010' (115 days) is well suited in rabi. 	<ul style="list-style-type: none"> Irrigate the kharif rice with ground water 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. Harvesting of kharif rice at physiological maturity will realize 80-85% of normal yield. Irrigate the rabi rice at critical stages only with groundwater. 	<ul style="list-style-type: none"> Seeds through OSSC, NFSM, NHM Intercultural implements through NHM, ATMA,
	Canal irrigated medium land				
	Canal irrigated low land	Rice-Rice	Low water requiring oilseeds and pulses like green gram, black gram, sunflower, sesamum	Same as above for kharif rice	

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency Measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Insufficient ground water recharge due to low rainfall	Plain land irrigated <u>Sub situations</u>	Vegetable-vegetable	Low duty vegetables like cowpea, okra, cluster bean, tomato may be selected in Kharif and brinjal, tomato, bitter gourd, bean etc should be taken in Rabi.	Harvesting about 11-37 % run-off is generated even by the delayed monsoon and should be stored in the farm ponds or tanks. These methods will recharge ground water during normal or deficit rainfall year. Rainwater stored in self sealing or lined ponds can be used for irrigation if there is long dry spell. Bulky organic manures should be applied.	Farm ponds/ water harvesting structure may be created by RKVY and IWDP,NREGS etc.
	Bore well/open dug well/tank irrigated upland				

				Irrigation may be applied in the alternate furrows.	
	Bore well/ open dug well/ tank irrigated medium land	Rice- vegetable	Low water requiring oilseeds and pulses like groundnut, green gram, black gram, sunflower, sesamum may be taken in kharif and short duration high value vegetables like Carrot, beet, brinjal, tomato, potato etc. may be taken in Rabi.	<ul style="list-style-type: none"> • Limited & life saving irrigation. • Alternate furrow irrigation. • Sprinkler irrigation. • Mulching with local available materials. • Keep the plot free of weed completely. 	
	Lift irrigated medium and low land.	Rice- Rice	Short duration rice var. may be taken up depending upon the availability of water in Kharif. 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. Use of early duration variety like 'MTU-1010' (115 days) is well suited in Rabi.	<ul style="list-style-type: none"> • Limited & life saving irrigation. • Alternate furrow irrigation. • Irrigate at the critical stages of crop growth. 	

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

Condition	Suggested contingency measures			
	Vegetative stage	Flowering stage	Crop maturity stage	Post harvests
Continuous high rainfall in a short span leading to water logging				
Paddy	Provide deep drains at frequent intervals for adequate irrigation	Provide drainage If possible	<ul style="list-style-type: none"> • Drain water for drying • Harvest at physiological maturity stage • Cut the crop, leaving 1.5 ft 	<ul style="list-style-type: none"> • Mechanization of harvesting for speed up the process. • Shifting to a safer place • Dry in shade in a well

			stubbles so that panicle will not touch the ground.	ventilated space
Arhar	Provide drainage	Provide drainage	Drain water for drying.	Safe storage against pest & diseases
Cowpea	Provide drainage. Necessary PP measures should be taken against disease and pest.	Provide drainage	<ul style="list-style-type: none"> • Drain water for drying • Harvest for vegetable purpose 	<ul style="list-style-type: none"> • Shifting to a safer place • Dry in shade in a well ventilated space • Safe storage against pest & diseases
Sugarcane	Provide drainage. Maintain ridge & furrow method. Proper wrapping and staking should be followed.	Provide drainage Maintain ridge & furrow method	Harvest at physiological maturity stage	Extraction of jaggery should be delayed by one week
Horticulture				
Fruits (Mango, Citrus etc)	Provide drainage Earthing up of plant base/root zone	Provide drainage Earthing up of plant base/root zone	<ul style="list-style-type: none"> • Provide drainage • Ear thing 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
Banana, Papaya	Provide drainage. Earthing up of plant base/root zone. Spray mancozeb @3 g/ltr and Bavistin @ 2 g/ltr alternately preventive measures against sigatoka disease.	Provide drainage Earthing up of plant base/root zone	<ul style="list-style-type: none"> • Harvested at green stage or table purpose, • No problem for marketing as it has buyers' preference 	Store for ripening in closed godowns for marketing
Cucurbit vegetables	Seedling in raised nursery beds, drainage,	Vines should be staked along elevated frames	<ul style="list-style-type: none"> • Ensure drainage • Harvesting at tender stages 	<ul style="list-style-type: none"> • Ensure drainage • Harvesting at tender stages
Solanaceous/ cruciferous vegetables	Seedling in raised nursery beds, drainage,	Provide drainage Application of hormones to induce more flowering	Provide drainage	<ul style="list-style-type: none"> • Ensure drainage • Harvesting at tender stages
Heavy rainfall with high speed winds in a short span²				
Paddy	Drainage if water logging persists Small seedlings withstand the problem	Drainage if water logging persists	Lodged panicles may be harvested at physiological maturity stage	<ul style="list-style-type: none"> • Ensure drainage • Harvesting at tender stages
Sugarcane	Drainage if water logging persists	Bundling of canes And drainage	Lodged canes may be harvested for extraction of juice	<ul style="list-style-type: none"> • Lodged canes may be harvested for extraction of juice & jaggery

