

Agriculture Contingency Plan For District: Khurda


Prepared by :

Krishi Vigyan Kendra, Khurda

Central Institute of Freshwater Aquaculture

(Indian Council of Agricultural Research)

Kausalyaganga, Bhubaneswar-751 002, India

Ph. : 0674-2465060, 2116261

State: ODISHA

Agriculture Contingency Plan for District: KHURDA

1.0 District Agriculture profile				
1.1	**Agro-Climatic/Ecological Zone**			
	Agro Ecological Sub Region (ICAR)	Eastern Ghats hot moist sub-humid eco sub-region (12.2)		
	Agro-Climatic Zone (Planning Commission)	East Coast Plain & Hill Region (XI)		
	Agro Climatic Zone (NARP)	East and South Eastern Coastal Plain Zone (OR-4)		
	List all the districts falling under the NARP Zone* (*>50% area falling in the zone)	Kendrapada, Khurda, Jagatsinghpur, Parts of Cuttack, Puri, Nayagarh and Parts of Ganjam		
	Geographic coordinates of district headquarters	Latitude	Longitude	Altitude
		$18^0$46' and $20^0$95'North	$83^0$48' and $87^0$46' East	42.0m above mean sea level
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	RRTTS,Bhubaneswar-3, 751002,Orissa		
	Mention the KVK located in the district with address	KVK (Khurda), CIFA, Kausalyaganga,Bhubaneswar-751002,Orissa		
	Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro-advisories in the Zone	Agromet Field Unit , CIFA, Kausalyaganga,Bhubaneswar-751002,Orissa		

1.2	Rainfall	Normal RF (mm)	Normal Rainy days (number)	Normal Onset (specify week and month)	Normal Cessation (specify week and month)
	SW monsoon (June-Sep):	1056.2	50.1	3rd week of June	4th week of September
	NE Monsoon(Oct-Dec):	204.7	8.9	1st week of November	2nd week of November
	Winter (Jan- February)	36.7	2.3	-	-
	Summer (Mar-May)	110.8	7.1	-	-
	Annual	1408.4	68.4	-	-

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)	**289**	**145**	**62**	**34**	**06**	**13**	**10**	**14**	**12**	**05**

Source: ORISSA BHOODAN YAGNA SAMITI, BHUBANESWAR, as on 31.03.2006. Directorate of Agriculture & Food Production, Orissa

1. 4	**Major Soils (common names like red sandy loam deep soils (etc.,)***	**Area ('000 ha)**	**Percent (%) of total geographical area**
	Sandy loam	**57.9**	**50.55**
	Loam	**25.1**	**21.86**
	Clay	**16.5**	**14.39**
	Clay Loam	**15.1**	**13.20**
	Total	**114.6**	**100.00**

1.5	**Agricultural land use**	**Area ('000 ha)**	**Cropping intensity %**
	Net sown area	**128**	**182**
	Area sown more than once	**105.5**	

	Gross cropped area	**232.65**	

1.6	**Irrigation**	**Area ('000 ha)**		
	Net irrigated area	52.61		
	Gross irrigated area	82.89		
	Rainfed area	74.39		
	Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
	Canals	21	92.84	
	Tanks	-	-	
	Open wells	2950	1.35	
	Bore wells	1489	2.9	
	Lift irrigation schemes	7167	**14.15**	
	Micro-irrigation			
	Other sources (please specify)		23.45	
	Total Irrigated Area		131.79	
	Pump sets	**200**		
	No. of Tractors	**64**		
	Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	No. of blocks/ Tehsils	(%) area	Quality of water (specify the problem such as high levels of arsenic, fluoride, saline etc)
	Over exploited			
	Critical			
	Semi- critical			
	Safe			
	Wastewater availability and use			
	Ground water quality			
*over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%				

1.7 Area under major field crops & horticulture

1.7	Major field crops cultivated	Area ('000 ha)							
		Kharif			*Rabi*				
		Irrigated	**Rainfed**	**Total**	**Irrigated**	**Rainfed**	**Total**	**Summer**	**Grand total**
	Cereals	50.02	65.53	115.55	8.54	--	8.54	--	124.09
	Paddy	50.02	64.62	114.64	8.41	--	8.41	--	123.05
	Wheat	--	--	--	0.04	-	0.04	--	0.04
	Maize	0.01	--	--	0.09	-	0.09	--	0.10
	Pulses	0.01	1.98	1.99	2.52	51.75	54.27	--	56.26
	Arhar	--	0.87	0.87	--	--	--	--	0.87
	Gram	--	--	--	0.38	--	0.38	--	0.38
	Green gram	--	0.08	0.08	0.83	34.95	35.78	--	35.86
	Biri	0.01	1.00	1.01	0.78	11.31	12.09	--	13.10
	Horse gram	--	--	--	--	4.51	4.51	--	4.51
	Field Pea					0.14	0.14		0.14
	Cow pea	--	--	--	0.53	--	0.53	--	0.53
	Other Pulses	-	0.03	0.03	-	0.84	0.84	-	0.87
	Oilseeds	--	0.28	0.28	0.80	5.88	6.68	--	6.96
	Groundnut	--	0.03	0.03	0.32	4.23	4.55		4.58

	Til	--	0.22	0.22	0.14	0.98	1.12		1.34
	Sunflower	--	--	--	0.19	-	0.19	-	0.19
	Mustard/Toria	--	--	--	0.15	0.63	0.78	-	0.78
	Sugarcane	-	--	-	1.35	--	1.35	--	1.35
	Condiments & spices	--	0.66	0.66	0.89	--	0.89	--	1.55
	Chilli	--	0.23	0.23	0.31	--	0.31	--	0.54
	Turmeric	--	0.09	0.09	--	--	--	--	0.09
	Ginger		0.34	0.34					0.34
	Coriander				0.39	--	0.39	--	0.39
	Garlic				0.19		0.19		0.19

Source: Orissa Agriculture Statistics 2008-09. * District Strategy Committee Report 2008-09.

	Horticulture crops - Fruits	**Total Area ('000 ha)**
	Fruits	**7.58**
	Kagji lime	**0.49**
	Mango	**4.72**
	Banana	**1.14**
	Sapota	**0.34**
	Guava	**0.12**
	Anola	**0.01**

	Pine apple	**0.02**
	Others	**0.74**
	Horticulture crops – Vegetables	**26.90**
	Potato	**0.15**
	Onion	**0.33**
	Sweet Potato	**0.09**
	Other vegetables	**26.66**
	Horticulture crops – Flowers	**0.283**
	Marigold	**0.056**
	Rose	**0.10**
	Gladioli	**0.10**
	Tuberose	**0.027**
	Plantation crops	**7.34**
	Coconut	**3.58**
	Cashew	**3.76**

Source: Orissa Agriculture Statistics 2008-09.

	Fodder crops	Area ('000 ha)		
		Total	**Irrigated**	**Rainfed**
	Fodder crops	Total	Irrigated	Rainfed
	Total fodder crop area (Napier,Para,Gunea etc)	**0.28**	-	**0.28**
	Grazing land	**14.49**	**1.66**	**12.83**
	Sericulture	-		
	Others (specify)			

Source: Chief District Veterinary Office, Khurda.

1.8	**Livestock (Source: Annual Report 2008-09 of the Chief District Veterinary Office, Khurda).**	**Male ('000)**	**Female ('000)**	**Total ('000)**
	Non descriptive Cattle (local low yielding)	**145047**	**207186**	**352233**
	Improved cattle (Exotic)	**287**	**28**	**315**
	Crossbred cattle	**9915**	**41116**	**51031**
	Non descriptive Buffaloes (local low yielding)	**9482**	**8163**	**17645**
	Descript Buffaloes	**713**	**1272**	**1985**
	Goat	**26856**	**66100**	**92956**
	Sheep	**15709**	**34647**	**50356**
	Others (Pig)	**1127**	**1586**	**2713**
	Commercial dairy farms (Number)			

<table>
<tr><td>1.9</td><td colspan="3">Poultry (Source: Annual Report 2008-09 of the Chief District Veterinary Office, Khurda).</td><td>No. of farms</td><td colspan="3">Total No. of birds (‘000)</td></tr>
<tr><td></td><td colspan="3">Commercial</td><td>184</td><td colspan="3">200665</td></tr>
<tr><td></td><td colspan="3">Backyard</td><td>-</td><td colspan="3">53863</td></tr>
<tr><td>1.10</td><td colspan="7">Fisheries</td></tr>
<tr><td></td><td colspan="7">A. Capture</td></tr>
<tr><td></td><td rowspan="2">i) Marine</td><td rowspan="2">No. of fishermen</td><td colspan="2">Boats</td><td colspan="2">Nets</td><td rowspan="2">Storage facilities (Ice plants..)</td></tr>
<tr><td>Mechanized</td><td>Non-mechanized</td><td>Mechanized (Trawl nets, Gill nets)</td><td>Non-mechanized (Shore Seines, Stake & trap nets)</td></tr>
<tr><td></td><td></td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td></td><td rowspan="3">ii) Inland (Data Source: District Fisheries office Khurda 2008-09))

Others

Brackish water (Chilika) (Data Source: District Fisheries office Khurda 2008-09)</td><td colspan="2">No. Farmer owned ponds</td><td colspan="2">No. of Reservoirs</td><td colspan="2">No. of village tanks</td></tr>
<tr><td colspan="2">2996</td><td colspan="2">Nil</td><td colspan="2">5920</td></tr>
<tr><td colspan="2">Water Spread Area (ha)</td><td colspan="2">Yield (t/ha)</td><td colspan="2">Production (‘000 tons)</td></tr>
<tr><td colspan="2">906 Sq. km (Summer)
1165 Sq. km (in rainy season)</td><td colspan="2">8.44 t/km^2</td><td colspan="2">10047.43</td></tr>
<tr><td></td><td colspan="7">B. Culture</td></tr>
</table>

		Water Spread Area (ha)	Yield (t/ha)	Production ('000 tons)
	i) **Brackish water**	-	-	-
	ii) **Fresh water** (Data Source: District Fisheries office Khurda 2008-09))	4030.7	0.806	4996.31
	iii)**Others**			

1.11 Production and Productivity of major crops (2008-09)

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)										
	Paddy	**219.61**	**1916**	**219.4**	**1536**	**23.83**	**2834**	**243.44**	**1978**	
	Maize	**1.65**	**1962**	**0.14**	**1585**	**--**	**--**	**1.79**	**1926**	
	Ragi	**0.05**	**685**	**--**	**--**	**--**	**--**	**0.05**	**685**	
	Pulses	**0.83**	**417**	**24.84**	**458**	**--**	**--**	**25.67**	**456**	
	Arhar	**0.42**	**485**	**--**	**--**	**--**	**--**	**0.42**	**485**	
	Gram	**--**	**--**	**0.26**	**677**	**--**	**--**	**0.26**	**677**	

	Mung	**0.03**	**363**	**15.60**	**436**	**--**	**--**	**15.63**	**436**	
	Biri	**0.37**	**364**	**6.17**	**510**	**--**	**--**	**6.54**	**499**	
	Horse gram	**--**	**--**	**1.93**	**428**	**--**	**--**	**1.93**	**428**	
	Cow pea	**--**	**--**	**0.42**	**801**	**--**	**--**	**0.42**	**801**	
	Field Pea			**0.09**	**655**	**--**	**--**	**0.09**	**655**	
	Other Pulses	**0.01**	**334**	**0.37**	**440**	**--**	**--**	**0.38**	**436**	
	Oilseeds	**0.15**	**536**	**9.19**	**1376**	**--**	**--**	**9.34**	**1342**	
	Groundnut	**0.03**	**1000**	**8.42**	**1851**	**--**	**--**	**8.45**	**1845**	
	Til	**0.11**	**488**	**0.38**	**342**	**--**	**--**	**0.49**	**366**	
	Sunflower	**--**	**--**	**0.12**	**625**	**--**	**--**	**0.12**	**625**	
	Mustard/Toria	**--**	**--**	**0.25**	**325**	**--**	**--**	**0.25**	**325**	
	Sugarcane	**--**	**--**	**86.51**	**64084**	**--**	**--**	**86.51**	**64084**	
Major Horticultural crops (Crops to be identified based on total acreage)										
	Potato	**--**	**--**	**1.81**	**12467**	**--**	**--**	**1.81**	**12467**	
	Onion	**--**	**--**	**2.66**	**8061**	**--**	**--**	**2.66**	**8061**	
	Other vegetables	**122.65**	**11221**	**236.62**	**15043**	**--**	**--**	**359.27**	**13476**	
	Total veg.	**122.82**	**11216**	**241.68**	**14845**			**364.50**	**13386**	
	Chilli	**0.19**	**826**	**0.27**	**871**	**--**	**--**	**0.46**	**852**	
	Ginger	**0.61**	**1794**	**--**	**--**	**--**	**--**	**0.61**	**1794**	

	Coriander	--	--	**0.18**	**462**	--	--	**0.18**	**462**	
	Turmeric	**0.19**	**2111**	--	--	--	--	**0.19**	**2111**	
	Garlic	--	--	**0.56**	**2947**	--	--	**0.56**	**2947**	
	Total condiments & spices	**0.99**	**1500**	**1.01**	**1135**	--	--	**2.00**	**1290**	

Source: Orissa Agriculture Statistics 2008-09, Govt. of Orissa

1.12	**Sowing window for 5 major field crops** **(start and end of normal sowing period)**	**Paddy**	**Mung**	**Black gram**	**G. Nut**	**Horse gram**
	Kharif- Rainfed	June-July	September	September	June	-
	Kharif-Irrigated	June-July	-	-	-	-
	Rabi- Rainfed	-	January	November (Pyra)	December-January	November-December
	Rabi-Irrigated	January	-	-	January	-

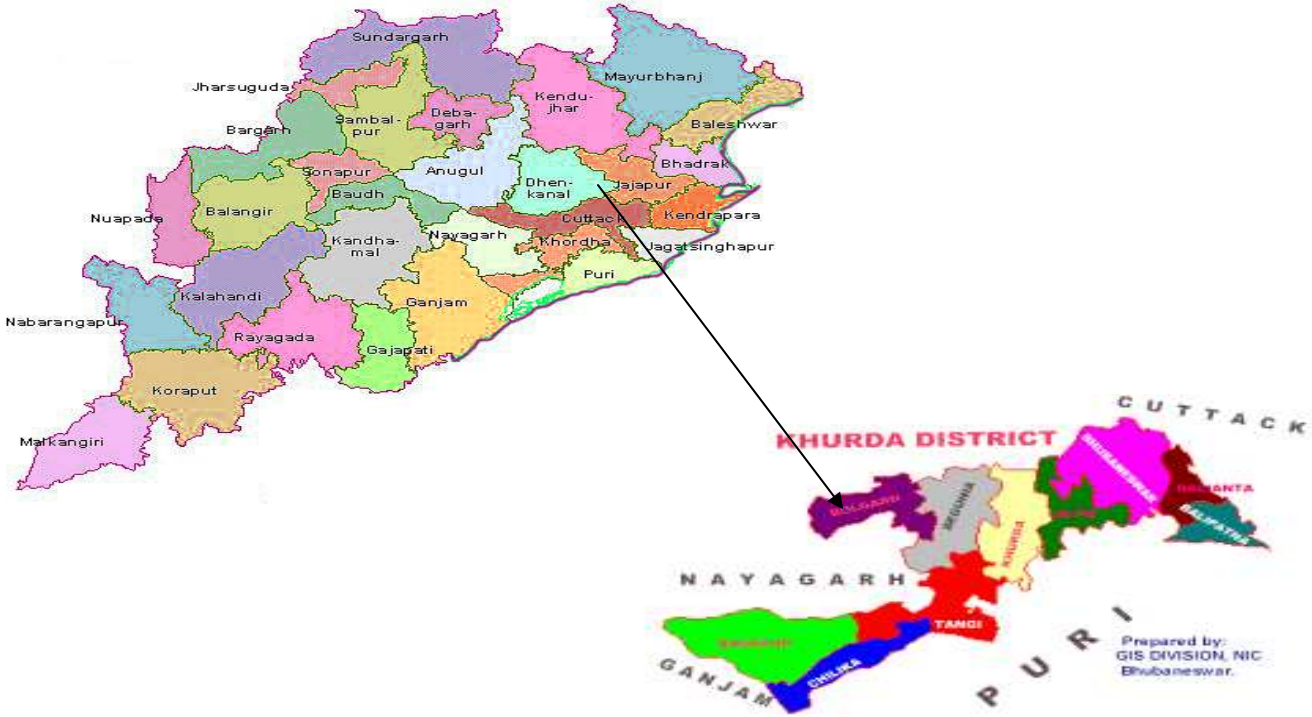
Source: District Agriculture Department and Krishi Vigyan Kendra, Khurda.

1.13	**What is the major contingency the district is prone to? (Tick mark)**	**Regular**	**Occasional**	**None**
	Drought		✓	
	Flood	✓		
	Cyclone		✓	

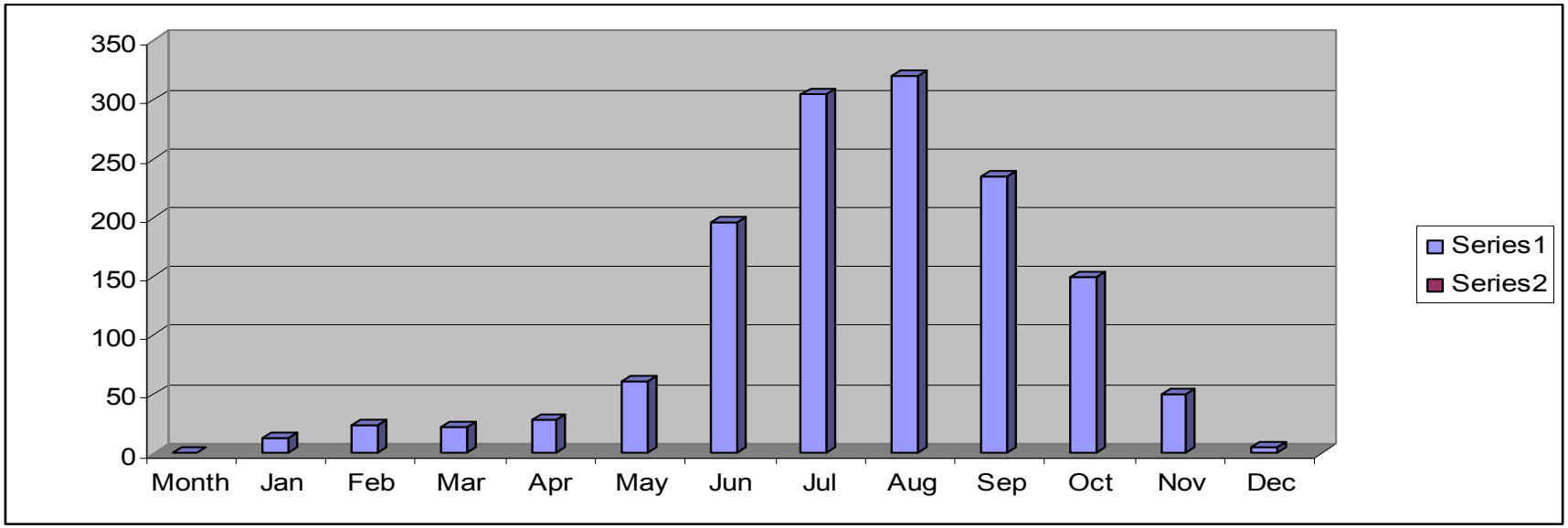
	Hail storm		✓	
	Heat wave		✓	
	Cold wave			✓
	Frost			✓
	Sea water intrusion			✓
	Pests and disease outbreak (specify)	Stem borer, Leaf folder, Sheath blight, BLB in paddy, Aphids, powdery mildew,rust in green gram/black gram, aphid & tikka disease in groundnut,	BPH , Gall midge in paddy, pod borer in green gram, collar rot in ground nut	
	Tsunami			✓