Horticulture				
Mango	<ul style="list-style-type: none"> Plantation of wind breakers around the field Drainage of excess water 	Drainage of excess water, spraying of planofix	Fallen fruits may be collected and value addition for higher income	Fruits should harvested before ripening/grading/Value addition for higher rate
Banana	<ul style="list-style-type: none"> Plantation of wind breakers around the field Drainage of excess water, provide staking support to plants 	Drainage of excess water, Provide staking support to plants	Drainage of excess water, Provide staking support to plants	Fruits should harvested before ripening/grading/Value addition for higher rate
Outbreak of pests and diseases due to unseasonal rains				
Paddy	Spray Tricyclazole @ 0.06 % against blast, Chloropyriphos 0.2 % against stem borer, Super killer against Swarming caterpillar @ 0.3 %	Spray Tricyclazole @ 0.06 % against blast, Chloropyriphos @ 0.2 % against stem borer, Super killer against Swarming caterpillar & leaf folder @ 0.3 %	0.2 % Malathion spray against Gundy bug	Sun drying / disinfection of gunny bags with malathion or heat treatment to manage stored grain pests
Arhar	Removal of infested tips to manage leaf webber	Hand picking & destruction of blister beetles	Spray of Ekalux @ 0.2 % against pod borer	Store in clean godown, disinfection of gunny bags / storage structure with malathion
Blackgram/ Greengram	Application of imidacloprid @ 5 ml/ 15 litre of water against YMV	Application of Malathion @ 0.2 % against Flea beetle	Spray of Nuvan @ 0.3 % against pod borer	Disinfection of storage structure to manage stored grain pests
Horticulture				
Solanaceous vegetables	Spraying malathion @ 0.3 % against hadda beetle, hand collection of egg mass Soil drenching of COC & Streptocycline against wilting	Application of Neem oil @ 0.5 % & Triazophos 0.2 % alternatively against brinjal fruit & shoot borer/ leaf curl virus,	Spraying of Profenophos @ 0.2 % against fruit borer Metalaxyl @ 0.15 % against Anthracnose	Segregation of infested fruits & destruction
Cucurbit vegetables	Spraying of Ekalux @ 0.2 % against Red pumpkin beetle, Collection & destruction of eggs/grubs, Soil drenching of COC & Streptocycline @ 0.01 % against wilting	Spraying Endosulfan @ 0.2 % against leaf eating caterpillars Metalaxyl @ 0.15 % against Powdery mildew, Carbendazim @ 0.2 % against leaf spot & blight	Poison baiting with Malathion & Jaggery against fruit fly	Destruction of overripe & infested fruits