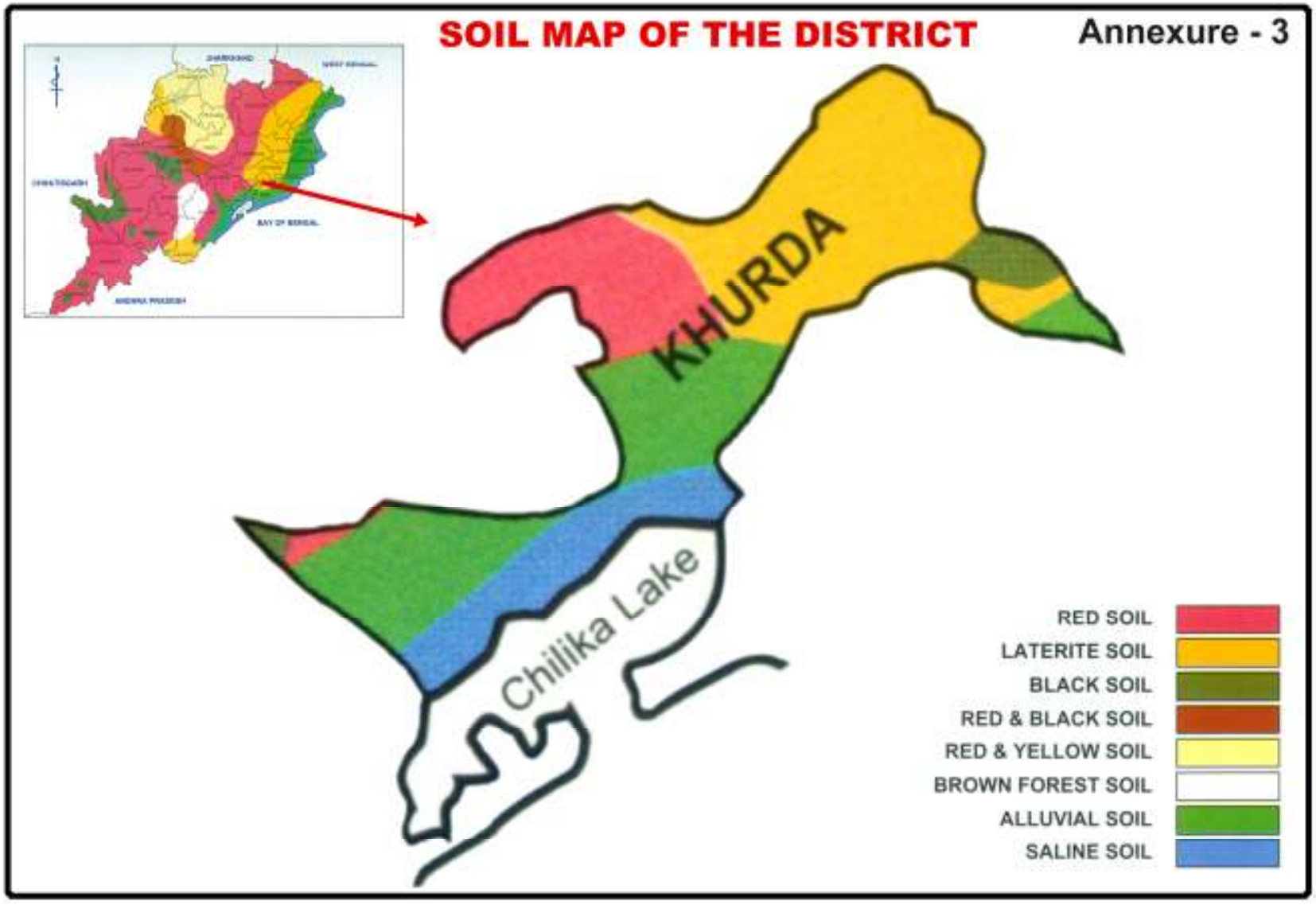
1.14	**Include Digital maps of the district for**	Location map of district within State as Annexure -I	Enclosed: Yes
		Mean annual rainfall as Annexure 2	Enclosed: Yes
		Soil map as Annexure 3	Enclosed: Yes

Location Map of Khurda district



MEAN ANNUAL RAINFALL




SOIL MAP OF THE DISTRICT
Annexure - 3
KHURDA
Chilika Lake
RED SOIL
LATERITE SOIL
BLACK SOIL
RED & BLACK SOIL
RED & YELLOW SOIL
BROWN FOREST SOIL
ALLUVIAL SOIL
SALINE SOIL

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 1st wk)	**Lateritic upland situation (Bhubaneswar,Jatni, Begunia, Bolagarh,Parts of Banapur,Tangi,Chilika Blocks)**	a) Rice-fallow b) Paddy-black gram/ green gram/Arhar	NO change	i.Summer ploughing, land shaping, bunding & conserving soil moisture ii. Apply full P, K and 20% N of recommended dose along with FYM in seed row.	Supports through NFSM, NREGS, IWMP, ISOPOM can be provided.
	Lateritic medium land situation (Bhubaneswar,Jatni, Begunia, Bolagarh,Parts of Banapur,Tangi,Chilika Blocks)	a) Paddy - Black gram / Green gram /Sesame	I. NO change	i. Delay sowing in nursery beds. ii. Strengthen field bunds dykes iii. Broadcast pre-germinated paddy seeds iv. Transplant seedlings in the main field after onset of normal rainfall.	
		b) Colocassia-Green	NO change	i. Sow	

		gram/Black gram		pregerminated corm/cormels ii. Use black polythene/paddy straw mulch in the inter row space to check weed growth and moisture loss. iii. Follow ridge and furrow method	
	Lateritic low land situation (Bhubaneswar,Jatni, Begunia, Bolagarh, Parts of Banapur,Tangi,Chilika Blocks)	a) Paddy-Green gram / Black gram	NO change	i. Delay sowing in nursery ii. Gully plugging Strengthen field bunds to conserve moisture	• Seed drill under RKVY. • Supply of seeds through ATMA, OSSC and NFSM
	Alluvium up land situation (Balianta,Balipatana & parts of Bhubaneswar Block)	a) Paddy- Fallow	NO change	i. Bed & furrow system of planting geometry. ii. Full P&K & 20% N at basal along with FYM at seed row iii. Delay sowing in paddy nursery.	
	Alluvium medium land situation (Balianta,Balipatana & parts of Bhubaneswar Block)	a)Paddy-Green gram/ Black gram /orse gram/sesame /Groundnut	NO change	i.Delay sowing in nursery. ii.Strengthen field bund and dykes to conserve rain water iii.Sow of pre-germinated paddy seeds. iv. Seed Inoculation with rhizobium @ 20-25gm/kg prior to sowing in pulses & groundnut v. Transplant 3-4	• Seeds through NFSM, ISOPOM, NHM and state seed corporation (OSSC). • Intercultural farm implements under RKVY.

				seedlings/hill with closer spacing	
		b) Colocassia – green gram/black gram/ Horse gram	NO change	i. Black polythene/paddy straw mulching should be applied in the inter row spacing to avoid weed growth and moisture loss. ii.Sow pre-germinated corm/cormels iii. Seed Inoculation with rhizobium @ 20-25gm/kg prior to sowing in pulses	
	Alluvium low land situation (Balianta,Balipatana & parts of Bhubaneswar Block)	a) Paddy -Green gram/ Black gram/Sesame b) Sole crop of Colocasia	NO change	i.Delay the sowing date in nursery according to onset of rain ii.Sow pre-germinated corm /cormels iii. Seed Inoculation with rhizobium @ 20-25gm/kg prior to sowing in pulses	• Supply of seeds through OSSC.
	Coastal Alluvial, Saline upland situation (Parts of Tangi, Chillika Block)	a) Sole crop of Black gram in unbundsed upland	NO change	i. Ploughing of soil across the slope. ii. Delay sowing date to onset of monsoon. iii. Seed Inoculation with rhizobium @ 20-25gm/kg prior to sowing	
		b) Paddy -Black gram	NO change	i. Bed & furrow system of planting geometry. ii. *In-situ* rain water conservation	
		c) Vegetable - Fallow			

				iii. Full P&K & 20% N at basal along with FYM at seed row. iv. Delay the sowing date in the nursery bed v. Plant the tomato seedlings on ridges	
	Coastal Alluvial, Saline Medium land situation (Parts of Tangi, Chillika Block)	a) Paddy-Black gram / horse gram	I. NO change	i. Delay the sowing date in the nursery beds. ii. Strengthening field bunds dykes iii. Sow of peregrinated paddy seeds	• Seeds through NFSM, ISOPOM, NHM and state seed corporation (OSSC). • Intercultural farm implements under RKVY.
		a) Paddy –Black gram	I. NO change	i. Delay the sowing date in nursery. ii. *In-situ* moisture conservation measures by scooping the field.	• Supply of seeds through OSSC& NSC.
	Mixed Black & Alluvium up land situation (Parts of Tangi,Banapur, Chillika Block	a) Paddy-Blackgram	NO change	iv. Bed & furrow system of planting geometry. v. Full P&K & 20% N at basal along with FYM at seed row vi. Delay sowing in paddy nursery.	
		a)Paddy-Green gram/ Black gram	NO change	i.Delay sowing in nursery. ii.Strengthen field bund and dykes to conserve rain water iii.Sow of pre-germinated paddy	

				seeds. iv. Seed Inoculation with rhizobium @ 20-25gm/kg prior to sowing in pulses v. Transplant 3-4 seedlings/hill with closer spacing	
		a) Paddy -Green gram/ Black gram b) Sole crop of Colocasia	NO change	i.Delay the sowing date in nursery according to onset of rain ii.Sow pre-germinated corm /cormels iii. Seed Inoculation with rhizobium @ 20-25gm/kg prior to sowing in pulses	

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 4 weeks (July 3rd wk)	**Lateritic upland situation (Bhubaneswar,Jatni, Begunia, Bolagarh,Parts of Banapur,Tangi,Chilika Blocks)**	a) Rice-fallow b) Paddy-black gram/ green gram/Arhar	i. Grow extra early paddy var. Kalinga-III, Heera, Rudra, Pathara, Neela. ii)Crop substitution with non paddy crops like ragi (Divyasingh, Champabati, Neelachal), Maize(Navjot,, Pragati, Shakti-1,Ganga-6, Ganga-11), Black gram (Pant U- 30, Ujala, Sarala,Prasad),Green gram (Sujata, Durga, PDM 54,Kamdev), sesame (Uma, Nirmala and Prachi) and arhar (UPAS120). Iii)Intercropping of Rice + Arhar, Maize + Cowpea	i.Summer ploughing, land shaping, bunding & conserving soil moisture ii. Apply full P, K and 20% N of recommended dose along with FYM in seed row. iii.Inter cropping of Rice + Arhar (5:2) & Maize + Cowpea (2:2) iii. Ridging in maize.	Supports through NFSM, NREGS, IWMP, ISOPOM can be provided.

	Lateritic medium land situation (Bhubaneswar,Jatni, Begunia, Bolagarh,Parts of Banapur,Tangi,Chilika Blocks)	a) Paddy - Black gram / Green gram /Sesame	I.Transplant age old seedlings of paddy (120-130days) varieties like, Lalat, Surendra, MTU-1010, Swarna, Pratikshya, Chandan, Padmini.	i. Delay the sowing date in the nursery beds. ii. Strengthening field bunds dykes iii. Sow of peregrinated paddy seeds	
		b) Colocassia-Green gram/Black gram	I. Colocassia can be transplanted in the main field after onset of normal monsoon II. Transplant Colocassia var. Kujanga kuji and Muktakeshi when sufficient rain water in the main field.	i.Apply black polythene mulch in inter row spacing to avoid weed growth and moisture loss.	
	Lateritic low land situation (Bhubaneswar,Jatni, Begunia, Bolagarh, Parts of Banapur,Tangi,Chilika Blocks)	a) Paddy-Green gram / Black gram	If the seedlings are well in nursery then go for planting of the sown varieties. If fresh nursery seeds are to be sown then go for little early varieties like Gayatri, Savitri, Sarala, Pooja.	i.Delay the sowing date in nursery Strengthen field bundss and gullies.	
	Alluvium up land situation (Balianta,Balipatana & parts of Bhubaneswar Block)	a) Paddy- Fallow	i.Use Short duration Paddy varieties like Khandagiri/ Jogesh/ Vandana / Parijata / Ghanteswari / Satabdi / Kalinga- II	i.Bed & furrow system of planting geometry. ii.Full P&K & 20% N at basal along with FYM at seed row iii.Delay sowing in paddy nursery.	
	Alluvium medium land situation (Balianta,Balipatana & parts of Bhubaneswar Block)	a)Paddy-Green gram/ Black gram /orse gram/sesame /Groundnut	i.Grow Paddy varieties like Swarna, Pratikshya, Surendra, Padmini, Lalat, Naveen , Gouri,Konark ii. Black gram (Pant U-19 & 30, Ujala, Sarala), green gram (Sujata, Durga, PDM-11& 54), Sesame (Uma, Nirmala and Prachi), horse gram (Urmi). iii. Groundnut AK-12-24, Smruti	i.Delay sowing in nursery. ii.Strengthen field bund and dykes to conserve rain water iii.Sow of pre-germinated paddy seeds. iv. Seed Inoculation with rhizobium @ 20-25gm/kg prior to sowing in pulses & groundnut v. Transplant 3-4 seedlings/hill with closer spacing	

		b) Colocassia – green gram/black gram/ Horse gram	i.Transplant colocassia (Muktakeshi,Jhankadi, Topi) in the main field after onset of normal monsoon ii. Black gram (Pant U-19 & 30, Ujala, Sarala), green gram (Sujata, Durga, PDM-11& 54).	i. Black polythene/paddy straw mulching should be applied in the inter row spacing to avoid weed growth and moisture loss. ii.Sow pregerminated corm/cormels iii. Seed Inoculation with rhizobium @ 20-25gm/kg prior to sowing in pulses	
	Alluvium low land situation (Balianta,Balipatana & parts of Bhubaneswar Block)	a) Paddy -Green gram/ Black gram/Sesame b) Sole crop of Colocasia	I. If the seedlings are well in nursery then plant the seedlings. II. Substitute very long duration paddy varieties with little early varieties like Gayatri, Savitri, Sarala, Pooja. III. Sow black gram (Pant U-19 & 30, Ujala, Sarala), green gram (*cv*- Sujata, Durga, PDM-11& 54), cow pea (*cv*- SEB- Z, Utkal Manika), guar (cv. PusaMausumi) ,sesame (*cv*-Uma, Nirmala and Prachi) iii. Plant Colocasia(Pani Saru-1 & 2) as sole crop	Delay the sowing date in nursery	
	Coastal Alluvial, Saline upland situation (Parts of Tangi, Chillika Block)	a) Sole crop of Black gram in unbundsed upland	i. Black gram (Pant U-19 & 30, Ujala, Sarala)	i. Ploughing of soil across the slope. ii. Delay sowing date to onset of monsoon. iii. Seed Inoculation with rhizobium @ 20-25gm/kg prior to sowing	
		b) Paddy -Black gram	i.Use short duration varieties of paddy like Khandagir/ Sneha/ Vandana /Shahabhagi in less saline areas ii.Sow drought tolerant non paddy crops like ragi (Chillika,Bhairavi,Sarada), Black gram (Pant U-19 & 30, Ujala, Sarala), Castor(Kranti,Jyoti), Sunflower(KBSH-1,Prosun-09) in	i.Bed & furrow system of planting geometry. *Ii In-situ* rain water conservation iii.Full P&K & 20% N at basal along with FYM at seed row. iv.Delay the sowing date in the nursery bed v.Plant the tomato seedlings on ridges	

			place of rice. iii. Grow Ragi, Horse gram in saline pockets. iv.Grow Cow pea (Utkal Manika,Maharani), Radish(Pusa Chetki)		
	Coastal Alluvial, Saline Medium land situation (Parts of Tangi, Chillika Block)	a) Paddy-Black gram / horse gram	i.Grow paddy varieties like Swarna, Pratikshya, Ranidhan in less saline areas. ii.Grow salt tolerant paddy varieties CSR-10, CSR-13, CST-7-1 in more affected areas. Iii.Black gram (Pant U-19 & 30, Ujala, Sarala), Horse gram (Urmi), sesame (Uma, Nirmala and Prachi),	i.Delay the sowing date in the nursery beds. ii.Strengthening field bunds dykes iii.Sow of peregrinated paddy seeds	• Seeds through NFSM, ISOPOM, NHM and state seed corporation (OSSC). • Intercultural farm implements under RKVY.
	Coastal Alluvial, Saline Medium low to low land situation (Parts of Tangi, Chillika Block	a) Paddy –Black gram	i.Transplant paddy var. Varshadhan, Durga, Panidhan after onset of rainfall. ii.In highly saline affected areas grow saline tolerant varieties likeSunamani,Lunishree, CSR-27,Rashamanjari	i.Delay the sowing date in nursery. *ii.In-situ* moisture conservation measures by scooping the field.	• Supply of seeds through OSSC& NSC.
	Mixed Black & Alluvium up land situation (Parts of Tangi,Banapur, Chillika Block	a) Paddy-Blackgram	i.Use Short duration Paddy varieties like Kayalni,Heera,Kalinga-III,Rudra, Sankar, Satabdi / Kalinga-II ii. Black gram (Pant U-19 & 30, Ujala, Sarala)	i.Bed & furrow system of planting geometry. ii. In-situ rain water conservation, harvesting of excess runoff for recycling and ground water recharge iii. 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. iv.Full P&K & 20% N at basal along with FYM at seed row v.Delay sowing in paddy nursery.	

				vi.Seed Inoculation with rhizobium @ 20-25gm/kg prior to sowing in pulses	
	Mixed Black & Alluvium Medium land situation (Parts of Tangi,Banapur, Chillika Block	a)Paddy-Green gram/ Black gram	i.Grow Paddy varieties like Swarna, Pratikshya, Surendra, ,Surendra, Padmini, Lalat, Naveen , Gouri,Konark ii.Black gram (Pant U-19 & 30, Ujala, Sarala), Green gram (Sujata, Durga, PDM-11& 54)	i.Delay sowing in nursery. ii.Strengthen field bund and dykes to conserve rain water iii. Sow of pre-germinated paddy seeds. iv. Seed Inoculation with rhizobium @ 20-25gm/kg prior to sowing in pulses v. Transplant 3-4 seedlings/hill with closer spacing	
	Mixed Black & Alluvium Low land situation (Parts of Tangi, Banapur,Chillika Block	a) Paddy -Green gram/ Black gram b) Sole crop of Colocasia	i.Transplant paddy var. Sabitri, CR1014,Mahanadi,Pooja,Tulasi, Ramachandi after getting sufficient rainfall ii. Black gram (Pant U- 30, Prasad), Green gram (Sujata, Durga, Jyoti, Kamdev) iii. Plant Colocasia(Pani Saru-1 & 2) as sole crop	i.Delay the sowing date in nursery according to onset of rain ii.Sow pre-germinated corm /cormels iii. Seed Inoculation with rhizobium @ 20-25gm/kg prior to sowing in pulses	