2.3 Floods

Condition	Suggested contingency measures			
	Seedling/ nursery stage	Vegetative stage	Reproductive stage	At harvest
Transient water logging/ partial inundation				
Paddy	<ul style="list-style-type: none"> • Drainage of the Nursery bed, If not possible go for re sowing. • Wet seeding of sprouted seeds (@75-80 kg/ha) of medium duration varieties (Lalat (120 days), Konark (125 days), Surendra (135 days). 	<ul style="list-style-type: none"> • 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. (RDF = 80:40:40 :: N:P₂O₅ :K₂O kg/ha) • In partially damaged field gap filling may be done by redistributing the tillers. • Spraying of water on the foliage to wash out the silt deposition. • Spraying of streptomycin @ 0.01 % as prophylactic measure against BLB 	<ul style="list-style-type: none"> • If flood comes during reproductive stage, emphasis should be given on forthcoming rabi crops. • Supply of seeds and other agro-inputs of <i>rabi</i> crops at subsidized rate, provision of bank loan etc • 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 if irrigation is available. • Utilization of residual soil moisture and use of recharged soil 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. 	<ul style="list-style-type: none"> • If flood comes during harvesting stage, , emphasis should be given on forthcoming rabi crops • Supply of seeds and other agro-inputs of <i>rabi</i> crops at subsidized rate, provision of bank loan etc • 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 • if irrigation is available. • Utilization of residual soil moisture and use of recharged soil profile for growing pulses • Growing of cucurbits after receding flood water
Horticulture	NOT A FEATURE OF FARMING SITUATION WHERE VEGETABLE IS GROWN			
Continuous submergence for more than 2 days	<ul style="list-style-type: none"> • Drainage of the Nursery bed, If not possible go for re sowing. • Wet seeding of sprouted seeds (@75-80 kg/ha) of medium duration varieties (Lalat (120 days), Konark (125 days), Surendra (135 days) 	<ul style="list-style-type: none"> • In partially damaged field gap filling may be done by redistributing the tillers. • A parallel nursery may be maintained in the small irrigated area in regular flood occurring area. So as to re plant the seedlings in heavilly damaged 	<ul style="list-style-type: none"> • Spraying of water on the foliage to wash out the silt deposition. • Spraying of validamycin @ 2 ml/litre of water as protective measure against sheath rot. 	<ul style="list-style-type: none"> • If flood comes during reproductive stage, , emphasis should be given on forthcoming rabi crops • Supply of seeds and other agro-inputs of <i>rabi</i> crops at subsidized rate, provision of bank loan etc

		condition. • Spraying of water on the foliage to wash out the silt deposition.		<ul style="list-style-type: none"> • Utilization of residual soil moisture and use of recharged soil profile for growing pulses • Growing of cucurbits after receding flood water
Horticulture				
Sea water inundation	NOT A FEATURE OF THE DISTRICT DUE TO DISTANCE FROM SEA MORE THAN 350 KM			

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

Extreme event type	Suggested contingency measures			
	Seedling/ nursery stage	Vegetative stage	Reproductive stage	At harvest
Heat Wave				
Summer paddy	Not applicable	Not encountered	<ul style="list-style-type: none"> • Spraying of amino acid based formulations for better grain filling. • Soil application of zinc sulphate @ 10 kg/ha • Early sowing and short duration var. may be taken to escape the heat wave. • Wind breaker plants may be planted to act as barrier. 	Mechanized harvesting should be taken up for speed up the process.
Cold wave	Not applicable			
Frost	Not applicable			
Hailstorm	Not applicable			
Cyclone				

2.5 Contingent strategies for Livestock, Poultry & Fisheries

2.5.1 Livestock

	Suggested contingency measures		
	Before the event	During the event	After the event
Drought			
Feed and fodder availability	Awareness camp, Reserve stock of feeding material	Dried feed @6kg/day, fodder cultivation with limited water	Application of multivitamins, minerals etc.
Drinking water	cement pit near tube well, Use of rain harvesting structures, Awareness campaign among the villagers, NGOs & SHG	Judicious use of the available water	small water bodies to be created, preventive measures,
Health and disease management	Awareness, deployment of officials	Diagnosis of the disease and curative measures Food and nutrient support	Disease preventive and curative measures
Floods			
Feed and fodder availability	-	-	-
Drinking water	-	-	-
Health and disease management	-	-	-
Cyclone			
Feed and fodder availability	-	-	-
Drinking water	-	-	-
Health and disease management	-	-	-
Heat wave and cold wave			
Shelter/environment management	Temporary shelter, green cover	Temporary shelter, don't leave for grazing, sufficient water	Application of multivitamins and nutrients
Health and disease management	Keeping reserve stock of medicines	Distribution of sufficient water and required medicines.	Application of multivitamins and nutrients

2.5.2 Poultry

	Suggested contingency measures			Convergence/linkages with ongoing programs, if any
	Before the event	During the event	After the event	
Drought				
Shortage of feed ingredients	Awareness through Farmers Club, PRIs, SHGs, Youth Clubs for feed reserve stock	Distribution of feed	Emphasis on availability of feed from locally ingredients	-
Drinking water	Awareness through PRIs, SHGs, Youth Clubs	Drinking water sufficiently provided	Pure drinking water and vaccines to be given	-
Health and disease management	Awareness through PRIs, SHGs, Youth Clubs	Vaccines to be given	Minimum health care, sanitation and preventive cares to be taken.	-
Floods				
Shortage of feed ingredients				
Drinking water				
Health and disease management				
Cyclone				
Shortage of feed ingredients				
Drinking water				
Health and disease management				
Heat wave and cold wave				
Shelter/environment management	Awareness through Farmers club, PRIs, SHGs, Youth Clubs	Should be weed free without wild fish, soil and water pH to be maintained	Soil, water, all environment should be ideal.	-
Health and disease management	Awareness through PRIs, SHGs, Youth Clubs	Medicines should be kept and given as and when necessary.	Soil and water should be tested periodically and steps should be taken in this regard.	-

2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event	During the event	After the event
1) Drought			
A. Capture			
Marine			
Inland			
(i) Shallow water depth due to insufficient rains/inflow	<ol style="list-style-type: none"> 1. Renovation and maintenance of existing GP tanks and water harvest structures. 2. Restricted release of water from reservoir. 3. Supplementary water harvest structures like farm pond, rain harvesting structure and tanks has to be developed. 	-	Water harvesting structures like farm pond, rain harvesting structure and tanks has to be developed and awareness campaign regarding the multipurpose use of short seasonal ponds
(ii) Changes in water quality	Release water into the habitat.	Mixing of water from the water harvest structure like ponds and tanks into the fish habitat.	Monitoring the water quality parameters like pH, DO, Alkalinity and health of aquatic organisms. Subsequently preventive and curative measures has to be taken.
B. Aquaculture			
(i) Shallow water in ponds due to insufficient rains/inflow	Building deep ditches in culture ponds for shelter of the fish to over come high temperature and sudden death	<ol style="list-style-type: none"> 1. Recharge the ponds with bore well, reservoir water or water from other sources. 2. Partial harvesting of the aged stock to reduce stocking density and enlarge the environment periphery 3. Artificial shelter by putting aquatic floating weeds, bushy plants in 1/3rd area 	awareness campaign regarding the multipurpose use of short seasonal ponds and carry out short seasonal pisciculture practices like fingerling production
(ii) Impact of salt load build up in ponds / change in water quality	Application of organic manure (Cow dung, Poultry manure) in culture system	Recharge the ponds with bore well water or water from other sources	Application of seasoned organic manure in culture system followed by the application of UREA /DAP
2) Floods			
A. Capture, Marine, Inland			
(i) No. of boats / nets/damaged	<ol style="list-style-type: none"> 1. The boats has to be secured safely to river/ reservoir banks. 2. Non operation of fixed bag 	<ol style="list-style-type: none"> 1. Checking of the safety of the boats / nets. 2. An inventory logbook with name of crewmembers should be maintained. 	<ol style="list-style-type: none"> 1. Maintenance of the boats and nets. 2. Assessment and settlement of insurance.

	nets in streams and rivers. 3. Insurance coverage for nets and boats.	3. Number of crew and load should be much below the marked tonnage.	
(ii) No.of houses damaged	Insurance coverage for houses.	-	Settlement of insurance.
(iii) Loss of stock			1. Assessment of stock (fish population) and replenishment if stock is depleted. 2. Habitat restoration for the stock remaining.
(iv) Changes in water quality			1. Application of lime in tanks. 2. Application of fertilizer.
(v) Health and diseases			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.
B. Aquaculture			
(i) Inundation with flood water			
(ii) Water contamination and changes in water quality	Application of lime.	-	1. Application of lime and geolite. 2. Application of Alum. 3. Application of KMnO4
(iii) Health and diseases	Application of lime	-	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.
(iv) Loss of stock and inputs (feed, chemicals etc)	1. Strengthening and increase in dyke height. 2. Transport of feed and chemicals to safer place. 3. Insurance coverage for stock.	1.Net enclosure should be provided over the dyke to prevent the escape of fish from pond. 2. Storing of feed and chemicals to safer place.	1. Stock assessment and restocking with advanced fingerlings or yearling if required. 2. Repairing of dykes. 3. Assessment of quality of feed and chemicals. 4. Assessment and settlement of insurance.
(v) Infrastructure damage (pumps, aerators, huts etc)			1. Repairing of pumps, aerators if required. 2. Repairing of damaged hut.
3. Cyclone / Tsunami			
A. Capture			