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 6 weeks (Aug 1st wk)	**Lateritic upland situation (Bhubaneswar,Jatni, Begunia, Bolagarh,Parts of Banapur,Tangi,Chilika Blocks)**	a) Rice-fallow b) Paddy-black gram/ green gram/Arhar	i. Grow extra early paddy var. Kalinga-III, Heera, Rudra, Pathara, Neela. ii)Crop substitution with non paddy crops like ragi (Divyasingh, Champabati, Neelachal), Maize(Navjot,, Pragati, Shakti-1,Ganga-6, Ganga -11), Black	i. If possible grow nursery near water source on community basis. ii. Complete hoeing and weeding of non-paddy crops to provide dust mulch. iii. Spray 2%KCl + 0.1ppm Boron to black gram. iv. Foliar application of 2% urea at	• Seed drill under RKVY. • Supply of seeds through ATMA, OSSC and NFSM

			gram (Pant U- 30, Ujala, Sarala,Prasad),Green gram (Sujata, Durga, PDM 54,Kamdev), Sesame (Uma, Nirmala and Prachi) and Arhar (UPAS120). Iii)Intercropping of Rice + Arhar, Maize + Cowpea	pre-flowering and flowering stage to green gram. v. Top dress 25% urea and potash after receipt of the rain to upland rice. vi. Remove the pest and disease infected plants from the main field. vii. Apply 50% N in very early paddy varieties. i.Summer ploughing, land shaping, bunding & conserving soil moisture iii. Inter cropping of Rice + Arhar (5:2) & Maize + Cowpea (2:2)	
		c) Vegetables-Fallow	i.Plant Yam (Hatikhoj, Orissa Elite) and Elephant Foot Yam (Gajendra) in field bunds ii.Grow bittergourd (Nakhara improved, Prachi, Vivek,Preeti), bottle gourd (P.S.P.R.), ridge gourd(Satapatri), pumpkin (cvVaidyabati, Guamal), guar (cv. Pusa Mausumi) , Sweet potato(Pusa Safed, Samrat) ,Brinjal (Utkal Keshari, Bluestar,Green Long Improved),Chilli (Utkal Ava, Suryamukhi), Okra (Utkal Gaurav, OH152,OH016,Mahyco-10) ,Cow pea (Utkal Manika,Maharani), Guar (PusaMausumi).	i. Cultivate in ridge and furrow method. ii. Adoption of closer spacing iii. Spray 1% urea after onset of monsoon iv. Conserve water by scooping soil on to the root zone. v. Give life saving irrigations. vi. Soil mulching by polythene/ plant parts	Sprayer supply through RKVY Supply of seeds through ATMA, OSSC, NHM and NFSM
	Lateritic medium land situation (Bhubaneswar,Jatni, Begunia, Bolagarh,Parts of Banapur,Tangi,Chilika Blocks)	a) Paddy - Black gram / Green gram /Sesame	i. Transplant available healthy seedlings of paddy var. Swarna, Partikshaya, Ranidhan @ 5-6 per hill Or prepare fresh nursery with paddy varieties like Lalat , MTU-1010, Naveen,Chandan.	i. Close the drainage holes and check the seepage loss in direct sown medium land rice. ii. Withhold N fertilizer (top dressing) application in broadcasted paddy up to receipt of rainfall.	• Seed drill under RKVY. • Supply of seeds through ATMA, OSSC and NFSM

			ii.Black gram (Pant U-19 & 30, Ujala, Sarala), green gram (Sujata, Durga, PDM-11& 54), Sesame (Kalika,Uma, Nirmala and Prachi)	iii. Transplant 45days old seedlings at closer spacing of var. Swarna, Pratikshya, Ranidhan. iv. Broadcast sprouted seeds of shorter duration varieties directly in the puddled field with drainage facility. v.Seed treatment with Thiram @ 2-3gm/kg & Inoculation with rhizobium @ 20-25gm/kg prior to sowing in Blackgram & Greengram.	
		b) Colocassia-Green gram/Black gram	i.Transplant Sprouted corm/cormels of colocasia variety Jhankadi, Topi & Mukta Keshi in the main field after onset of normal monsoon ii. Black gram (Pant U-19 & 30, Ujala, Sarala), green gram (Sujata, Durga, PDM-11& 54)		• Seeds through NFSM, ISOPOM, NHM and state seed corporation (OSSC). • Intercultural farm implements under RKVY.
	Lateritic low land situation (Bhubaneswar,Jatni, Begunia, Bolagarh, Parts of Banapur,Tangi,Chilika Blocks)	a) Paddy-Green gram / Black gram	i.Replace ruling paddy varieties in low land with medium duration varieties like Swarna , Pratikshaya , Ranidhan , Surendra and in medium deep water situation var. Gayatri, Savitri, Sarala. ii.Black gram (Pant U-19 & 30, Ujala, Sarala), green gram (Sujata, Durga, PDM-11& 54),	i.Sow in fresh nursery with shorter duration varieties or else go for transplanting 45days old seedlings at closer spacing @ 5-6 per hill of Gayatri, Savitri, Sarala type of varieties. ii. Treat the paddy seed with tricyclazole @ 1gm/kg before nusery raising	• Seeds through NFSM, ISOPOM, NHM and state seed corporation (OSSC).

	Alluvium up land situation (Balianta,Balipatana & parts of Bhubaneswar Block)	a) Paddy- Fallow	i.Grow extra early paddy var. Kalinga-III, Heera, Rudra, Pathara, Neela ii.Sow drought tolerant non paddy crops like ragi (AKP-2,Divyasingh) I. Black gram (Pant U-19 & 30, Ujala, Sarala), green gram (Sujata, Durga, PDM-54,Dhauli)	i. If possible grow nursery near water source on community basis ii. Complete hoeing and weeding of non-paddy crops to provide dust mulch. iii. Spraying of 2% KCl + 0.1 ppm Boron to black gram. iv. Foliar application of 2% urea at pre-flowering and flowering stage of green gram. v. . vi. Top dressing of 25 % urea and potash after receipt of the rain for upland rice. vii. Remove the pest and disease infested plants from the main field.	• Seeds through NFSM, ISOPOM, NHM and state seed corporation (OSSC).
	Alluvium medium land situation (Balianta,Balipatana & parts of Bhubaneswar Block)	a)Paddy-Green gram/ Black gram /Horse gram/sesame /Groundnut	i. Transplant available healthy seedlings of paddy var. Swarna, Partikshaya, Ranidhan @ 5-6 per hill Or prepare fresh nursery with paddy varieties like Lalat , MTU-1010, Naveen,Chandan. ii.Black gram (Pant U-19 & 30, Ujala, Sarala), Green gram (Sujata, Durga, PDM-11& 54), Sesame (Kalika,Uma, Nirmala and Prachi),Horsegram(Urmi & Local cultivars), Groundnut (AK12-24,Smruti, JL-24)	i.Close the drainage holes and check the seepage loss in direct sown medium land rice. ii.Withhold N fertilizer (top dressing) application in broadcasted paddy up to receipt of rainfall. iii.Transplant 45days old seedlings at closer spacing of var. Swarna, Pratikshya, Ranidhan. iv. Broadcast sprouted seeds of shorter duration varieties directly in the puddled field with drainage facility. v. Seed treatment with Thiram @ 2-3gm/kg & Inoculation with rhizobium @ 20-25gm/kg prior to sowing in Blackgram , Greengram & Groundnut.	• Seeds through NFSM, ISOPOM, NHM and state seed corporation (OSSC). • Intercultural farm implements under RKVY.
		b) Colocassia – green gram/black gram/ Horse gram	i.Transplant Sprouted corm/cormels of colocasia variety Jhankadi, Topi & Mukta Keshi with sufficient rain water in the main field		

	Alluvium low land situation (Balianta,Balipatana & parts of Bhubaneswar Block)	a) Paddy -Green gram/ Black gram/Sesame b) Sole crop of Colocasia	i) Grow paddy varieties like Surendra, Swarna, Partikshayat , Gayatri , Savitri **,** Manika, Mahanadi,in low land ii) Plant Colocasia (Pani Saru-1 & 2) as sole crop	i. Plant the existing over aged seedlings and apply 40-50% N as basal dose. ii. Delay the sowing date in nursery.	
	7) Coastal Alluvial, Saline upland situation (Parts of Tangi, Chillika Block)	a) Sole crop of Black gram b) Paddy -Black gram c) Vegetable - Fallow	i. Black gram (Pant U-19 & 30, Ujala, Sarala) i. Grow extra early paddy var. like Kalinga-III, Heera, Dhala Heera. ii.Sow drought tolerant non paddy crops like ragi (Divyasingh, champabati, AKP-2), Black gram (Pant U-19 & 30,Ujala, Sarala), Sunflower(KBSH-1,Prosun-09) in place of rice. iii. Grow Ragi, Horse gram in saline pockets. iv.Grow tomato (Utkal Deepti,Utkal Kumari), Brinal (Utkal Madhuri,Utkal Kesari,Local cultivar) & Cow pea (Utkal Manika,Maharani), Radish (Pusa Chetki)	i. Ploughing across the slope. ii. Delay sowing date to onset of monsoon. iii. Seed Inoculation with rhizobium @ 20-25gm/kg prior to sowing iv. If possible grow nursery near water source on community basis v.Summer ploughing vi. Complete hoeing and weeding of non-paddy crops to provide dust mulch. vii.Spray of 2% DAP at flowering & pod filling stage viii. Spraying of 2% KCl + 0.1 ppm Boron to black gram. ix.Foliar application of 5% polyfeed (19:19:19) at20days interval after fruit initiation in Brinal & Tomato x. Spray 1% urea in vegetable crops. xi. Top dress 25 % urea and potash after receipt of the rain in upland rice. xii. Remove pest and disease infested plants from main field.	

	Coastal Alluvial, Saline Medium land situation (Parts of Tangi, Chillika Block)	a) Paddy-Black gram / horse gram	i.Transplant available seedlings of paddy var. Swarna, Partikshaya, Ranidhan, Konark @ 5-6 per hill in less saline areas(or) prepare fresh nursery raising of paddy seedlings ii. Grow salt tolerant paddy varieties CSR-10, CSR-13, CST-7-1 in more affected areas. iii. Black gram (Pant U-19 & 30, Ujala, Sarala, Horse gram (Urmi)	i. Summer ploughing ii. Green manuring (Dhaincha) as pre-kharif crop iii. Delay the sowing date in the nursery beds. iv. Strengthening field bunds dykes v. Sow of peregrinated paddy seeds vi. Close the drainage holes and check the seepage loss in direct sown medium land rice regularly. vii. Withhold N fertilizer (top dressing) application up to receipt of rainfall. Transplant 45days old seedlings at closer spacing with 3-4 seedlings per hill.	• Seeds through NFSM, ISOPOM, NHM and state seed corporation (OSSC). • Intercultural farm implements under RKVY.
	Coastal Alluvial, Saline Medium low to low land situation (Parts of Tangi, Chillika Block	a) Paddy - Black gram	i. Transplant paddy var. Varshadhan, Durga, Panidhan after onset of rainfall. ii.In highly saline affected areas grow saline tolerant varieties like Sunamani, Lunishree, CSR-27, Rashamanjari,Sonamani,Luna Suvarna iii. Black gram (Pant U-19 & 30, Ujala, Sarala)	i. Delay the sowing date in nursery till sufficient water is received ii. Already sown nursery should be given life saving irrigation. iii.Use of bulky organic manures during land preparartion. iv.Green manuring (Dhaincha) as pre-kharif crop v.Plant 45days old seedlings at closer spacings. vi.Spray of 2% DAP at flowering & pod filling stage vii. Seed treatment with Thiram @ 2-3gm/kg & Inoculation with rhizobium @ 20-25gm/kg prior to sowing in Blackgram	
	Mixed Black & Alluvium up land situation (Parts of Tangi,Banapur, Chillika Block	a) Paddy-Blackgram	i.Use Short duration Paddy varieties like Kayalni,Heera,Kalinga-III, Rudra, Sankar, Satabdi / Kalinga- II ii. Black gram (Pant U-19 & 30,	i.Bed & furrow system of planting geometry. ii. In-situ rain water conservation, harvesting of excess runoff for recycling and ground water recharge	Seeds through NFSM, ISOPOM and state seed corporation (OSSC). STW by RKVY

			Ujala, Sarala)	iii. 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. iv.Full P&K & 20% N at basal along with FYM at seed row v. Delay sowing in paddy nursery. vi.Seed Inoculation with rhizobium @ 20-25gm/kg prior to sowing in pulses	
		b) Vegetables – Fallow	i.Grow Cucumber (Poinsett, Barsha Mangal, Sheetal, Himangi), Ridge gourd (Satapatri), Snake gourd (Sweta,CO-1,MDU-i) ii. Brinjal (Utkal Keshari,Utkal Madhuri,Green long improved),Okra(Utkal Gaurav, Arka Anamika, Mahyco10,OH 016, Panchali) & Cowpea (Utkal Manika). iii. Plant Yam (Hatikhoj, Orissa Elite) and Elephant foot Yam (Gajendra) as sole crop or in field bunds.	i.More FYM to be applied in seed rows/planting pits. ii.Soil mulching by polythene/ plant parts iii.Transplnt the hardened brinjal seedlings after root dip treatment with Ridomyl MZ & Plantomycin @ 2gm & 1.0gm / lit.water iv.Treat the tubers of Yam / Elephant foot yam in cowdung slurry mixed with Ridomyl MZ & Monocrotophos @ 2gm & 1.5 ml / lit.water v. Provide life saving irrigation to the newly planted seedlings vi. Soak the okra seeds in water for 10-12hrs before sowing for better germination.	•
	Mixed Black & Alluvium Medium land situation (Parts of Tangi,Banapur, Chillika Block	a)Paddy-Green gram/ Black gram	i.Grow Paddy varieties like Swarna, Pratikshya, Surendra, Padmini, Lalat, Naveen , Gouri,Konark ii. Black gram (Pant U-19 & 30, Ujala, Sarala), green gram (Sujata, Durga, PDM-11& 54)	i.Delay sowing in nursery. ii.Strengthen field bund and dykes to conserve rain water iii.Sow of pre-germinated paddy seeds. iv. Use of bulky organic manures before sowing is recommended.	•

				v. Seed Inoculation with rhizobium @ 20-25gm/kg prior to sowing in pulses vi. Transplant 3-4 seedlings/hill with closer spacing	
	Mixed Black & Alluvium Low land situation (Parts of Tangi, Banapur,Chillika Block	a) Paddy -Green gram/ Black gram b) Sole crop of Colocasia	i.Transplant paddy var. Sabitri, CR1014,Mahanadi,Pooja,Tulasi, Ramachandi after getting sufficient rainfall ii. Black gram (Pant U- 30, Prasad), Green gram (Sujata, Durga, Jyoti, Kamdev) iii. Plant Colocasia(Pani Saru-1 & 2) as sole crop	i.Delay the sowing date in nursery according to onset of rain ii.Sow pre-germinated paddy seeds & corm /cormels of colocasia iii. Transplant 3-4 seedlings/hill with closer spacing iv. 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. v. Seed Inoculation with rhizobium @ 20-25gm/kg prior to sowing in pulses	•

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 8 weeks (Aug 3rd wk)	**Lateritic upland situation (Bhubaneswar,Jatni, Begunia, Bolagarh,Parts of Banapur,Tangi,Chilika Blocks)**	a) Rice-fallow b) Paddy-black gram/ green gram/Arhar	i. Grow extra early paddy var. Kalinga-III, Heera, Rudra, Pathara, Neela. ii)Crop substitution with non paddy crops like ragi (Divyasingh, Champabati, Neelachal), Maize(Navjot,, Pragati, Shakti-1,Ganga-6, Ganga -11), Black gram (Pant U- 30, Ujala, Sarala,Prasad),Green gram (Sujata, Durga, PDM 54,Kamdev), Sesame (Uma, Nirmala and Prachi) and Arhar (UPAS120). Iii)Intercropping of Rice + Arhar, Maize + Cowpea	i. If possible grow community nursery near water source ii.Summer ploughing, land shaping& bunding for conserving soil moisture iii.Spray 2%KCl + 0.1ppm Boron to black gram. iv. Foliar application of 2% urea at pre flowering and flowering stage of green gram. v. Top dress 25% urea and potash after receipt of the rain to upland rice. vi. Remove the pest and disease infected plants from the main field. vi. Inter cropping of Rice + Arhar (5:2) & Maize + Cowpea (2:2)	• Seeds through NFSM, ISOPOM, NHM and state seed corporation (OSSC). • Intercultural farm implements under RKVY.
		c) Vegetables – Fallow	i.Plant Yam (Hatikhoj, Orissa Elite) and Elephant Foot Yam (Gajendra) in field bunds ii.Grow bittergourd (Nakhara improved, Prachi, Vivek,Preeti), bottle gourd (P.S.P.R.), ridge gourd(Satapatri), pumpkin (cvVaidyabati, Guamal), guar (cv. Pusa Mausumi) , Sweet potato(Pusa Safed, Samrat) ,Brinjal (Utkal Keshari, Bluestar,Green Long Improved),Chilli (Utkal Ava, Suryamukhi), Okra (Utkal Gaurav, OH152,OH016,Mahyco-10) ,Cow pea (Utkal Manika,Maharani), Guar (PusaMausumi).	i.Cultivate in ridge and furrow method. ii.Complete hoeing and weeding to provide dust mulch iii.Adoption of closer spacing .iv. Spray 1% urea in vegetable crops v. Conserve water by scooping soil on to the root zone. vi.Give life saving irrigations. vii. Soil mulching by polythene/ plant parts	Seeds through ATMA and NHM
	Lateritic medium land situation (Bhubaneswar,Jatni,	a) Paddy - Black gram / Green	i. Transplant available age old seedlings of paddy var. Swarna, Partikshaya, Ranidhan @ 5-6	i. Close drainage holes and check seepage loss in direct sown medium land rice.	iii) Seed drill under RKVY. iv) Supply of

	Begunia, Bolagarh,Parts of Banapur,Tangi,Chilika Blocks)	gram /Sesame	per hill (or) prepare fresh nursery with paddy varieties like Lalat , MTU-1010, Naveen,Chandan. ii.Black gram (Pant U-19 & 30, Ujala, Sarala), green gram (Sujata, Durga, PDM-11& 54), Sesame (Kalika,Uma, Nirmala and Prachi)	ii. Withhold N fertilizer (top dressing) application up to receipt of rainfall. iii. Transplant 45days old seedlings@ 5-6 seedlings/hill at closer spacing. iv. Broadcast sprouted seeds of comparatively shorter duration varieties directly in the puddled field with drainage facility. iv. In case of fresh nursery raising of paddy seedlings, transplant 12-15 days old seedlings in SRI Method. v. Treat the paddy seed with tricyclazole @ 1gm/kg before nusery raising vi. Seed treatment with Thiram @ 2-3gm/kg & Inoculation with rhizobium @ 20-25gm/kg prior to sowing in Blackgram & Greengram	seeds through ATMA, OSSC and NFSM
		b) Colocassia-Green gram/Black gram	i.Transplant Sprouted corm/cormels of colocasia variety Jhankadi, Topi & Mukta Keshi in the main field after onset of normal monsoon ii. Black gram (Pant U-19 & 30, Ujala, Sarala), green gram (Sujata, Durga, PDM-11& 54)		• Seeds through NFSM, ISOPOM, NHM and state seed corporation (OSSC). • Intercultural farm implements under RKVY.
	Lateritic low land situation (Bhubaneswar,Jatni, Begunia, Bolagarh, Parts of Banapur,Tangi,Chilika Blocks)	a) Paddy-Green gram / Black gram	i.Replace ruling paddy varieties like Gayatri, Savitri, Sarala in low land with medium duration varieties viz. Swarna , Pratikshaya , Ranidhan , Surendra , Ajaya, Rajlaxmi ii.Black gram (Pant U-19 & 30, Ujala, Sarala), green gram (Sujata, Durga, PDM-11& 54),	i.Go for fresh nursery raising with comparatively shorter duration varieties or else go for transplanting 45days old seedlings at closer spacing @ 5-6 per hill. ii. Treat the paddy seed with tricyclazole @ 1gm/kg before nusery raising iii. Seed treatment with Thiram @ 2-3gm/kg & Inoculation with rhizobium @ 20-25gm/kg prior to sowing in Blackgram & Greengram	• Seeds through NFSM, ISOPOM and state seed corporation (OSSC).

	Alluvium up land situation (Balianta,Balipatana & parts of Bhubaneswar Block)	a) Paddy-fallow	i.Grow extra early paddy var. Kalinga-III, Heera, Rudra, Pathara, Neela ii.Sow drought tolerant non paddy crops like ragi (AKP-2,Divyasingh) II. Black gram (Pant U-19 & 30, Ujala, Sarala), green gram (Sujata, Durga, PDM-54,Dhauli)	i. If possible grow nursery near water source or ii. Complete hoeing and weeding of non-paddy crops to provide dust mulch. iii. Sprayif 2% KCl + 0.1 ppm Boron to black gram. iv. Foliar application of 2% urea at pre-flowering and flowering stage of green gram. v. Top dressing of 25 % urea and potash after receipt of the rain for upland rice.. vi. Remove the pest and disease infected plants from the main field.	• Seeds through NFSM, ISOPOM and state seed corporation (OSSC).
		b) Vegetables – Fallow	i.Grow Cucurbits like bittergourd(Nakhara improved), Cucumber (Poinsett, Barsha Mangal), Ridge gourd(Satapatri), Pumpkin (Vaidyabati, Guamal) ii. Brinjal (Utkal Keshari,Green long improved), Chilli (Utkal Ava, Utkal Rashmi) , Okra(Utkal Gaurav,Arka Anamika, Mahyco10,OH 016, Panchali), Guar (PusaMausumi) iii. Plant Yam (Hatikhoj, Orissa Elite) and Elephant foot Yam (Gajendra) as sole crop or in field bunds.	i. Cultivate vegetables like Okra, brinjal , tomato on ridges. ii. Spray 1% urea in vegetable crops iii. Soil mulching by polythene/ plant parts iv.Sow pre-germinated seeds of bittergourd v.Treat the tubers of Yam / Elephant foot yam in cowdung slurry mixed with Ridomyl MZ & Monocrotophos @ 2ml & 1.5 ml / lit.water vi.Provide Life saving irrigation & irrigation at critical stages of crop growth	Seeds through NFSM and NHM.
	Alluvium medium land situation (Balianta,Balipatana & parts of Bhubaneswar Block)	a)Paddy-Green gram/ Black gram /Horse gram/sesame /Groundnut	i. Transplant available healthy seedlings of paddy var. Swarna, Partikshaya, Ranidhan @ 5-6 per hill Or prepare fresh nursery with paddy varieties like Lalat , MTU-1010, Naveen,Chandan. ii.Black gram (Pant U-19 & 30, Ujala, Sarala), Green gram (	i.Close the drainage holes and check the seepage loss in direct sown medium land rice. ii. Withhold N fertilizer (top dressing) application in broadcasted paddy up to receipt of rainfall. iii.Transplant 45 days old	• Seeds through NFSM, ISOPOM, NHM and state seed corporation (OSSC). • Intercultural farm implements under RKVY.

			Sujata, Durga, PDM-11& 54), Sesame (Kalika,Uma, Nirmala and Prachi),Horsegram(Urmi & Local cultivars), Groundnut (AK12-24,Smruti, JL-24)	seedlings at closer spacing of var. Swarna, Pratikshya, Ranidhan @ 5-6 per hill. iv. Broadcast sprouted seeds of shorter duration varieties directly in the puddled field with drainage facility. v. Seed treatment with Thiram @ 2-3gm/kg & Inoculation with rhizobium @ 20-25gm/kg prior to sowing in Blackgram, Greengram & Groundnut.	
		b) Colocassia – green gram/black gram/ Horse gram	i.Transplant Sprouted corm/cormels of colocasia variety Jhankadi, Topi & Muktakeshi with sufficient rain water in the main field		• Seeds through NFSM, ISOPOM, NHM and state seed corporation (OSSC).
	Alluvium low land situation (Balianta,Balipatana & parts of Bhubaneswar Block)	a) Paddy -Green gram/ Black gram/Sesame b) Sole crop of Colocasia	i) Grow paddy varieties like Surendra, Swarna, Partikshayat , Gayatri , Savitri **,** Manika, Mahanadi in low land ii.Plant Colocasia (Pani Saru-1 & 2) as sole crop	i. Delay the sowing date in nursery. ii.Plant the existing over aged seedlings and apply 40-50% N as basal dose.	
	Coastal Alluvial, Saline upland situation (Parts of Tangi, Chillika Block)	a) Sole crop of Black gram	i. Black gram (Pant U-19 & 30, Ujala, Sarala) ii. Grow extra early paddy var. like Kalinga-III, Heera, Dhala Heera. iii.Sow drought tolerant non paddy crops like ragi (	i. Ploughing across the slope. ii. Delay sowing date to onset of monsoon. iii. Seed Inoculation with rhizobium @ 20-25gm/kg prior to sowing iv. If possible grow nursery	
		b) Paddy -Black gram			

			Divyasingh, champabati, AKP-2), Black gram (Pant U-19 & 30,Ujala, Sarala), Sunflower(KBSH-1,Prosun-09) in place of rice. iv. Grow Ragi, Horse gram in saline pockets.	near water source on community basis v.Summer ploughing vi. Complete hoeing and weeding of non-paddy crops to provide dust mulch. vii.Spray of 2% DAP at flowering & pod filling stage viii. Spraying of 2% KCl + 0.1 ppm Boron to black gram. ix.Foliar application of 5% polyfeed (19:19:19) at20days interval after fruit initiation in Brinal & Tomato x. Spray 1% urea in vegetable crops. xi. Top dress 25 % urea and potash after receipt of the rain in upland rice. xii. Remove pest and disease infested plants from main field.	
	Coastal Alluvial, Saline Medium land situation (Parts of Tangi, Chillika Block)	a) Paddy-Black gram / horse gram	i.Transplant available seedlings of paddy var. Swarna, Partikshaya, Ranidhan, Konark @ 5-6 per hill in less saline areas(or) prepare fresh nursery raising of paddy seedlings ii. Grow salt tolerant paddy varieties CSR-10, CSR-13, CST-7-1 in more affected areas. iii. Black gram (Pant U-19 & 30, Ujala, Sarala, Horse gram (Urmi)	viii. Summer ploughing ix. Green manuring (Dhaincha) as pre-kharif crop x. Delay the sowing date in the nursery beds. xi. Strengthening field bunds dykes xii. Sow of peregrinated paddy seeds xiii. Close the drainage holes and check the seepage loss in direct sown medium land rice regularly. xiv. Withhold N fertilizer (top dressing) application up to receipt of rainfall. Transplant 45days old seedlings at closer spacing with 3-4 seedlings per hill.	• Seeds through NFSM, ISOPOM, NHM and state seed corporation (OSSC). • Intercultural farm implements under RKVY.

	Coastal Alluvial, Saline Medium low to low land situation (Parts of Tangi, Chillika Block	a) Paddy - Black gram	i. Transplant paddy var. Varshadhan, Durga, Panidhan after onset of rainfall. ii.In highly saline affected areas grow saline tolerant varieties like Sunamani, Lunishree, CSR-27, Rashamanjari,Sonamani,Luna Suvarna iii. Black gram (Pant U-19 & 30, Ujala, Sarala)	iii. Delay the sowing date in nursery till sufficient water is received iv. Already sown nursery should be given life saving irrigation. iii.Use of bulky organic manures during land preparartion. iv.Green manuring (Dhaincha) as pre-kharif crop v.Plant 45days old seedlings at closer spacings. vi.Spray of 2% DAP at flowering & pod filling stage in black gram vii. Seed treatment with Thiram @ 2-3gm/kg & Inoculation with rhizobium @ 20-25gm/kg prior to sowing in Blackgram	
	Mixed Black & Alluvium up land situation (Parts of Tangi,Banapur, Chillika Block	a) Paddy-Blackgram	i.Use Short duration Paddy varieties like Kayalni,Heera,Kalinga-III, Rudra, Sankar, Satabdi / Kalinga-II ii. Black gram (Pant U-19 & 30, Ujala, Sarala)	i.Bed & furrow system of planting geometry. ii. In-situ rain water conservation, harvesting of excess runoff for recycling and ground water recharge iii. 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. iv.Full P&K & 20% N at basal along with FYM at seed row v. Delay sowing in paddy nursery. vi.Seed Inoculation with rhizobium @ 20-25gm/kg prior	

				to sowing in pulses	
	Mixed Black & Alluvium Medium land situation (Parts of Tangi,Banapur, Chillika Block	a)Paddy-Green gram/ Black gram	i.Grow Paddy varieties like Swarna, Pratikshya, Surendra, Padmini, Lalat, Naveen , Gouri,Konark ii. Grow salt tolerant paddy varieties CSR-10, CSR-13, CST-7-1 in affected areas. iii. Black gram (Pant U-19 & 30, Ujala, Sarala), green gram (Sujata, Durga, PDM-11& 54)	i. Delay sowing in nursery. ii.Strengthen field bund and dykes to conserve rain water iii. Sow of pre-germinated paddy seeds. iv. Use of bulky organic manures before sowing is recommended. v. Seed Inoculation with rhizobium @ 20-25gm/kg prior to sowing in pulses vi. Transplant 3-4 seedlings/hill with closer spacing	
	12) Mixed Black & Alluvium Low land situation (Parts of Tangi, Banapur,Chillika Block	a) Paddy -Green gram/ Black gram b) Sole crop of Colocasia	i.Transplant paddy var. Sabitri, CR1014,Mahanadi,Pooja,Tulasi, Ramachandi after getting sufficient rainfall ii. Black gram (Pant U- 30, Prasad), Green gram (Sujata, Durga, Jyoti, Kamdev) iii. Plant Colocasia(Pani Saru-1 & 2) as sole crop iv. Grow saline tolerant varieties like Sunamani, Lunishree, CSR-27, Luna Suvarna in saline pockets	i.Delay the sowing date in nursery according to onset of rain ii.Sow pre-germinated paddy seeds & corm /cormels of colocasia iii. Transplant 3-4 seedlings/hill with closer spacing iv. 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. v. Seed Inoculation with rhizobium @ 20-25gm/kg prior to sowing in pulses	

Condition			Suggested Contingency measures		
Early season drought **(Normal onset)**	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measues**	**Remarks on Implementation**
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand	**Lateritic upland situation (Bhubaneswar,Jatni, Begunia, Bolagarh,Parts of Banapur,Tangi,Chilika Blocks)**	a) Rice-fallow b) Paddy-black gram/ green gram/Arhar	i. Grow extra early paddy var. Kalinga-III, Heera, Rudra, Pathara, Neela. ii. Gap filling if mortality is <50% and re-sowing if mortality is >50%. iii) Broadcast sprouted seeds of short duration varieties. iv) Apply herbicide to control weed in paddy field. v)Reseed nursery beds vii) Black gram (Pant U- 30, Ujala, Sarala, Prasad), Green gram (Sujata, Durga, PDM 54,Kamdev), Sesame (Uma, Nirmala and Prachi) and Arhar (UPAS120). viii) Inter cropping of Rice + Arhar (5:2) & Maize + Cowpea (2:2)	i.Summer ploughing, land shaping& bunding for conserving soil moisture iv. Foliar application of 2% urea at pre flowering and flowering stage of green gram. v. Top dress 25% urea and potash after receipt of the rain to upland rice. vii. Seed Inoculation with rhizobium @ 20-25gm / kg prior to sowing in pulses viii. Spray of 2% DAP at flowering & pod filling stage in black gram	• Seeds through NFSM, ISOPOM, NHM and state seed corporation (OSSC). • Intercultural farm implements under RKVY.
	Lateritic medium land situation (Bhubaneswar,Jatni, Begunia, Bolagarh,Parts of Banapur,Tangi,Chilika Blocks)	a) Paddy - Black gram / Green gram /Sesame b) Colocassia-Green gram/Black gram	i. If rice population is >50% carry out weeding, and adjust the plant population by redistribution of seedlings(Khelua)& if rice population is <50% then resow the seeds ii. Transplant available age old seedlings of paddy var. Swarna, Partikshaya, Ranidhan @ 5-6 per hill iii. Apply herbicide to control weed in paddy field.	i. Summer ploughing & strengthening the field bundsfor moisture conservation. ii. Seed Inoculation with rhizobium @ 20-25gm / kg prior to sowing in pulses iii. Foliar application of 2% urea at pre flowering and flowering stage of	

			ii. Treat the Black gram ,green gram Sesame seeds with Thiram 2-3gm/ kg i. Treat the colocasia corm/cormels with Ridomyl MZ & Monocrotophos @ 2gm & 1.5 ml / lit.water & go for sprouting in nursery bed i.Transplant Sprouted corm/cormels of colocasia in the main field after onset of normal monsoon	green gram. iv. Spray of 2% DAP at flowering & pod filling stage in black gram v. Give organic mulch in the inter row space of the transplanted colocasia crop vi. Rain water storage in the farm ponds or tanks.	
	Lateritic low land situation (Bhubaneswar,Jatni, Begunia, Bolagarh, Parts of Banapur,Tangi,Chilika Blocks)	a) Paddy-Green gram / Black gram	i. Transplant available age old seedlings of paddy var. Gayatri, Savitri, Sarala @ 5-6 per hill. ii. If rice population is more than 50% carry out weeding and adjust the plant population by redistribution of hills (*Khelua)* *iii.* If nursery is damaged then go for fresh nursery raising of comparatively shorter duration varieties viz. Swarna , Pratikshaya , Ranidhan , Surendra , Ajaya, Rajlaxmi iv. Treat the paddy seed with tricyclazole @ 1gm/kg before nusery raising *iv.* Prefer direct seeding to transplant in low lands *v.* Sow seeds in *Punji method* *vi.* Apply herbicide to control weed in paddy field *vii.* Treat the Black gram ,green gram Sesame seeds with Thiram 2-3gm/ kg	i. Summer ploughing & strengthening the field bunds for moisture conservation. ii. Go for green manuring with dhanicha before transplanting in paddy. ii. Spray of 2% DAP at flowering & pod filling stage in black gram iii. Seed Inoculation with rhizobium @ 20-25gm/kg prior to sowing in Blackgram & Greengram	

	Alluvium up land situation (Balianta,Balipatana & parts of Bhubaneswar Block)	a) Paddy-fallow	i. Fresh nursery raising of extra early paddy varieties like Kalinga-III, Heera, Rudra etc, after treating the paddy seed with tricyclazole @ 1gm/kg . ii.If population of rice plant is more than 50% in the mainfield & availability of water is there,then go for weeding & k*helua* operation for clonal propagation in direct seeded paddy. iv.Use sprouted seeds for direct seeding @10 seeds at 20X10cm spacing	i. Raise community nursery at reliable water source. ii. Strengthen the field bunds for moisture conservation. iii. Sow the rhizobium inoculated seeds of black gram & green gram during afternoon followed by laddering.	
	Alluvium medium land situation (Balianta,Balipatana & parts of Bhubaneswar Block)	a)Paddy-Green gram/ Black gram /Horse gram/Sesame /Groundnut	i. Transplant available age old seedlings of paddy at closer spacing @ 5-6 per hill . ii. Sprouted seeds may be direct seeded in lines or fresh seedlings of comparatively shorter duration may be raised for transplanting after treating the paddy seed with tricyclazole @ 1gm/kg . iii. Treat the Black gram ,green gram Sesame seeds with Thiram 2-3gm/ kg before sowing	i.Close the drainage holes and check the seepage loss in direct sown medium land rice. ii. Withhold N fertilizer (top dressing) application in broadcasted paddy up to receipt of rainfall. iii. Inoculation with rhizobium @ 20-25gm/kg prior to sowing in Black gram, Green gram & Groundnut . iv. Rain water storage in the farm ponds or tanks. v. Apply FYM & SSP in the planting furrow of colocasia	
		b) Colocassia –green gram/black gram/ Horse gram	i.Transplant sprouted corm/cormels of colocasia in the main field if water is there in the farm ponds (or) any available source.		
	Alluvium low land situation	a) Paddy -Green	i. Transplant available age old seedlings of paddy at closer	i. Delay the sowing date in nursery.	

	(**Balianta,Balipatana & parts of Bhubaneswar Block)**	gram/ Black gram/Sesame b) Sole crop of Colocasia	spacing @ 5-6 per hill. ii. Sprouted seeds may be direct seeded in puddle lands or fresh seedlings of comparatively shorter duration may be raised for transplanting after treating the paddy seed with tricyclazole @ 1gm/kg iii. Treat the Black gram ,green gram Sesame seeds with Thiram 2-3gm/ kg before sowing iv. Transplant sprouted corm/cormels of colocasia in the main field if water is there in the farm ponds (or) any available source. v. Adopt punji method of sowing. vi.Apply chemical herbicides like Butachlor, Pretilachlor as pre emergence of the paddy crop vii. Never wait for beusaning, go for hand weeding.	ii. Plant the existing over aged seedlings and apply 40-50% N as basal dose. iii. If rice population is less than 50% gap filling may be done.	
	Coastal Alluvial, Saline upland situation (Parts of Tangi, Chillika Block)	a) Sole crop of Black gram b) Paddy -Black gram c) Vegetable -Fallow	i. If rice plant population is less than 50%, gap filling may be done with available age old seedlings ii. Grow extra early paddy var. like Kalinga-III, Heera, Dhala Heera etc. ii. Never wait for beusaning, go for hand weeding in direct seeded rice.. iii. Sow drought tolerant non paddy crops like ragi, Sunflower in place of rice. iv. Treat the Black gram, green gram seeds with Thiram 2-3gm / kg before sowing. v. Grow Ragi, Horse gram in saline pockets.	i. *In-situ* rain water conservation ii. Apply sufficient FYM in the planting furrow/root zone of the vegetable crops iv. Provide life saving irrigation & live mulch to the vegetable crops already transplanted.	

			vi. Grow tomato, Brinal & Cow pea & Radish		
	Coastal Alluvial, Saline Medium land situation (Parts of Tangi, Chillika Block)	a) Paddy-Black gram / horse gram	ii. If rice population is less than 50% then resow the crop iii.Select early maturing varieties <100days iv.Sprouted seeds may be direct seeded in lines or fresh seedlings may be raised for transplanting ii. Grow salt tolerant paddy varieties CSR-10, CSR-13, CST-7-1 in more affected areas. iii. Treat the Black gram, Horse gram seeds with Thiram 2-3gm / kg before sowing.	i. Plug drainage holes for checking seepage loss and to provide life saving irrigation as and when necessary. ii. Strengthening field bunds dykes iii. Withhold N fertilizer (top dressing) application up to receipt of rainfall. iv. Use of sufficient organic matter / FYM / Compost	
	Coastal Alluvial, Saline Medium low to low land situation (Parts of Tangi, Chillika Block	a) Paddy - Black gram	i. Gap filling of damaged field with the same age seedlings. ii. If rice plant population is less than 50% , fresh seedlings may be transplanted iii. Prefer direct seeding to transplanting in low lands. iv. Sow 5-7 seeds (*Punji*) per hill. v. Prefer closer spacing vi. In highly saline affected areas grow saline tolerant varieties like Sunamani, Lunishree, CSR-27, etc. vii. Treat the Black gram, Horse gram seeds with Thiram 2-3gm / kg before sowing.	i. Already sown nursery should be given life saving irrigation. ii. Use of bulky organic manures during land preparartion. iii. Green manuring (Dhaincha) as pre-kharif crop iv. Spray of 2% DAP at flowering & pod filling stage in black gram	
	Mixed Black & Alluvium up land situation (Parts of Tangi,Banapur,	a) Paddy- Blackgram	i. Fresh nursery raising of extra early paddy varieties like Kalinga-III, Heera, Rudra etc. after treating the paddy seed with tricyclazole @ 1gm/kg .	i In-situ rain water conservation, harvesting of excess runoff for recycling	

	Chillika Block		ii.If population of rice plant is more than 50% in the mainfield & availability of water is there,then go for weeding & k*helua* operation for clonal propagation in direct seeded paddy. iv.Use sprouted seeds for direct seeding @10 seeds at 20X10cm spacing v. Treat the Black gram seeds with Thiram 2-3gm / kg before sowing.	and ground water recharge ii.Full P&K & 20% N with FYM as basal iii. Delay sowing in paddy nursery. iv.Seed Inoculation with rhizobium @ 20-25gm/kg prior to sowing in pulses	
	Mixed Black & Alluvium Medium land situation (Parts of Tangi,Banapur, Chillika Block	a)Paddy-Green gram/ Black gram	i. Grow Paddy varieties like Swarna, Pratikshya, Naveen etc. ii. If rice plant population is less than 50% , fresh seedlings may be transplanted iii. Sprouted seeds may be direct seeded in lines. iv. Transplant 3-4 seedlings/hill with closer spacing. v. Grow salt tolerant paddy varieties CSR-10, CSR-13, CST-7-1 in affected areas. vi. Treat the Black gram seeds with Thiram 2-3gm / kg before sowing.	i. Strengthen field bund and dykes to conserve rain water ii. Use of bulky organic manures before sowing. iv. Seed Inoculation with rhizobium @ 20-25gm/kg prior to sowing in pulses v. Spray of 2% DAP at flowering & pod filling stage in black gram	
	Mixed Black & Alluvium Low land situation (Parts of Tangi, Banapur,Chillika Block	a) Paddy -Green gram/ Black gram b) Sole crop of Colocasia	i.Transplant paddy var. Sabitri, CR1014, Mahanadi,Pooja,Tulasi, Ramachandi after getting sufficient rainfall ii. Prefer direct seeding to transplanting in low lands. iii.. Grow saline tolerant varieties like Sunamani, Lunishree, CSR-27, Luna	i. Strengthen field bunds to conserve rain water ii.Seed Inoculation with rhizobium @ 20-25gm/kg prior to sowing in pulses iii.Apply FYM , full P, 50% N & K in the planting furrow of	