Marine			
(i) Average compensation paid due to loss of fishermen lives			
(ii) Avg. no. of boats / nets/damaged			
(iii) Avg. no. of houses damaged			
Inland			
B. Aquaculture			
(i) Overflow / flooding of ponds	<ul style="list-style-type: none"> • Strengthening and increase in dyke height. • The ponds should be constructed with proper inlet and out let facility for better intake and discharge of water. 	Net enclosure should be provided over the dyke to prevent the escape of fish from pond and entry of the unwanted fish from the surrounding water sources.	<ul style="list-style-type: none"> • Repairing and strengthening of dyke if required. • Grass or stone pitching of the pond dyke
(ii) Changes in water quality (fresh water / brackish water ratio)			
(iii) Health and diseases	-	-	<ol style="list-style-type: none"> 1. Application of lime, CIFAX 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.
(iv) Loss of stock and inputs (feed, chemicals etc)	<ol style="list-style-type: none"> 1. Strengthening and increase in dyke height. 2. Transport of feed and chemicals to safer place. 3. Insurance coverage for stock. 	<ol style="list-style-type: none"> 1. Net enclosure should be provided over the dyke to prevent the escape of fish from pond. 2. Storing of feed and chemicals to safer place. 	<ol style="list-style-type: none"> 1. Stock assessment and restocking with advanced fingerlings or yearling if required. 2. Repairing of dykes. 3. Assessment of quality of feed and chemicals. 4. Assessment and settlement of insurance.
(v) Infrastructure damage (pumps, aerators, shelters/huts etc)	-	-	<ol style="list-style-type: none"> 1. Repairing of pumps, aerators if required. 2. Repairing of damaged shed.
(vi) Any other	-	-	-
4. Heat wave and cold wave			
A. Capture			
Marine			
Inland		During hot waves night fishing should be done and proper storage facility should be emphasized. Preservation by cold chain should be	Awareness campaign among the fishery folk regarding the storage chain and value addition of the traced fish as well as of indisposed fish stock like fish pickle, fish drying

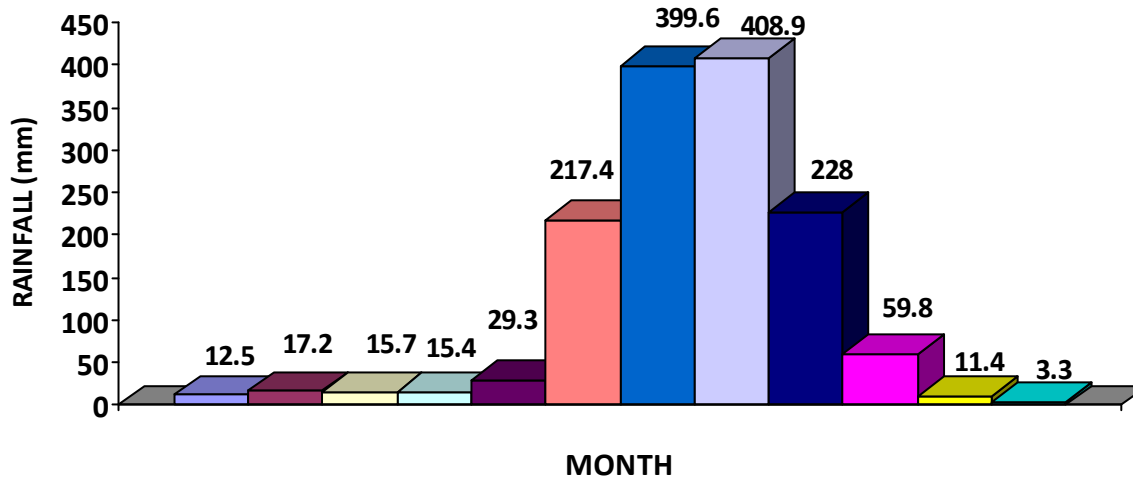
		increased during hot waves and care should be taken for quick dispose.	
B. Aquaculture			
(i) Changes in pond environment (water quality)	During hot waves adequate water depth (1.5-2m) should be maintained.	During hot waves mixing of water with fresh water should be done. While adding water net should be provided in the inlet point to avoid the entry of unwanted fishes. The culture system should be provided with aeration of ducks should be introduced in the culture ponds to avoid oxygen depletion due to high temperature during hot waves. Partial harvesting of the aged fish can be done to avoid loss of crop and sudden mortality of the fish due to excess stress	Proper post stocking management of the pond environment should be carried out.
(ii) Health and Disease management	Application of lime and turmeric.	<ul style="list-style-type: none"> • Feeding should be minimized as per the feed intake • If cold waves persists EUS outbreak takes place 	1. Application of CIFAX to control EUS disease in fish and line to balance the pH.