			Suvarna in saline pockets iv. Transplant 3-4 seedlings/hill with closer spacing v. Treat the Black gram seeds with Thiram 2-3gm / kg before sowing iii. Plant Colocasia(Pani Saru-1 & 2) as sole crop vi. Transplant sprouted corm/cormels of colocasia in the main field if sufficient water is available	colocasia	

Condition			**Suggested Contingency measures**		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measues**	**Remarks on Implementation**
At vegetative stage	**Lateritic upland situation (Bhubaneswar,Jatni, Begunia, Bolagarh,Parts of Banapur,Tangi,Chilika Blocks)**	a) Rice-fallow b) Paddy-black gram/ green gram/Arhar	I. Broadcasting sprouted seeds of short duration varieties. II. Resowing/transplanting with shorter duration varieties in severely damaged field with >50% mortality. III. Thin out excess population from unit area /hill & redistribute in the crop field for gap filling	i.Spraying of 2% urea ii. Broad bed and furrow planting for *in-situ* moister conservation iii.Rain water harvesting and recycling iv.Top dressing the crop after receipt of rain. v.Check seepage loss by plugging the holes. Vi.Application of potassic fertilizer. vii.Plug all seepage outlets. Viii.Seed priming by treating with 0.25% CaCl2 at 20 hrs before sowing.	CLDP, IWMP, NREGS, ISOPOM & NFSM. • Seeds through NFSM, ISOPOM, NHM and state seed corporation (OSSC). • Intercultural farm implements under RKVY.
	Lateritic medium land situation (Bhubaneswar,Jat	a) Paddy - Black gram / Green gram	i. Grow extra early paddy var. Kalinga-III, Heera, Rudra, Pathara, Neela. ii. Gap filling if mortality is <50% and	i.Summer ploughing, land shaping& bunding for conserving soil	

	ni, Begunia, Bolagarh,Parts of Banapur,Tangi,Chilika Blocks)		re-sowing if mortality is >50%. iii) Broadcast sprouted seeds of short duration varieties. iv) Apply herbicide to control weed in paddy field. v) Reseed nursery beds vi. Seed Inoculation with rhizobium @ 20-25gm / kg prior to sowing in pulses	moisture ii. Foliar application of 2% urea at pre flowering and flowering stage of green gram. iii. Top dress 25% urea and potash after receipt of the rain to upland rice. v. Spray of 2% DAP at flowering & pod filling stage in black gram	
		b) Colocassia-Green gram/Black gram	i.Plant Yam and Elephant Foot Yam in field bunds ii. Treat the tubers of Yam / Elephant foot yam in cowdung slurry mixed with Ridomyl MZ & Monocrotophos @ 2gm & 1.5 ml / lit.water iii. Transplant old seedlings with higher nitrogen and potash application so as to induce fast growth after rain. iv.Transplant Sprouted corm/cormels of colocasia, if sufficient water availability in the main field.	i. Cultivate in ridge and furrow method. ii.Complete hoeing and weeding to provide dust mulch iii.Adoption of closer spacing v. Conserve water by scooping soil on to the root zone. vi.Soil mulching by polythene/ plant parts vii.The field should be free of weeds for utilization of water and nutrients by the crops viii.Application of higher quantity of FYM and organic manure	

	Lateritic low land situation (Bhubaneswar,Jatni, Begunia, Bolagarh, Parts of Banapur,Tangi,Chilika Blocks)	a) Paddy-Green gram / Black gram	i. Transplant available age old seedlings of paddy var. Gayatri, Savitri, Sarala @ 5-6 per hill. ii. If rice population is more than 50% carry out weeding and adjust the plant population by redistribution of hills (*Khelua)* *iii.* If nursery is damaged then go for fresh nursery raising of comparatively shorter duration varieties viz. Swarna , Pratikshaya , Ranidhan , Surendra , Ajaya, Rajlaxmi iv. Treat the paddy seed with tricyclazole @ 1gm/kg before nusery raising *v.* Prefer direct seeding to transplant in low lands *vi.* Sow seeds in *Punji method* *vii.* Apply herbicide to control weed in paddy field *viii.* Treat the Black gram ,green gram Sesame seeds with Thiram 2-3gm/ kg ix. Seed Inoculation with rhizobium @ 20-25gm/kg prior to sowing in Blackgram & Greengram	i. Summer ploughing & strengthening the field bunds for moisture conservation. ii. Go for green manuring with dhanicha before transplanting in paddy. iii. Do not beushan the crop, remove weeds and top dress N after iv.. Spray of 2% DAP at flowering & pod filling stage in black gram	
	Alluvium up land situation (Balianta,Balipatana & parts of Bhubaneswar Block)	a) Paddy-fallow	i.Broadcasting sprouted seeds of short duration varieties. ii.Resowing/transplanting with shorter duration varieties in severely damaged field with >50% mortality. iii.Thin out excess population from unit area /hill & redistribute in the crop field for gap filling	i.Conserve rainwater by increasing bund height ii.Do not beushan the crop, remove weeds and top dress N after dry spell.	
	Alluvium medium land situation (Balianta,Balipatana & parts of Bhubaneswar Block)	a)Paddy-Green gram/ Black gram /Horse gram/Sesame /Groundnut	i. Transplant available age old seedlings of paddy at closer spacing @ 5-6 per hill . ii. Sprouted seeds may be direct seeded in lines or fresh seedlings of comparatively shorter duration may be	i.Close the drainage holes and check the seepage loss in direct sown medium land rice. ii. Withhold N fertilizer (top dressing)	

			raised for transplanting after treating the paddy seed with tricyclazole @ 1gm/kg . iii. Treat the Black gram ,green gram Sesame seeds with Thiram 2-3gm/ kg before sowing	application in broadcasted paddy up to receipt of rainfall. iii. Inoculation with rhizobium @ 20-25gm/kg prior to sowing in Black gram, Green gram & Groundnut. iv. Rain water storage in the farm ponds or tanks. v. Apply FYM & SSP in the planting furrow of colocasia	
		b) Colocassia –green gram/black gram/ Horse gram	i.Transplant sprouted corm/cormels of colocasia in the main field if water is there in the farm ponds (or) any available source.		
	Alluvium low land situation (Balianta,Balipatana & parts of Bhubaneswar Block)	a) Paddy -Green gram/ Black gram/Sesame b) Sole crop of Colocasia	i. Transplant available age old seedlings of paddy at closer spacing @ 5-6 per hill. ii. Sprouted seeds may be direct seeded in puddle lands or fresh seedlings of comparatively shorter duration may be raised for transplanting after treating the paddy seed with tricyclazole @ 1gm/kg iii. Treat the Black gram ,green gram Sesame seeds with Thiram 2-3gm/ kg before sowing iv. Transplant sprouted corm/cormels of colocasia in the main field if water is there in the farm ponds (or) any available source. v.Apply chemical herbicides like Butachlor, Pretilachlor as pre emergence of the paddy crop vi. Never wait for beusaning, go for hand weeding.	i. Delay the sowing date in nursery. ii.Plant the existing over aged seedlings and apply 40-50% N as basal dose. iii.If rice population is less than 50% gap filling may be done. iv.Close the drainage holes and check the seepage loss in direct sown	
	Coastal Alluvial, Saline upland situation (Parts of Tangi, Chillika Block)	a) Sole crop of Black gram b) Paddy -Black gram	i. If rice plant population is less than 50%, gap filling may be done with available age old seedlings ii. Grow extra early paddy var. like Kalinga-III, Heera, Dhala Heera etc. ii. Never wait for beusaning, go for hand	i. In-situ rain water conservation ii. Harvesting of excess runoff for re-use and ground water recharge iii. Raising bund height	

		c) Vegetable -Fallow	weeding in direct seeded rice. iii. Sow drought tolerant non paddy crops like ragi, Sunflower in place of rice. iv. Treat the Black gram, green gram seeds with Thiram 2-3gm / kg before sowing. v. Grow Ragi, Horse gram in saline pockets. vi. Grow tomato, Brinal & Cow pea & Radish	to conserve the rain water. iv.Apply sufficient FYM in the planting furrow/root zone of the vegetable crops v. Provide life saving irrigation & live mulch to the vegetable crops already transplanted	
	Coastal Alluvial, Saline Medium land situation (Parts of Tangi, Chillika Block)	a) Paddy-Black gram / horse gram	i. If rice population is less than 50% then resow the crop ii.Select early maturing varieties <100days iii.Sprouted seeds may be direct seeded in lines iv. Grow salt tolerant paddy varieties CSR-10, CSR-13, CST-7-1 in more affected areas. v. Treat the Black gram, Horse gram seeds with Thiram 2-3gm / kg before sowing.	i. Plug drainage holes for checking seepage loss and to provide life saving irrigation as and when necessary. ii. Raising bund height to conserve the rain water iii. Withhold N fertilizer (top dressing) application up to receipt of rainfall. iv.Use of sufficient organic matter / FYM / Compost v. Do not beushan the crop, remove weeds and top dress N after dry spell	
	Coastal Alluvial, Saline Medium low to low land situation (Parts of Tangi, Chillika Block	a) Paddy - Black gram	i. Transplanting with clonal tillers for uniform population. ii. If rice plant population is less than 50% , fresh seedlings may be transplanted iii. Prefer direct seeding to transplanting in low lands. iv. Sow 5-7 seeds (*Punji*) per hill. v. Prefer closer spacing vi. In highly saline affected areas grow saline tolerant varieties like Sunamani,	i. Already sown nursery should be given life saving irrigation. ii. Use of bulky organic manures during land preparartion. iii. Conserve rainwater by increasing bund height iii. Green manuring (Dhaincha) as pre-kharif	

			Lunishree, CSR-27, etc. vii. Treat the Black gram, Horse gram seeds with Thiram 2-3gm / kg before sowing.	crop iv. Spray of 2% DAP at flowering & pod filling stage in black gram	
	Mixed Black & Alluvium up land situation (Parts of Tangi,Banapur, Chillika Block	a) Paddy- Blackgram	i. Fresh nursery raising of extra early paddy varieties like Kalinga-III, Heera, Rudra etc. after treating the paddy seed with tricyclazole @ 1gm/kg . ii.If population of rice plant is more than 50% in the mainfield & availability of water is there,then go for weeding & k*helua* operation for clonal propagation in direct seeded paddy. iv.Use sprouted seeds for direct seeding @10 seeds at 20X10cm spacing v. Treat the Black gram seeds with Thiram 2-3gm / kg before sowing.	i In-situ rain water conservation, harvesting of excess runoff for recycling and ground water recharge ii.Full P&K & 20% N with FYM as basal iii. Delay sowing in paddy nursery. iv.Seed Inoculation with rhizobium @ 20-25gm/kg prior to sowing in pulses	
	Mixed Black & Alluvium Medium land situation (Parts of Tangi,Banapur, Chillika Block	a)Paddy-Green gram/ Black gram	i. Grow Paddy varieties like Swarna, Pratikshya , Naveen etc. ii. If rice plant population is less than 50% , fresh seedlings may be transplanted iii. Sprouted seeds may be direct seeded in lines. iv. Transplant 3-4 seedlings/hill with closer spacing. v. Grow salt tolerant paddy varieties CSR-10, CSR-13, CST-7-1 in affected areas. vi. Treat the Black gram seeds with Thiram 2-3gm / kg before sowing.	i. Strengthen field bund and dykes to conserve rain water ii. Use of bulky organic manures before sowing. iii. Seed Inoculation with rhizobium @ 20-25gm/kg prior to sowing in pulses iv. Spray of 2% DAP at flowering & pod filling stage in black gram	
	Mixed Black & Alluvium Low land situation (Parts of Tangi,	a) Paddy -Green gram/ Black gram	i. If rice plant population is less than 50% , transplant with clonal tillers for uniform population ii. Prefer direct seeding to transplanting	i. Strengthen field bunds to conserve rain water ii.Seed Inoculation with rhizobium @ 20-	

	Banapur,Chillika Block	b) Sole crop of Colocasia	in low lands resowing is necessary. iii. Transplant 3-4 seedlings/hill with closer spacing iv.Treat the Black gram seeds with Thiram 2-3gm / kg before sowing iii. Plant Colocasia(Pani Saru-1 & 2) as sole crop v.Transplant sprouted corm/cormels of colocasia in the main field if sufficient water is available	25gm/kg prior to sowing in pulses iii.Apply FYM , full P, 50% N & K in the planting furrow of colocasia	

Condition			**Suggested Contingency measures**		
Mid season drought (long dry spell)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measues**	**Remarks on Implement ation**
At flowering/ fruiting stage	**Lateritic upland situation (Bhubaneswar,Jatni, Begunia, Bolagarh,Parts of Banapur,Tangi,Chilika Blocks)**	a) Rice-fallow b) Paddy-black gram/ green gram/Arhar	i. Life saving irrigation should be applied, if available. ii.Sprinkling of water to minimize chaff ness of grains iii. Harvest the crop at physiological maturity stage. iv. Sow pulses if paddy crop is severely affected by drought condition.	i. Recycling of harvested rain water ii. Apply potassic fertilizer when ever soil moisture allows iii. Check seepage loss by plugging the holes.	• Seeds through NFSM, ISOPOM, NHM and state seed corporation (OSSC). • Inter cultural farm implements under RKVY.
		c) Vegetables – Fallow	i. Withhold nitrogen application rather apply some potassic fertilizer if soil moisture permits. ii. Get ready for a catch crop in case of severe mortality. iii. Give intermittent spray of water to keep the micro climate moist. iv. Spray 2%KCl + 0.1ppm boron to non paddy crops to overcome drought.	i. Give life saving irrigation at the rhizosphere (basin). ii. Provide mulch to the vegetable crops already transplanted (basins & inter row spaces) ii. Give light hoeing to disturb capillaries for checking evaporation	
	Lateritic medium land situation (Bhubaneswar,Jatni, Begunia,	a) Paddy - Black gram / Green gram /Sesame	i. Life saving irrigation should be applied, if available. ii.Sprinkling of water to minimize chaff ness of grains	i. Recycling of harvested rain water ii. Apply potassic fertilizer when ever soil moisture	

	Bolagarh,Parts of Banapur,Tangi,Chilika Blocks)		iii. Harvest the crop at physiological maturity stage. iv. Sow pulses if paddy crop is severely affected by drought condition.	allows (or) after receipt of rain. iii. Check seepage loss by plugging the holes.	
		b) Colocassia-Green gram/Black gram	i. Remove excess side suckers in colocasia. ii. If the colocasia crop is about to matured, then harvest the same & sow Green gram/Black gram with residual moisture condition.	i. Inter row space mulching by dry grass / leaves/ paddy straw / plant parts in colocasia	
	Lateritic low land situation (Bhubaneswar,Jatni, Begunia, Bolagarh, Parts of Banapur,Tangi,Chilika Blocks)	a) Paddy-Green gram / Black gram	i. Life saving irrigation should be applied, if available. ii.Sprinkling of water to minimize chaff ness of grains iii. Harvest the crop at physiological maturity stage. iv. Sow pulses if paddy crop is severely affected by drought condition.	i. Recycling of harvested rain water ii. Apply potassic fertilizer when ever soil moisture allows (or) after receipt of rain. iii. Check seepage loss by plugging the holes.	
	Alluvium up land situation (Balianta,Balipatana & parts of Bhubaneswar Block)	a) Paddy-fallow	i. Life saving irrigation should be applied, if available. ii.Sprinkling of water to minimize chaff ness of grains iii. Harvest the crop at physiological maturity stage. iv. Sow pulses if paddy crop is severely affected by drought condition.	i. Recycling of harvested rain water ii. Apply potassic fertilizer when ever soil moisture allows iii. Check seepage loss by plugging the holes.	
		b) Vegetables – Fallow	i. Withhold nitrogen application rather apply some potassic fertilizer if soil moisture permits. ii. Get ready for a catch crop in case of severe mortality. iii. Give intermittent spray of water to keep the micro climate moist. iv. Spray 2%KCl + 0.1ppm boron to non paddy crops to overcome drought.	i. Give life saving irrigation at the rhizosphere (basin). ii. Provide mulch to the vegetable crops already transplanted (basins & inter row spaces) ii. Give light hoeing to disturb capillaries for checking evaporation	

	Alluvium medium land situation (Balianta,Balipatana & parts of Bhubaneswar Block)	a)Paddy-Green gram/ Black gram /Horse gram/Sesame /Groundnut	i. Life saving irrigation should be applied, if available. ii.Sprinkling of water to minimize chaff ness of grains iii. Harvest the crop at physiological maturity stage. iv. Sow pulses if paddy crop is severely affected by drought condition. v. Sprinkling of water through sprinklers to avoid hardening of soil which decreases pegging in groundnut.	i. Recycling of harvested rain water ii. Apply potassic fertilizer when ever soil moisture allows (or) after receipt of rain. iii. Check seepage loss by plugging the holes.	
		b) Colocassia –green gram/black gram/ Horse gram	i. Remove excess side suckers in colocasia. ii. If the colocasia crop is about to matured, then harvest the same & sow Green gram/Black gram with residual moisture condition. .	i. Inter row space mulching by dry grass / leaves/ paddy straw / plant parts in colocasia	
	Alluvium low land situation (Balianta,Balipatana & parts of Bhubaneswar Block)	a) Paddy -Green gram/ Black gram/Sesame b) Sole crop of Colocasia	i. Life saving irrigation should be applied, if available. ii.Sprinkling of water to minimize chaff ness of grains iii. Harvest the crop at physiological maturity stage. iv. Sow pulses if paddy crop is severely affected by drought condition. i. Remove excess side suckers in colocasia. ii. If the colocasia crop is about to matured, then harvest the same & sow Green gram/Black gram with residual moisture condition.	i. Recycling of harvested rain water ii. Apply potassic fertilizer when ever soil moisture allows (or) after receipt of rain. iii. Check seepage loss by plugging the holes. i. Inter row space mulching by dry grass / leaves/ paddy straw / plant parts in colocasia	
	Coastal Alluvial, Saline upland situation (Parts of Tangi,	a) Sole crop of Black gram b) Paddy -Black gram	i. Life saving irrigation should be applied, if available. ii.Sprinkling of water to minimize chaff ness of grains	i. Recycling of harvested rain water ii. Apply potassic fertilizer when ever soil moisture	

	Chillika Block)		iii. Harvest the crop at physiological maturity stage. iv. Sow pulses if paddy crop is severely affected by drought condition.	allows (or) after receipt of rain. iii. Check seepage loss by plugging the holes.	
		c) Vegetable -Fallow	i. Withhold nitrogen application rather apply some potassic fertilizer if soil moisture permits. ii. Get ready for a catch crop in case of severe mortality. iii. Give intermittent spray of water to keep the micro climate moist. iv. Spray 2%KCl + 0.1ppm boron to non paddy crops to overcome drought.	i. Give life saving irrigation at the rhizosphere (basin). ii. Provide mulch to the vegetable crops already transplanted (basins & inter row spaces) ii. Give light hoeing to disturb capillaries for checking evaporation	
	Coastal Alluvial, Saline Medium land situation (Parts of Tangi, Chillika Block)	a) Paddy-Black gram / horse gram	i. Life saving irrigation should be applied, if available. ii.Sprinkling of water to minimize chaff ness of grains iii. Harvest the crop at physiological maturity stage. iv. Sow pulses if paddy crop is severely affected by drought condition.	i. Recycling of harvested rain water ii. Apply potassic fertilizer when ever soil moisture allows (or) after receipt of rain. iii. Check seepage loss by plugging the holes.	
	Coastal Alluvial, Saline Medium low to low land situation (Parts of Tangi, Chillika Block	a) Paddy - Black gram	i. Life saving irrigation should be applied, if available. ii.Sprinkling of water to minimize chaff ness of grains iii. Harvest the crop at physiological maturity stage. iv. Sow pulses if paddy crop is severely affected by drought condition.	i. Recycling of harvested rain water ii. Apply potassic fertilizer when ever soil moisture allows (or) after receipt of rain. iii. Check seepage loss by plugging the holes.	
	Mixed Black & Alluvium up land situation	a) Paddy- Blackgram	i. Life saving irrigation should be applied, if available. ii.Sprinkling of water to minimize	i. Recycling of harvested rain water ii. Apply potassic fertilizer	

	(Parts of Tangi,Banapur, Chillika Block		chaff ness of grains iii. Harvest the crop at physiological maturity stage. iv. Sow pulses if paddy crop is severely affected by drought condition.	when ever soil moisture allows (or) after receipt of rain. iii. Check seepage loss by plugging the holes.	
		b) Vegetables – Fallow	i. Withhold nitrogen application rather apply some potassic fertilizer if soil moisture permits. ii. Get ready for a catch crop in case of severe mortality. iii. Give intermittent spray of water to keep the micro climate moist. iv. Spray 2%KCl + 0.1ppm boron to non paddy crops to overcome drought.	i. Give life saving irrigation at the rhizosphere (basin). ii. Provide mulch to the vegetable crops already transplanted (basins & inter row spaces) ii. Give light hoeing to disturb capillaries for checking evaporation	
	Mixed Black & Alluvium Medium land situation (Parts of Tangi,Banapur, Chillika Block	a)Paddy-Green gram/ Black gram	i. Life saving irrigation should be applied, if available. ii.Sprinkling of water to minimize chaff ness of grains iii. Harvest the crop at physiological maturity stage. iv. Sow pulses if paddy crop is severely affected by drought condition.	i. Recycling of harvested rain water ii. Apply potassic fertilizer when ever soil moisture allows (or) after receipt of rain. iii. Check seepage loss by plugging the holes.	

	12) Mixed Black & Alluvium Low land situation (Parts of Tangi, Banapur,Chillika Block	a) Paddy -Green gram/ Black gram b) Sole crop of Colocasia	i. Life saving irrigation should be applied, if available. ii.Sprinkling of water to minimize chaff ness of grains iii. Harvest the crop at physiological maturity stage. iv. Sow pulses if paddy crop is severely affected by drought condition. v. Remove excess side suckers in colocasia. vi. If the colocasia crop is about to matured, then harvest the same & sow Green gram/Black gram with residual moisture condition.	i. Recycling of harvested rain water ii. Apply potassic fertilizer when ever soil moisture allows (or) after receipt of rain. iii. Check seepage loss by plugging the holes. iv.Inter row space mulching by dry grass / leaves/ paddy straw / plant parts in colocasia	

Condition			**Suggested Contingency measures**		
Terminal drought (Early withdrawal of monsoon)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measues**	**Remarks on Implementation**
	Lateritic upland situation (Bhubaneswar,Jatni, Begunia, Bolagarh,Parts of Banapur,Tangi,Chilika Blocks)	a) Rice-fallow b) Paddy-black gram/ green gram/Arhar	i. Life saving irrigation should be applied, if available. ii.Sprinkling of water to minimize chaff ness of grains iii. Harvest the crop at physiological maturity stage. iv. If the standing crop fails then go for horse gram/green gram/ black gram/ toria as pre *rabi* crop.	i. Recycling of harvested rain water ii. Apply potassic fertilizer when ever soil moisture allows iii. Check seepage loss by plugging the holes.	• Seeds through NFSM, ISOPOM, NHM and state seed corporation (OSSC). • Intercultural farm implements under RKVY.
		c) Vegetables – Fallow	i. Withhold nitrogen application rather apply some potassic fertilizer if soil moisture permits. ii. Get ready for a catch crop in case of severe mortality. iii. Give intermittent spray of	i. Give life saving irrigation at the rhizosphere (basin). ii. Provide mulch to the vegetable crops already transplanted (basins & inter row	

			water to keep the micro climate moist. iv. Spray 2%KCl + 0.1ppm boron to non paddy crops to overcome drought. v. Remove and destroy pest and disease affected plants vi.Prepare stand by nursery on community basis to mitigate complete crop failure and catch the season	spaces) ii. Give light hoeing to disturb capillaries for checking evaporation	
	Lateritic medium land situation (Bhubaneswar,Jatni, Begunia, Bolagarh,Parts of Banapur,Tangi,Chilika Blocks)	a) Paddy - Black gram / Green gram /Sesame	i. Life saving irrigation should be applied, if available. ii.Sprinkling of water to minimize chaff ness of grains iii. Harvest the crop at physiological maturity stage. iv. Sow pulses if paddy crop is severely affected by drought condition.	i. Recycling of harvested rain water ii. Apply potassic fertilizer when ever soil moisture allows (or) after receipt of rain. iii. Check seepage loss by plugging the holes.	
		b) Colocassia-Green gram/Black gram	i. Remove excess side suckers in colocasia. ii. If the colocasia crop is about to matured, then harvest the same & sow Green gram/Black gram with residual moisture condition. .	i. Inter row space mulching by dry grass / leaves/ paddy straw / plant parts in colocasia	
	Lateritic low land situation (Bhubaneswar,Jatni, Begunia, Bolagarh, Parts of Banapur,Tangi,Chilika Blocks)	a) Paddy-Green gram / Black gram	i. Life saving irrigation should be applied, if available. ii.Sprinkling of water to minimize chaff ness of grains iii. Harvest the crop at physiological maturity stage. iv. Sow pulses if paddy crop is severely affected by drought condition.	i. Recycling of harvested rain water ii. Apply potassic fertilizer when ever soil moisture allows (or) after receipt of rain. iii. Check seepage loss by plugging the holes.	
	Alluvium up land situation	a) Paddy-fallow	i. Life saving irrigation should be applied, if available.	i. Recycling of harvested rain water	

	(**Balianta,Balipatana & parts of Bhubaneswar Block)**		ii.Sprinkling of water to minimize chaff ness of grains iii. Harvest the crop at physiological maturity stage. iv. If the standing crop fails then go for horse gram/green gram/ black gram/ toria as pre *rabi* crop.	ii. Apply potassic fertilizer when ever soil moisture allows iii. Check seepage loss by plugging the holes.	
		b) Vegetables – Fallow	i. Withhold nitrogen application rather apply some potassic fertilizer if soil moisture permits. ii. Get ready for a catch crop in case of severe mortality. iii. Give intermittent spray of water to keep the micro climate moist. iv. Spray 2%KCl + 0.1ppm boron to non paddy crops to overcome drought.	i. Give life saving irrigation at the rhizosphere (basin). ii. Provide mulch to the vegetable crops already transplanted (basins & inter row spaces) ii. Give light hoeing to disturb capillaries for checking evaporation	
	Alluvium medium land situation (Balianta,Balipatana & parts of Bhubaneswar Block)	a)Paddy-Green gram/ Black gram /Horse gram/Sesame /Groundnut	i. Life saving irrigation should be applied, if available. ii.Sprinkling of water to minimize chaff ness of grains iii. Harvest the crop at physiological maturity stage. iv. Sow pulses if paddy crop is severely affected by drought condition. v. Sprinkling of water through sprinklers to avoid hardening of soil which decreases pegging in groundnut.	i. Recycling of harvested rain water ii. Apply potassic fertilizer when ever soil moisture allows (or) after receipt of rain. iii. Check seepage loss by plugging the holes.	
		b) Colocassia –green gram/black gram/ Horse gram	i. Remove excess side suckers in colocasia. ii. If the colocasia crop is about to matured, then harvest the same & sow Green gram/Black gram with residual moisture condition..	i. Inter row space mulching by dry grass / leaves/ paddy straw / plant parts in colocasia	

	Alluvium low land situation (Balianta,Balipatana & parts of Bhubaneswar Block)	a) Paddy -Green gram/ Black gram/Sesame b) Sole crop of Colocasia	i. Life saving irrigation should be applied, if available. ii.Sprinkling of water to minimize chaff ness of grains iii. Harvest the crop at physiological maturity stage. iv. Sow pulses if paddy crop is severely affected by drought condition. i. Remove excess side suckers in colocasia. ii. If the colocasia crop is about to matured, then harvest the same & sow Green gram/Black gram with residual moisture condition.	i. Recycling of harvested rain water ii. Apply potassic fertilizer when ever soil moisture allows (or) after receipt of rain. iii. Check seepage loss by plugging the holes. i. Inter row space mulching by dry grass / leaves/ paddy straw / plant parts in colocasia	
	Coastal Alluvial, Saline upland situation (Parts of Tangi, Chillika Block)	a) Sole crop of Black gram b) Paddy -Black gram	i. Life saving irrigation should be applied, if available. ii.Sprinkling of water to minimize chaff ness of grains iii. Harvest the crop at physiological maturity stage. iv. If the standing crop fails then go for black gram/ toria as pre *rabi* crop.	i. Recycling of harvested rain water ii. Apply potassic fertilizer when ever soil moisture allows (or) after receipt of rain. iii. Check seepage loss by plugging the holes.	
		c) Vegetable -Fallow	i. Withhold nitrogen application rather apply some potassic fertilizer if soil moisture permits. ii. Get ready for a catch crop in case of severe mortality. iii. Give intermittent spray of water to keep the micro climate moist. iv. Spray 2%KCl + 0.1ppm boron to non paddy crops to overcome drought.	i. Give life saving irrigation at the rhizosphere (basin). ii. Provide mulch to the vegetable crops already transplanted (basins & inter row spaces) ii. Give light hoeing to disturb capillaries for checking evaporation	

	Coastal Alluvial, Saline Medium land situation (Parts of Tangi, Chillika Block)	a) Paddy-Black gram / horse gram	i. Sow Rhizobium inoculated pulse seed if paddy crop is severely affected by drought condition. ii.Foliar application of 2% urea at pre-flowering and flowering stage to pulses	i. Recycling of harvested rain water ii. Apply potassic fertilizer when ever soil moisture allows (or) after receipt of rain. iii. Check seepage loss by plugging the holes.	
	Coastal Alluvial, Saline Medium low to low land situation (Parts of Tangi, Chillika Block	a) Paddy - Black gram	i. Apply life saving irrigation should be applied. ii.Sprinkling of water to minimize chaff ness of grains	i. Recycling of harvested rain water ii. Apply potassic fertilizer when ever soil moisture allows (or) after receipt of rain. iii. Check seepage loss by plugging the holes.	
	Mixed Black & Alluvium up land situation (Parts of Tangi,Banapur, Chillika Block	a) Paddy- Blackgram	i. Life saving irrigation should be applied, if available. ii.Sprinkling of water to minimize chaff ness of grains iii. Harvest the crop at physiological maturity stage. iv. If the standing crop fails then go for black gram/ toria as pre *rabi* crop.	i. Recycling of harvested rain water ii. Apply potassic fertilizer when ever soil moisture allows (or) after receipt of rain. iii. Check seepage loss by plugging the holes.	
		b) Vegetables – Fallow	i. Withhold nitrogen application rather apply some potassic fertilizer if soil moisture permits. ii. Get ready for a catch crop in case of severe mortality. iii. Give intermittent spray of water to keep the micro climate moist. iv. Spray 2%KCl + 0.1ppm	i. Give life saving irrigation at the rhizosphere (basin). ii. Provide mulch to the vegetable crops already transplanted (basins & inter row spaces) ii. Give light hoeing to disturb capillaries for	

			boron to non paddy crops to overcome drought.	checking evaporation	
	Mixed Black & Alluvium Medium land situation (Parts of Tangi,Banapur, Chillika Block	a)Paddy-Green gram/ Black gram	i. Life saving irrigation should be applied, if available. ii.Sprinkling of water to minimize chaff ness of grains iii. Harvest the crop at physiological maturity stage. iv. Sow pulses if paddy crop is severely affected by drought condition.	i. Recycling of harvested rain water ii. Apply potassic fertilizer when ever soil moisture allows (or) after receipt of rain. iii. Check seepage loss by plugging the holes.	
	Mixed Black & Alluvium Low land situation (Parts of Tangi, Banapur,Chillika Block	a) Paddy -Green gram/ Black gram b) Sole crop of Colocasia	i. Life saving irrigation should be applied, if available. ii.Sprinkling of water to minimize chaff ness of grains iii. Harvest the crop at physiological maturity stage. iv. Sow pulses if paddy crop is severely affected by drought condition. v. Remove excess side suckers in colocasia. vi. If the colocasia crop is about to matured, then harvest the same & sow Green gram/Black gram with residual moisture condition.	i. Recycling of harvested rain water ii. Apply potassic fertilizer when ever soil moisture allows (or) after receipt of rain. iii. Check seepage loss by plugging the holes. iv.Inter row space mulching by dry grass / leaves/ paddy straw / plant parts in colocasia	

2.1.2 Drought - Irrigated situation-Not experienced.

Condition			**Suggested Contingency measures**		
	Major Farming situation	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measues**	**Remarks on Implementation**
Delayed release of water in canals due to low	**1)Coastal-Irrigated Alluvium up land situation**	a) Paddy-fallow / vegetables	a) Paddy-fallow / vegetables	i. Raise the paddy nursery near available water source (or) utilising	

rainfall	(**Balipatana & Balianta Block)**			ground water source ii. Grow Short duration Paddy varieties like Khandagiri/ Jogesh/ Vandana / Parijata / Ghanteswari / Satabdi / Kalinga- II iii. Treat the corm/cormels of colocasia variety Jhankadi, Topi, Muktakesi with Ridomyl MZ & Monocrotophos @ 2ml & 1.5 ml / lit.water & sow in nursery bed for sprouting. iv. Transplant the sprouted corm / cormels of colocasia with basal application of full P, 50% N & K when sufficient irrigation water is available v. Transplant the brinjal seedlings & provide life saving irrigation (in planting basin) vi. Grow Yam (Orissa Elite,Hatikhoj) at field bunds.	
	2)Coastal-Irrigated Alluvium Medium land situation (Balipatana & Balianta Block)	a) Rice - greengram / blackgram/ sesame	a) Rice - greengram / blackgram/ sesame	i. Raise the paddy nursery near available water source (or) utilising ground water source ii. Grow Paddy varieties like Swarna, Pratikshya, Surendra, Padmini, Lalat, Naveen , Gouri,Konark iii.Raise Dhanicha as green manure crop & puddled it prior to transplanting of paddy	
		b) Colocassia –green gram /	b) Colocassia -green gram /	i. Treat the corm/cormels of	

		black gram	black gram	colocasia variety Jhankadi, Topi, Muktakesi with Ridomyl MZ & Monocrotophos @ 2ml & 1.5 ml / lit.water & sow in nursery bed for sprouting. iv. Transplant the sprouted corm / cormels of colocasia with basal application of full P, 50% N & K when sufficient irrigation water is available	
	3)Coastal-Irrigated Alluvium Low land situation (Balipatana & Balianta Block)	a) Rice-rice b) Sole crop of Colocasia	a) Rice-rice b) Sole crop of Colocasia	i. Raise the paddy nursery near available water source (or) utilising ground water source ii. Grow paddy var. Swarna, Pratikshya ,Sabitri, CR1014, Mahanadi, Pooja, Tulasi, Ramachandi iii.Raise Dhanicha as green manure crop & puddled it prior to transplanting of paddy iv. Treat the corm/cormels of colocasia variety Pani Saru-1 & 2, local cultivars with Ridomyl MZ & Monocrotophos @ 2ml & 1.5 ml / lit.water & sow in nursery bed for sprouting. iv. Transplant the sprouted corm / cormels of colocasia with basal application of full P, 50% N & K when sufficient irrigation water is available	

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measues**	**Remarks on Implementation**
Limited release of water in canals due to low rainfall	**1)Coastal-Irrigated Alluvium up land situation (Balipatana & Balianta Block)**	a) Paddy-fallow / vegetables	a) Paddy-fallow / vegetables	i.Grow little early paddy varieties like Khandagiri/ Pathara / Vandana / Parijata / Ghanteswari/Kalinga-III ii.Raise the paddy nursery near available water source (or) utilising ground water source iii. Treat the corm/cormels of colocasia variety Jhankadi, Topi, Muktakesi with Ridomyl MZ & Monocrotophos @ 2ml & 1.5 ml / lit.water & sow in nursery bed for sprouting. iv. Transplant the sprouted corm / cormels of colocasia with basal application of full P, 50% N & K when sufficient irrigation water is available v. Transplant the brinjal seedlings & provide life saving irrigation (in planting basin) vi. Grow Yam (Orissa Elite,Hatikhoj) at field bunds. vii. Intercrops of Paddy + Green gram (PDM 54, Sujata) (4:2), Paddy + Black gram (T9, Pant U -19, PU – 30) (4:2).	
	Coastal-Irrigated Alluvium Medium land situation (Balipatana & Balianta Block)	a) Rice - greengram / blackgram/ sesame	a) Rice - greengram / blackgram/ sesame	i. Raise the paddy nursery near available water source (or) utilising ground water source ii. Grow Paddy varieties like MTU-1010, Indira, Daya,Lalat, Naveen,Konark,Daya, Satabdi, MTU1001 iii.Raise Dhanicha as green manure crop & puddled it prior to transplanting of paddy	

		b) Colocassia –green gram / black gram	b) Colocassia - green gram / black gram	i. Treat the corm/cormels of colocasia variety Jhankadi, Topi, Muktakesi with Ridomyl MZ & Monocrotophos @ 2ml & 1.5 ml / lit.water & sow in nursery bed for sprouting. ii. Transplant the sprouted corm / cormels of colocasia with basal application of full P, 50% N & K when sufficient irrigation water is available iii.Apply sufficient FYM to the colocasia crop field prior to planting	
	Coastal-Irrigated Alluvium Low land situation (Balipatana & Balianta Block)	a) Rice-rice b) Sole crop of Colocasia	a) Rice-rice b) Sole crop of Colocasia	i. Raise the paddy nursery near available water source (or) utilising ground water source ii. Grow paddy var. Swarna, Pratikshya , Padmini, Tapaswini,Rajlaxmi,Moti iii.Raise Dhanicha as green manure crop & puddled it prior to transplanting of paddy iv. Treat the corm/cormels of colocasia variety Pani Saru-1 & 2, local cultivars with Ridomyl MZ & Monocrotophos @ 2ml & 1.5 ml / lit.water & sow in nursery bed for sprouting. iv. Transplant the sprouted corm / cormels of colocasia with basal application of full P, 50% N & K when sufficient irrigation water is available v.Apply sufficient FYM to the colocasia crop field prior to planting	

Condition			**Suggested Contingency measures**		
	Major Farming situation	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measues**	**Remarks on Implementation**
Non release of water in canals under delayed onset of monsoon	**Coastal-Irrigated Alluvium up land situation (Balipatana &**	a) Paddy-fallow / vegetables	a) Paddy-fallow / vegetables	i.Grow extra early paddy varieties like Kalyani-II/ Hira / Satari / Dhalahira ii. Use of high organic matter to conserve moisture *In-situ*.	

in catchment	**Balianta Block)**			iii.Raise the paddy nursery near available water source (or) utilising ground water source iv.Judicious use of water v. Dry seeding in nursery bed vi. Reduction of conveyance losses while irrigating the crops vii. Treat the corm/cormels of colocasia variety Jhankadi, Topi, Muktakesi with Ridomyl MZ & Monocrotophos @ 2ml & 1.5 ml / lit.water & sow in nursery bed for sprouting. viii. Transplant the sprouted corm / cormels of colocasia with basal application of full P, 50% N & K when sufficient rain water is available ix. Transplant the brinjal seedlings & provide life saving irrigation (in planting basin) x. Grow Yam (Orissa Elite, Hatikhoj) at field bunds. xi.Intercrop with extra early paddy varieties of Paddy + Arhar (5:2)	
	2)Coastal-Irrigated Alluvium Medium land situation (Balipatana & Balianta Block)	a) Rice - greengram / blackgram/ sesame	a) Rice - greengram / blackgram/ sesame	i. Raise the paddy nursery near available water source (or) utilising ground water source ii. Grow Paddy varieties like MTU-1010, Indira, Daya,Lalat, Naveen,Konark,Daya, Satabdi, MTU1001 iii.Delay seeding of Dhanicha as green manure crop & puddled it when sufficient rain water is received prior to transplanting iv. Reduction of conveyance losses while irrigating the crops	

Non release of water in canals under delayed onset of monsoon in catchment		b) Colocassia –green gram / black gram	b) Colocassia - green gram / black gram	i. Treat the corm/cormels of colocasia variety Jhankadi, Topi, Muktakesi with Ridomyl MZ & Monocrotophos @ 2ml & 1.5 ml / lit.water & sow in nursery bed for sprouting. ii. Transplant the sprouted corm / cormels of colocasia with basal application of full P, 50% N & K when sufficient rain water is available iii.Apply sufficient FYM to the colocasia crop field prior to planting	
	3)Coastal-Irrigated Alluvium Low land situation (Balipatana & Balianta Block)	a) Rice-rice b) Sole crop of Colocasia	a) Rice-rice b) Sole crop of Colocasia	i. Raise the paddy nursery near available water source (or) utilising ground water source ii. Grow paddy var. Swarna, Pratikshya , Padmini, Tapaswini,Rajlaxmi,Moti iii. Delay seeding of Dhanicha as green manure crop & puddled it when sufficient rain water is received prior to transplanting iv. Treat the corm/cormels of colocasia variety Pani Saru-1 & 2, local cultivars with Ridomyl MZ & Monocrotophos @ 2ml & 1.5 ml / lit.water & sow in nursery bed for sprouting. v. Transplant the sprouted corm / cormels of colocasia with basal application of full P, 50% N & K when sufficient irrigation water is available vi.Apply sufficient FYM to the colocasia crop field prior to planting vii. Reduction of conveyance losses while irrigating the crops viii. Conserve the rain water in the field	

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	**1)Coastal-Irrigated Alluvium up land situation (Balipatana & Balianta Block)**	a) Paddy-fallow / vegetables	a) Paddy-fallow / vegetables	i.Delay nursery raising of extra early paddy ii.Raise paddy nursery under SRI method iii. SRI method of cultivation iv.Use of high organic matter to conserve moisture *In-situ*. v. Transplant the sprouted corm / cormels of colocasia with basal application of full P, 50% N & K when sufficient rain water is available vi. Transplant the brinjal seedlings & provide life saving irrigation (in planting basin) vii. Provide organic mulching in planting basins viii. Apply irrigation in skip row pattern	
	2)Coastal-Irrigated Alluvium Medium land situation (Balipatana & Balianta Block)	a) Rice - greengram / blackgram/ sesame	a) Rice - greengram / blackgram/ sesame	i.Delay nursery raising & raise paddy nursery under SRI method iii. SRI method of cultivation iv. Dry seeding in in main field iv. Use of high organic matter to conserve moisture *In-situ*.	