ANNEXURE-I
Location map of district within State



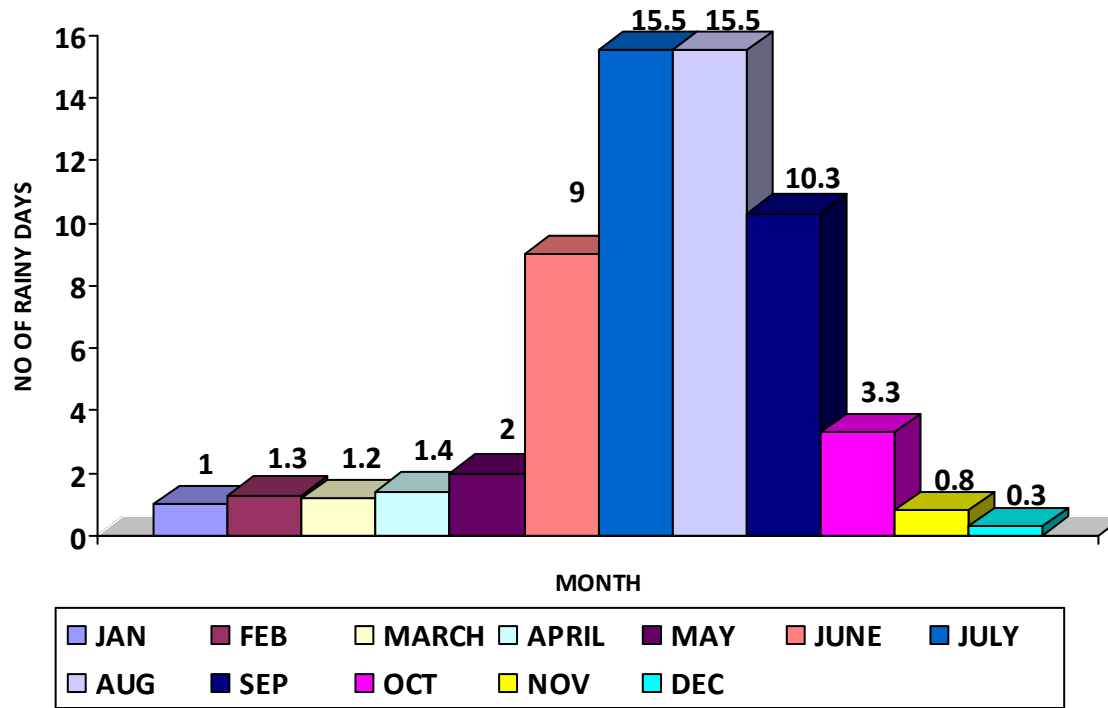
ANNEXURE-II

MONTHLY RAINFALL OF DIST SUBARNAPUR-2008-09



JAN	FEB	MARCH	APRIL	MAY	JUNE
JULY	AUG	SEP	OCT	NOV	DEC

MONTHLY RAINY DAYS OF THE DISTRICT SUBARNAPUR, 2008-09



ANNEXRE-II

Fig. SOIL TYPE OF ORISSA