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
		b) Colocassia –green gram / black gram	b) Colocassia -green gram / black gram	i. Transplant the sprouted corm / cormels of colocasia with basal application of full P, 50% N & K when sufficient rain water is available ii. Apply irrigation in skip row pattern iii. Provide organic mulching inthe inter row spaces	
	3)Coastal-Irrigated Alluvium Low land situation (Balipatana & Balianta Block)	a) Rice-rice b) Sole crop of Colocasia	a) Rice-rice b) Sole crop of Colocasia	i. Raise the paddy nursery near available water source (or) utilising ground water source ii. Delay seeding of Dhanicha as green manure crop & puddled it when sufficient rain water is received prior to transplanting v. Transplant the sprouted corm / cormels of colocasia variety Pani Saru-1 & 2, local cultivars with basal application of full P, 50% N & K when sufficient rain water is available vi.Apply sufficient FYM to the colocasia crop field prior to planting vii. Reduction of	

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	**Agronomic measures**	**Remarks on Implementation**
				conveyance losses while irrigating the crops viii. Conserve the rain water in the field	

Condition	Major Farming situation	Suggested Contingency measures		
		Change in crop/cropping system	**Agronomic measures**	**Remarks on Implementation**
Insufficient groundwater recharge due to low rainfall	**1)Coastal-Irrigated Alluvium up land situation (Balipatana & Balianta Block)**	**a) Paddy-fallow / vegetables**	i).Delay nursery raising of extra early paddy ii.Raise paddy nursery under SRI method iii. SRI method of cultivation iv. Use of high organic matter to conserve moisture *In-situ*. v. Transplant the sprouted corm / cormels of colocasia with basal application of full P, 50% N & K when sufficient rain water is available vi. Transplant the brinjal seedlings & provide life saving irrigation (in planting basin) vii. Provide organic mulching in planting basins viii. Apply irrigation in skip row pattern	

Condition	Major Farming situation	Suggested Contingency measures		
		Change in crop/cropping system	**Agronomic measures**	**Remarks on Implementation**
	2)Coastal-Irrigated Alluvium Medium land situation (Balipatana & Balianta Block)	a) Rice - greengram / blackgram/ sesame	Delay nursery raising of extra early paddy ii.Raise paddy nursery under SRI method iii. SRI method of cultivation iv.Use of high organic matter to conserve moisture *In-situ*. v. Transplant the sprouted corm / cormels of colocasia with basal application of full P, 50% N & K when sufficient rain water is available vi. Transplant the brinjal seedlings & provide life saving irrigation (in planting basin) vii. Provide organic mulching in planting basins viii. Apply irrigation in skip row pattern	
		b) Colocassia -green gram / black gram		Application of irrigation at critical growth stages
	3)Coastal-Irrigated Alluvium Low land situation (Balipatana & Balianta Block)	a) Rice-rice b) Sole crop of Colocasia	i. Raise the paddy nursery near available water source (or) utilising ground water source ii. Delay seeding of Dhanicha as green manure crop & puddled it when sufficient rain water is received prior to transplanting v. Transplant the sprouted corm / cormels of colocasia variety Pani Saru-1 & 2, local cultivars with basal application of full P, 50% N & K when sufficient rain water is available vi.Apply sufficient FYM to the colocasia crop field prior to planting vii. Reduction of conveyance losses while irrigating the crops viii. Conserve the rain water in the field	

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

Condition	**Suggested contingency measure**			
Continuous high rainfall in a short span leading to water logging	**Vegetative stage**	**Flowering stage**	**Crop maturity stage**	**Post harvest**
Paddy	1. Drain out the excess water from the field making cross sectional furrows 2.Gap filling in damaged vacant space either by new seedlings of same variety remaining in hand after transplanting or seedlings of the other variety or by splitting of the existing seedlings 3. Prophylactic spray to reduce any possible pest & disease attack	1. Make provision for drainage of excess water from the crop field	Harvesting at physiological maturity stage	1.Safe storage & room drying of paddy to prevent viviparous germination and early disposal of product
Black gram	1.Make provision for drainage of excess water from the crop field 2. Reseeding in the damaged patches	1. Make provision for drainage of excess water from the crop field 2. Prophylactic spray to reduce any possible pest & disease attack	1. Harvesting at physiological maturity	1. Safe storage & room drying of seeds and early disposal of product
Greengram	1.Make provision for drainage of excess water from the crop field 2. Reseeding in the damaged	1. Make provision for drainage of excess water from the crop field	1. Harvesting at physiological maturity	1. Safe storage & room drying of seeds and early disposal of product

	patches	2. Prophylactic spray to reduce any possible pest & disease attack		
Groundnut	1.Make provision for drainage of excess water from the crop field 2. Light hoeing & application of potassic fertilizer, if possible 3. Prophylactic spray to reduce any possible pest & disease attack	1. Make provision for drainage of excess water from the crop field 2. Prophylactic spray along with micronutrients to the standing crop	1. Make provision for drainage of excess water from the crop field 2. Harvest the crop at physiological maturity stage	Safe storage & room drying of pods and early disposal of product
Sesamum	1.Make provision for drainage of excess water from the crop field 2. Prophylactic spray to reduce any possible pest attack	1.Make provision for drainage of excess water from the crop field 3. Prophylactic spray to reduce any possible pest & disease attack	1. Make provision for drainage of excess water from the crop field 2. Harvest the crop at physiological maturity stage	Safe storage & room drying of seeds and early disposal of product
Horticulture				
Coconut	Drainage, earthing up	Drainage, earthing up, Prophylactic spray	Drainage, earthing up	-
Banana	Drainage, earthing up	Drainage, earthing up, Prophylactic spray	Drainage, earthing up	Quick disposal/sale

Mango	Drainage, earthing up	Drainage, earthing up, Prophylactic spray	Drainage, earthing up	Quick disposal/ sale
Cashew	Drainage, earthing up			
Vegetables	Drainage, Gap filling, earthing up, Prophylactic spray	Drainage, earthing up, Prophylactic spray	Drainage, earthing up, Prophylactic spray	Quick disposal / sale
Heavy rainfall with high speed winds in a short span[2]				
Paddy	1.Drain out the excess water from the field making cross sectional furrows 2.Prophylactic spray, 3. Apply potassic fertilizer 4. Spray boron at 0.1% solution.	1. Drainage of excess water 2. Apply potassic fertilizer 3. Prophylactic spray,if necessary	Harvesting at physiological maturity stage	Safe storage & room drying of seeds
Black gram	1.Make provision for drainage of excess water from the crop field 2. Reseeding in the damaged patches	1. Make provision for drainage of excess water from the crop field 2. Prophylactic spray to reduce any possible pest & disease attack	1. Harvesting at physiological maturity	1. Safe storage & room drying of seeds and early disposal of product
Greengram	1.Make provision for drainage of excess water from the crop field	1. Make provision for drainage of excess water from	1. Harvesting at physiological	1. Safe storage & room drying of seeds and early disposal of product

	2. Reseeding in the damaged patches	the crop field 2. Prophylactic spray to reduce any possible pest & disease attack	maturity	
Groundnut	1.Make provision for drainage of excess water from the crop field 2. Light hoeing & application of potassic fertilizer, if possible 3. Prophylactic spray to reduce any possible pest & disease attack	1. Make provision for drainage of excess water from the crop field 2. Prophylactic spray along with micronutrients to the standing crop	1. Make provision for drainage of excess water from the crop field 2. Harvest the crop at physiological maturity stage	Safe storage & room drying of pods and early disposal of product
Crop5 : Sesamum	1.Make provision for drainage of excess water from the crop field 2. Prophylactic spray to reduce any possible pest attack	1.Make provision for drainage of excess water from the crop field 3. Prophylactic spray to reduce any possible pest & disease attack	1. Make provision for drainage of excess water from the crop field 2. Harvest the crop at physiological maturity stage	Safe storage & room drying of seeds and early disposal of product
Horticulture				
Coconut	Drainage, earthing up, Removal of damaged plant parts, Prophylactic spray	Drainage, earthing up, Replanting of new saplings in place of uprooted plants, Prophylactic	Drainage, earthing up, Removal of damaged plant parts	Quick disposal of tendered/green coconuts

		spray		
Banana	Drainage, earthing up, Removal of damaged plant/ plant parts	Drainage, earthing up, Removal of damaged plant/ plant parts , Make provision for propping up of the plants,Prophylactic spray	Drainage, earthing up, Removal of damaged plant/ plant parts, Make provision for propping up of the plants, Wrapping up of the banana bunches	Quick disposal / sale of mutured bunches
Mango	Drainage, earthing up, earthing up, Removal of damaged plant/ plant parts, Adopt prophylactic spray, Make provision for wind breaks around the orchard	Drainage, Removal of damaged plant/ plant parts, Adopt prophylactic spray	Drainage, Removal of damaged plant/ plant parts, Adopt prophylactic spray	Quick disposal / sale of fallen green mangoes
Cashew	Drainage, earthing up, earthing up, Removal of damaged plant parts, Prophylactic spray	Drainage, removal of damaged plant parts, Prophylactic spray	Drainage, Prophylactic spray	Quick disposal of fallen apples/nuts
Vegetables	Drainage, Gap filling, earthing up, Prophylactic spray to reduce any possible pest & disease attack,Foliar application of polyfeed (NPK19:19:19)	Drainage, earthing up ,prophylactic spray, Foliar application of polyfeed (NPK19:19:19)	Drainage, earthing up, prophylactic spray, Foliar application of polyfeed (NPK(19:19:19)	Quick disposal of produce
Outbreak of pests and diseases due to unseasonal rains				
Paddy	Stem borer-Spray Chloropyriphos@ 2.5ml/lit. water (or) application of	BPH- Apply thiomethoxam @ 1gm/4ltr of water	Adopt need based pesticide	Drying Safe storage Early disposal

	Phorate 10G @ 15kg/ha Leaf folder- Spray Quinalphos @ 2ml/lit.water Sheath blight- spray hexaconazole@ 1000ml / ha (or) Propiconazole@ 500ml / ha Blast- spray Tricyclazole @ 500gm/ ha	BLB- spray Plantomycin 500gm + Copper Oxychloride 1000gm / ha		
Blackgram	Tobacco leaf eating caterpillar- spraying of Chloropyriphos @ 2ml/ltr of water at evening	Pod borer-spray Endosulphan @1000 ml/ha	Adopt need based pesticide	Drying Safe storage Early disposal
Groundnut	Aphids- Apply Thiamethoxam @ 100gm/ha (or) Imidachloprid 125ml/ha Hairy caterpillar- spraying of Chloropyriphos @ 2ml/ltr(or) endosulphan @ 2ml/lit. water	Tikka disease – apply Saff @ 1gm/ltr of water and adopt need based pesticide Hairy caterpillar- spraying of Chloropyriphos @ 2ml/ltr(or) endosulphan @ 2ml/lit. water	Adopt need based pesticide	Drying Safe storage Early disposal
Sesamum	Leaf roller & capsule borer- spraying of Endosulphan @ 1000ml/ha	Leaf roller & capsule borer- spraying of Endosulphan @ 1000ml/ha	Adopt need based pesticide	Drying Safe storage Early disposal
Coconut	Eriophyid Mite-Root feeding with Neemazal+water @ 7.5ml each per plant Adopt need based pesticide	Eriophyid Mite-Root feeding with Neemazal+water @ 7.5ml each per plant Adopt need based pesticide	Eriophyid Mite-Root feeding with Neemazal+water @ 7.5ml each per plant Adopt need based pesticide Harvest at maturity	Quick disposal of affected matured nuts

Banana	Sigatoka leaf spot- Spray Chlorothalonil 2gm/lit (or) Cabendazim+ Mancozeb combination product @ 2gm/lit.water Rhizome weevil- Soil application of chloropyriphos dust @ 100gm/plant	Sigatoka leaf spot- Spray Chlorothalonil 2gm/lit (or) Cabendazim+ Mancozeb combination product @ 2gm/lit.water Rhizome weevil- Soil application of chloropyriphos dust @ 100gm/plant	Sigatoka leaf spot- Spray Chlorothalonil 2gm/lit (or) Cabendazim+ Mancozeb combination product @ 2gm/lit.water	Quick disposal / sale of mutured bunches
Mango	Adopt need based pesticide	Adopt need based pesticide	Adopt need based pesticide	Quick disposal / sale of mangoes
Cashew	Stem & root borer-chiselling out the affected bark & treat with Chloropyriphos solution (0.2%)	Stem & root borer-chiselling out the affected bark & treat with Chloropyriphos solution (0.2%) Tea Musquito Bug- Spray Carbaryl (0.05%)	Adopt need based pesticide	Quick disposal of apples/nuts
Vegetables	Sucking Pests- Apply Thiamethoxam @ 100gm/ha (or) Imidachloprid 125ml/ha Wilting- Root zone drenching with Ridomyl MZ @ 2.5gm+ Plantomycin @ 1gm/ lit. of water	Sucking Pests- Apply Thiamethoxam @ 100gm/ha (or) Imidachloprid 125ml/ha Wilting- Root zone drenching with Ridomyl MZ @ 2.5gm+	Adopt need based pesticide	Quick disposal of produce

		Plantomycin @ 1gm/ lit. of water		

2.3 Floods:

Condition	**Suggested contingency measure**			
Transient water logging/ partial inundation	**Seedling / nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Paddy	i. Drainage of standing water by making furrows ii.Avoid nitrogenous fertilizer application iii. Spray clean water to clear up the leaves iv. If seedling damaged go for reseeding by dapog method	i. Drainage of standing water by making furrows ii.Apply N&K to boost the growth iii. Adopt need based plant protection measures iv.Spray clean water to clear up the leaves v.Gap filling through clonal tillers	i. Drainage of standing water by making furrows ii. Apply potassic fertilizer. iii. Harvest at Physiological maturity iv. Pyra cropping with black gram	Drying of produce & threshing with power thresher
Horticulture				
Coconut	It escapes	It escapes	It escapes	-
Banana	Make provision for drainage when the flood receds, earthing up, prophylactic and curative sprays	Make provision for drainage when the flood receds	Make provision for drainage when the flood receds	-
Continuous submergence for more than 2 days				
Paddy	Make provision for drainage when the flood receds, Spray clean water to clear up the leaves,If seedlings damaged reseed in the nursery,	Provide drainage, retransplant short duration varieties if damage is more than 50%, prophylactic spray of	Early drainage, Rinsing of the top leaves and floral parts, Harvest at Physiological maturity,	Drying of produce & threshing with power thresher

	prophylactic spray of fungicides & apply potassic fertilizer in the nursery	fungicides & apply potassic fertilizer	Pyra cropping with black gram	
Horticulture				
Coconut	It escapes	It escapes	It escapes	_
Banana	Make provision for drainage when the flood receds, earthing up, prophylactic and curative sprays of fungicides	Make provision for drainage when the flood receds	Make provision for drainage when the flood receds	-
Sea water intrusion	Not applicable	-	-	-

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

Extreme event type	**Suggested contingency measure[r]**			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Heat Wave				
Paddy	Irrigate the nursery bed, Spray water to the seedlings in the evening hours	Irrigate the field with sufficient water	Keep sufficient water in the field Spray water to avoid chaff seeds/grains,if availability of irrigation water is limited	Harvest at physiological maturity stage to avoid crop damage due to excessive heat
Pulses	Provide sprinkle irrigation to the crop field to avoid water stress	Provide light /sprinkler irrigation to the crop field to avoid water stress	Sprinkle irrigation to the crop field to avoid water stress, if necessary	Harvest early and keep in field for one day only to avoid shattering of grains in field itself

Horticulture				
Coconut	Sheding of nursery, frequent irrigation,sprinkling / spraying of water, live fence barrier	Wind break on north side, Irrigate in basins (or) use drip irrigation	Wind break on north side, Irrigate in basins (or) use drip irrigation	-
Banana	Sheding of nursery, frequent irrigation,sprinkling/spraying of water, live fence barrier	Wind break on north side, Irrigate in furrows (or) use drip irrigation	Wind break on north side, Irrigate in basins (or) use drip irrigation ,wrapping up of the banana bunches	-
Mango	Sheding of nursery, frequent irrigation,sprinkling/spraying of water, live fence barrier	Wind break on north side, Water channels around the crop, Spraying of water	Wind break on north side, Water channels around the crop, Spraying of water	-
Cashew	Sheding of nursery, frequent irrigation,sprinkling/spraying of water, live fence barrier	Wind break on north side, Irrigate in basins (or) use drip irrigation, sprinkling/spraying of water to the plants	Wind break on north side, Irrigate in basins (or) use drip irrigation, sprinkling/spraying of water to the plants	-
Vegetables	Sheding of nursery, frequent irrigation,sprinkling / spraying of water, live fence barrier	Increase the frequency of irrigation,irrigate in furrows, sprinkling / spraying of water to the crop in evening hours, avoid foliar application of fertilizer (or) plant protection chemical during day hours	Increase the frequency of irrigation,irrigate in furrows, sprinkling /spraying of water to the crop in evening hours, avoid foliar application of fertilizer (or) plant protection chemical during day hours	Harvest and dispose the produce
Cold wave	**Not applicable**			
Frost	**Not applicable**			
Paddy	-	--	-	-
Pulse	-	-	-	-

Hailstorm				
Paddy	Cover the beds with polythene or paddy straw, sow extra seeds in sufficient quantity to mitigate the field needs	Prophylactic and curative spray of fungicides,apply potassic fertilizer to the crop field	Avoid lodging and trailing type of paddy varieties, Varieties with serpentine movement ability are better adopted in the field to reequip the damage afterwards with new shoots coming out from the nodes touching the soil	Collect the harvest produce and store in safe place with or without sun drying
Pulse	Sow some extra seeds if a major portion is lost due to hail storm	Mixed crop provides better protection against total crop failure	Go for fodder cultivation to avoid total crop loss	
Vegetables	Sheding of nursery, sprinkling/spraying of water, live fence barrier	Irrigate in furrows, sprinkling /spraying of water to the crop in evening hours, foliar application of fertilizer (or) plant protection chemical	Irrigation,irrigate in furrows, sprinkling /spraying of water to the crop in evening hours, foliar application of fertilizer (or) plant protection chemical	Harvest and dispose the produce
Horticulture				
Coconut	Spraying of water	Wind break on north side, Water channels around the crop, Spraying of water	Wind break on north side, Water channels around the crop, Spraying of water	-
Banana	Shading with shade net, Spraying of water, live fence barrier,	Wind break on north side, Water channels around the crop, Spraying of water	Wind break on north side, Water channels around the crop, Spraying of water	Harvest matured fingers and quick dispose / sale
Mango	Spraying of water	Wind break on north side, Water channels around the	Wind break on north side, Water channels around the crop,	Harvest mautured one and quick

		crop, Spraying of water	Spraying of water	dispose / sale
(Vegetables)	Use of Shed Net for nursery raising.	i. Removal of damaged plant parts ii. Prophylactic spraying of bactericide. iii. Drainage of Excess water iv. Plant fresh seedlings if the damage percentage is >50% v. Gap filling with fresh seedlings in early growth phase.	i.Drainage of excess water ii.Harvest the fruits of the affected/ damaged crop plants. iii.If the damage is below economic thresh hold limit then spray with bactericide after cleaning the damaged plant parts. iv.Take a catch crop like greens, radish, in case of completely failure crop.	i.Harvest the crop and grade it before marketing ii. Quick disposal of harvested produce. iii. Immediate value addition to excess produce.
Cyclone				
Paddy	Drainage of excess water dapog nursery method, SRI method planting in main field	Gap filling by splitting existing plant / direct seeding of pre-germinated seed, prophylactic IPDM measures	i. Drainage of excess water, ii. Prophylactic IPDM measures	Drainage & harvesting mautured paddy
Horticulture				
Coconut	Spraying of water	Wind break on north side, Water channels around the crop, Spraying of water	Wind break on north side, Water channels around the crop, Spraying of water	-
Banana	Shading with shade net, Spraying of water, live fence barrier,	Wind break on north side, Water channels around the crop, Spraying of water	Wind break on north side, Water channels around the crop, Spraying of water	Harvest and quick dispose / sale
Mango	Shading with shade net, Spraying of water, live fence barrier,	Wind break on north side, Water channels around the	Wind break on north side, Water channels around the crop,	Harvest and quick dispose / sale

		crop, Spraying of water	Spraying of water	
(Vegetables)	Use of Shed Net for nursery raising.	i.Removal of damaged plant parts ii.Prophylactic spraying of bactericide. iii.Drainage of Excess water iv.Plant fresh seedlings if the damage percentage is >50% v. Gap filling with fresh seedlings in early growth phase.	i.Drainage of excess water ii.Harvest the fruits of the affected/ damaged crop plants. iii.If the damage is below economic thresh hold limit then spray with bactericide after cleaning the damaged plant parts. iv.Take a catch crop like greens, radish, in case of completely failure crop.	i.Harvest the crop and grade it before marketing ii. Quick disposal of harvested produce. iii. Immediate value addition to excess produce.

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	• Livestock insurance • Encourage perennial fodder production on river banks on community basis. • Village gauchar (grazing) lands should be developed for fodder production. • On boundaries of agricultural field trees or shrubs like Sesbania, Subabul etc. should be planted. • It is essential to establish fodder bank near forest areas. Provision is also necessary to store surplus crop residues in fodder banks, which can be made available during	• 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, sugar cane bagasse, banana plant. • Feeding of crop residues such as cassia tora, water hyacinth and other tree pods and seeds etc. • Improving available roughages by urea treatment & providing urea molasses	• Supplementary feeding of concentrate feed to remaining livestock and the replacement stock. • Exploring the chances of growing short term fodder crops to meet immediate requirement

	drought. • Excess fodder in flush season can be preserved as hay / silage. • Explore the possibilities of availability of unconventional / alternative feed resources during drought. • Organizing training programme of persons connected with A.H. on feeding and management of animals during drought.	mineral block for feeding cattle.	
Drinking water	• Preserving water in community tanks and ponds etc. for drinking purpose by excavation and sanitization of these resources. In addition, wells (bore wells or dug wells) may be constructed ahead of possible event of drought.	• Drinking water arrangement may be made from any available sources to meet at least the minimum daily requirement of the livestock as a life saving measure.	• Necessary arrangements for providing pure drinking water.
Health and disease management	• Veterinary preparedness with vaccine and medicines. • Supplementation of mineral and vitamin mixtures	• Conducting animal health camps and treating the affected animals specially against dehydration & debility condition. • Supplementation of mineral and vitamin mixtures	• Availing insurance • Culling of unproductive livestock • Proper disposal of dead animals
Floods			
Feed and fodder availability	• Procure feeds and fodders & store in safe place to feed the livestock.	• Stored feeds and fodders should be fed to animals	• Provision of supplementary feeding (concentrate / Roughage) with vitamin & minerals. • Straws and stoves that got soaked during floods need not be thrown away. They can be fed to animals after drying & choffing. • Sprinkling concentrate mixture over the dried/chopped fodder can improve intake and utility.

Drinking water	Store water in big containers anticipating the flood	• Stored water may be provided to the livestock for drinking in any available clean container. • Collection of the flood water in any container, allow settling down the sediments, straining the water before providing to livestock.	• Provision of clean drinking water from tube well/ bore wells. • Disinfect the other water sources with chemical disinfectants before allowing the live stock for drinking.
Health and disease management	• Training to the farmers about care & management of live stock during flood situation. Preparation and distribution of leaflets or booklets in simple local language for care of livestock in disaster. • Keeping track of weather forecast and prior information through radio and TV etc. • Prior construction of animal shelters in disaster prone areas. • Keep the emergency service kit (First Aid requisites) ready containing Clinical thermometers, Disinfectants like potassium permanganate, Dettol, Savlon, Tannic acid powder (for poisons), Anti- diarrhoel , Antibiotics, Anticeptic like Tincture of iodine, tincture of Benzoin etc. • Shifting of animals to temporary camps & keeping them in flocks of 25-50 animals in each group. Inside the camp the animals can be just left free within the paddock/ barricades created with wooden pole. • If no trees or sheds are available, shelter the animals under a tent / tarpaulins held aloft by supporting poles or temporary sheds with coconut leaf roof.	• 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, controlling rope, splints, slings, poles and ropes to lift animals. Drugs including painkillers, antiseptics, antibiotics, anti-venom and anti-shock drugs etc. should be adequately available with them. • Keep the animals loose in paddock (sheltered or unsheltered) rather keeping them together. • Releasing animals from the unnatural and harmful position or situation, stopping bleeding, binding broken limbs, administering painkillers, anti-poison and anti-shock drugs, sedating difficult animals and even performing euthanasia on hopelessly injured and suffering animals with the consent of their owners. • Temporary relief camps on spots can be set up at short notice to provide shelter to animals on roads, railway line embankments, other earthen embankments, low hillocks, upland etc.	• 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 for the control of non-specific digestive and respiratory infections in consultation of local veterinary personals. • Improving shed hygiene especially in the farmers household through cleaning and disinfection

Cyclone			
Feed and fodder availability	• Procured feeds and fodders to be used for feeding all animals. • Store surplus feed and fodder in a safe place protected from wind and rain to meet the need at the time of emergency.	• Stored feeds and fodders should be fed to all animals. • Straws and stoves that have been soaked dried and chopped to prevent fungal growth and rotting before feeding the animals. • Concentrate & mineral mixture can be spread over the dried straw and stoves that would improve palatability, digestibility and utility.	• Provision of supplementary feed (concentrate / roughage) with vitamin & minerals to overcome the stress of the calamity.
Drinking water	• Provision of clean drinking water.	• Priorities be given to provide required volume of water especially to sick and old animals, young animals, pregnant and lactating animals as water may be in short supply. • Drinking water may be collected from available sources and provided to animals in any kind of clean container.	• Provision of clean drinking water after disinfecting the available water sources other than tube wells and bore wells.
Health and disease management	• Training to the farmers about care of their animas when catastrophe strives, so that they are prepared for the situation. Preparation and distribution of leaflets or booklets in simple local language for care of livestock in disaster. • Keeping track of weather forecast and prior information through radio and TV etc. • Prior construction of animal shelters in disaster prone areas. • Keep the emergency service kit	• There should be one veterinarian for every 3 to 4 villages to work with the help of local volunteers. • The team should be well equipped with contingent items like bandages, tourniquet ropes, controlling rope, splints, slings, poles and ropes to lift animals. Drugs including painkillers, antiseptics, antibiotics, anti-venom and anti-shock drugs etc. in adequate quantity. • Keep the animals loose in paddock (sheltered or unsheltered) rather than keeping them tied.	• Prompt and appropriate attention to injured animals by providing necessary clinical assistance and medicines to the livestock owners. • Prompt and proper disposal of dead animals be taken up to prevent outbreak of any epidemic disease. • Vaccination campaign against common endemic diseases of the area (like H.S. B.Q, Anthrax etc.) must be taken up urgently. Necessary steps should be taken for the control of non-specific

	(First Aid Requisites) ready containing Cotton wool, Bandages, Surgical gauze, old cotton sheets, Rubber tubing (for torniquet), Surgical scissors – Curved and made of stainless steel, Forceps, Splints or Split bamboos (for fractures), Clinical thermometers – two or three, Disinfectants – potassium permanganate, Acriflvin, 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), Trocar and canola (for bloat), Pocket Knife (for cutting, strangulating ropes etc.) • Temporary camps may be started to keep herds or flocks of 25-50 animals in each camp. Inside the camp the animals can be just left free within the paddock/ barricades created with wooden pole.	• Releasing animals from the unnatural and harmful position or situation, stopping bleeding, binding broken limbs, administering painkillers, anti-poison and anti-shock drugs, sedating difficult animals and even performing euthanasia on hopelessly injured and suffering animals with the consent of their owners. • Temporary relief camps on spots can be set up at short notice to provide shelter to animals on roads, railway line embankments, other earthen embankments, low hillocks, upland etc.	digestive and respiratory infections in consultation of local veterinary personnels. • Improving shed hygiene especially in the farmers household through cleaning and disinfection
Heat wave and cold wave			
Shelter/environment management	• Trees may be planted around the livestock sheds to provide shade and comfort (Green cover) • The roof of the shed be painted white, paddy straw be spread over the roof.	• Washing / wallowing / sprinkling/ splashing / showering of each animal. • Provision of cool drinking water • Fixing of cooling devices such as fans, wet curtains or panels, air cooler if possible.	• Provide sufficient cold drinking water
Health and disease	• Training of farmers on possible disease outbreaks and health	• Feeding Green fodder/ silage/ hay • Provision for night feeding	• Protection of dry / milch cows/ buffaloes/ breeding bulls and

management	management of livestocks during hot summer to keep them prepared to face such situations.	• Allow grazing early in the morning and late in the afternoon • Grazing only available green pastures/ grass lands • Add electrolytes in the drinking water to minimize heat stress and dehydration	teasers against thermal stress • Close observation of all open cows • AI during cooler parts of the day. • Insemination at optimal time with good quality semen.

[s] based on forewarning wherever available

2.5.2 Poultry

	Suggested contingency measures			**Convergence/linkages with ongoing programs, if any**
	Before the event[a]	**During the event**	**After the event**	
Drought				
Shortage of feed ingredients	Ensure procurement of feed ingredients well ahead and store them for use during scarcity	Stored feed ingredients be supplemented with commercial feed to minimize the cost	Procure and provide required quantity of compounded feed with addition of vitamins and minerals.	
Drinking water	Check water source for ensuring sufficient portable water during drought	Attempt will be made to provide sanitized drinking water	Availability of water will be ensured by digging of bore well	
Health and disease management	Procurement of vaccines and medicines and antistress agents. Feeding antibiotics Procurement of litter materials	Provision of antistress agents in feed or drinking water. Supplementing vitamin-minerals to overcome micronutrient	Vaccination of adult birds against Ranikhet and Fowl pox diseases.	

		deficiencies.		
Floods				
Shortage of feed ingredients	Ensure procurement of feed ingredients / compounded feed sufficiently well ahead as feed supply to the farm will hamper due to submergence of the connecting roads	Supply the compound feed to the poultry farm under submerged area	Feed supply will continue till the situation improves	
Drinking water	Protect the water sources from submergence	Attempt will be made to provide sanitized drinking water	Water sources will sanitized with bleaching powder or any water sanitizer	
Health and disease management	Procurement of vaccines and medicines. Feeding antibiotics Procurement of litter materials	Continue feeding antibiotics Prevent entrance of flood water to the shed Replace wet litter Proper disposal of dead birds if any	Disinfection of the farm premises. Feeding antibiotics and deworming. Replace wet litter Disinfection of sheds. Proper disposal of dead birds if any	
Cyclone				
Shortage of feed ingredients	Procurement of feed	Supply the compound feed to the poultry farm under cyclone	Feed supply will be continued till the situation improves.	

		affected area		
Drinking water	-	Attempt will be made to provide sanitized drinking water	Water sources will sanitized with bleaching powder or any water sanitizer	
Health and disease management	Procurement of medicine and vaccine	Vaccination of birds against different diseases Provision should be made for availablility of sanitized water	Water sources will sanitized with bleaching powder or any water sanitizer	
Heat wave				
Shelter/environment management	Fixing curtains on open sides of the shed. Procurement of electrical appliances like fans, Providing shade to poultry houses. Providing proper ventilation.	Attempt will be made for cooling of poultry shed by adapting different cooling methods Thickness of litter should be reduced Ventilation to the house should be increased by providing ceiling fans and exhaust fan	Provision should be made to ensure proper ventilation to the house	
Health and disease management	Procurement of Antistress drugs	Supplementation of antistress drug	Vaccination of birds against RD	
Cold wave				
Shelter/environment management	Procurement of curtains to cover open sides of the	Close the open sides of the shed by	Remove the curtains.	

	shed. Heating arrangement kept ready	curtain in such a way that ventilation should not be hampered. Provide heat if necessary depending on the temperature and age of the birds	Discontinue heating	
Health and disease management	Procurement of Antistress drugs and vaccine	Feeding of antistress drugs in drinking water Vaccination against fowl pox	Vaccination against IBD and RD	Procurement of Antistress drugs and vaccine

[a] based on forewarning wherever available

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	1. Supplementary water harvest structures like pond and tanks has to be developed. 2. Renovation and maintenance of existing water harvest structures.	-	-
(ii) Changes in water quality	Prepare to release water into the habitat	1. Mixing of water from the water harvest structure like ponds and tanks into the fish habitat.	-

(iii) Any other	-	-	-
B. Aquaculture			
(i) Shallow water in ponds due to insufficient rains/ inflow	1. Building deep ditches in culture ponds for shelter of the fish to over come high temperature	1. Recharge the ponds with bore well water or water from other sources. 2. Partial harvesting of the stock to reduce stocking density. 3. Artificial shelter by putting aquatic floating weeds in 1/3rd area.	1. Removal of the aquatic weed 2. Recharge the ponds with water from available sources.
(ii) Impact of salt load build up in ponds/ change in water quality	1. Application of organic manure in culture system	1. Recharge the ponds with bore well water or water from other sources	1. Application of organic manure in culture system
(iii) Any other	-	-	-
2) Floods			
A. Capture			
Marine	-	-	-
Inland			
(i) No. of boats / nets/damaged	1. The boats has to be secured safely to river/ reservoir banks. 2. Non operation of fixed bag nets in streams and rivers. 3. Insurance coverage for nets and boats.	1. Checking of the safety of the boats / nets. 2. An inventory logbook with name of crew members should be maintained. 3. Number of crew and load should be much below the marked tonnage.	1. Maintenance of the boats and nets. 2. Assessment and settlement of insurance.
(ii) No.of houses damaged	1. Insurance coverage for houses.	-	1. 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. Observation of the health status of fish and accordingly control measure should be taken. 2. Control on the transport of brooders and seeds
B. Aquaculture			
(i) Inundation with flood water	1. Strengthening and increase in dyke height. 2. The dyke should be constructed with inlet and out let facility.	1. Net enclosure should be provided over the dyke to prevent the escape of fish from pond.	1. Repairing and strengthening of dyke if required.
(ii) Water contamination and changes in water quality	1. Application of lime.	-	1. Application of lime and geolite. 2. Application of Alum. 3. Application of $KMnO_4$
(iii) Health and diseases	1. Application of lime	-	1. Application of lime and $KMnO_4$. 2. Assessment of the health status of fish and accordingly control measure should be taken. 3. Control on transport of brooders and seeds. 4. Eradication of the unwanted fish entered into the pond during flood
(iv) Loss of stock and inputs (feed, chemicals etc)	1. Strengthening and increase in dyke height. 2. Before flood the stock should be harvested and sold 3. Transport of feed and chemicals to safer place. 5. Insurance coverage for stock.	1. Net enclosure should be provided over the dyke to prevent the escape of fish from pond. 2. Water should be diverted from the main stream. 3. Sand bags can be used for protection of dykes. 4. 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. Regain of water quality through liming & fertilization schedule 4. Provide quality feed and fertilizer. 5. Assessment of the loss and settlement of insurance.
(v) Infrastructure damage (pumps, aerators, huts etc)	1. Construction of flood shelter for pumps, aerators etc.	-	1. Repairing of pumps, aerators if required. 2. Repairing of damaged hut.
(vi) Any other	-	-	-
3. Cyclone / Tsunami			

A. Capture			
Marine	-	-	-
Inland			
(i) Average compensation paid due to loss of fishermen lives	1. Repeated broadcast and telecast of warning. 2. Sea venture should be avoided 3. Insurance coverage for lives of fishermen.	1. Provision of relief. 2. Evacuation of people to safer areas.	1. Assessment and settlement of insurance.
(ii) Avg. no. of boats / nets/damaged	1. The boat has to be secured safely to river/ reservoir banks. 2. Insurance coverage for nets and boats.	1. Checking of the safety of the boats / nets. 2. An inventory logbook with name of crewmembers should be maintained.	1. Maintenance of the boats and nets. 2. Assessment and settlement of insurance.
(iii) Avg. no. of houses damaged	1. Insurance coverage for houses.	-	1. Settlement of insurance.
Inland			
B. Aquaculture			
(i) Overflow / flooding of ponds	1. Strengthening and increase in dyke height. 2. The dyke should be constructed with inlet and out let facility.	1. Net enclosure should be provided over the dyke to prevent the escape of fish from pond.	1. Repairing and strengthening of dyke if required.
(ii) Changes in water quality (fresh water / brackish water ratio)			
(iii) 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.
(iv) Loss of stock and inputs (feed, chemicals etc)	1. Strengthening and increase in dyke height. 2. Transport of feed and chemicals to safer	1. Net enclosure should be provided over the dyke to prevent the escape of fish from pond.	1. Stock assessment and restocking with advanced fingerlings or yearling if required.

	place. 3. Insurance coverage for stock.	2. Storing of feed and chemicals in a safer place.	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)	-	-	1. Repairing of pumps, aerators if required. 2. Repairing of damaged hut.
(vi) Any other			
4. Heat wave and cold wave			
A. Capture			
Marine	-	1. During hot waves night fishing should be done. 2. During hot waves preservation by cold chain should be increased.	-
Inland	-	1. During hot waves night fishing should be done. 2. Preservation by cold chain should be increased during hot waves.	-
B. Aquaculture			
(i) Changes in pond environment (water quality)	1. During hot waves adequate water depth should be maintained.	1. During hot waves mixing of water with fresh water should be done. 2.The culture system should be provided with aeration to avoid oxygen depletion due to high temperature during hot waves. 3. Partial harvesting can be done to avoid loss of crop.	-
(ii) Health and Disease management		1. Feeding should be stopped. 2. If cold waves persists EUS outbreak takes place	1. Application of CIFAXto contro EUS disease in fish.