DISTRICT CONTINGENCY PLAN

KRISHI VIGYAN KENDRA, JAJPUR

भाकृअनुप
ICAR

ORISSA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY
BHUBANESWAR - 3

State: ODISHA

Agriculture Contingency Plan for District: JAJPUR

1.0 District Agriculture profile				
1.1	**Agro-Climatic/Ecological Zone**			
	Agro Ecological Sub Region (ICAR)	**Sub humid to humid eastern and south eastern upland**		
	Agro-Climatic Zone (Planning Commission)	**East coast plains and hills**		
	Agro Climatic Zone (NARP)	**North Eastern Coastal Plain Zone & mid central table land zone**		
	List all the districts falling under the NARP Zone* (*>50% area falling in the zone)	**Baleswar, Bhadrak ,Jajpur , Ghasipura and Hatadihi blocks of Keonjhar**		
	Geographic coordinates of district headquarters	**Latitude**	**Longitude**	**Altitude**
		20^{o} 30' to 20^{o} 10'	**85^{o} 40' to 86^{o} 44'**	**19.0 m**
	Name and address of the concerned RRTTS	**RRTTS, Ranital, Bhadrak**		
	Mention the KVK located in the district with address	**KVK, Jajpur, At/Po- Barchana, Jajpur , Pin- 754296**		
	Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro-advisories in the Zone	**Ranital, Bhadrak**		

1)

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):	1168.6	51.0	June 2nd week	Sept. last week
	NE Monsoon(Oct-Dec):	185.1	8.2	Oct. last week	Dec. 2nd week
	Winter (Jan- March)	66.4	2.9	Jan 3rd week	March last week
	Summer (Apr-May)	139.8	6.1	April 1st week	May last week
	Annual	1559.9	77		

***Source – Orissa Agril. Statistic 2010-11**

1. 3	Major Soils (common names like red sandy loam deep soils (etc.,)*	Area ('000 ha)	Percent (%) of total
	1. Alluvial	55.295	19.07
	2. Saline soil Alluvial	18.419	6.35
	3. Alluvial Red Laterite	156.86	54.1
	4.Red Laterite Alluvial	17.79	6.14
	5. Red Laterite	41.54	14.33

1.4 BASIC INFORMAITON OF THE DISTRICT, JAJPUR

Geographical area(,000ha)	**2,89,900 ha**
Gross Cropped area(,000ha)	**2,50,602 ha**
Cultivated area(,000ha)	**1,45,450 ha**
Paddy area(,000ha)	**1,17,000 ha**
Groundnut area(,000ha)	**33000 ha**
Black Gram area(,000ha)	**18000 ha**
Green Gram area(,000ha)	**25939 ha**
Net Sown area(,000ha)	**137000**
Area under Forest(,000ha)	**72**
Fallow land(,000ha)	**5**
Waste Land(,000ha)	**4**
Irrigated Land(,000ha)	**Kharif-42.16** **Rabi-23.75**
Area under Kharif crops(,000ha)	**151.72**
Area under Rabi crops(,000ha)	**108.93**
Cropping intensity	**170%**

Agro Climatic Zone	**North eastern coastal plain zone & mid central table land zone of Orissa between latitude of 20 degree 30' N to 21 degree 10' and longitude of 85 degree 40' E**
Annual Rainfall	**1559.9mm**
Humidity	**62-87%**
Temperature(Maximum and minimum)	**43^0 c & 14^0 c**
Soil type of the district	**Red laterite, Alluvial, Sandy loam**
Major enterprises in the district	**Paddy, Groundnut, Greengram, Poultry**
Total Population	**18,26,000**
Rural population	**14,60,000**
No. of Villages	**1859**
No. of Village Panchayats	**280**
No. of Blocks	**10**
No. of GP	**311**
No. of Tahsils	**6**

***Strategy committee Meeting report of Jajpur district 2021**

1.5 Area under major field crops & horticulture

Three major field crops

Year	PADDY			GROUNDNUT			GREENGRAM		
	A	P	Y	A	P	Y	A	P	Y
2002-03	130.26	173.6	1512	30.12	54.5	1808	14.98	5.53	369
2003-04	131.36	173.9	1514	30.21	54.64	1809	14.99	5.61	370
2004-05	131.2	174.5	1511	30.32	56.93	1812	15.21	5.62	370
2005-06	131.7	175.15	1512	31.32	56.99	1813	15.26	5.66	371
2006-07	132.87	178.13	1514	32.32	58.66	1815	15.36	5.7	371
2007-08	133.04	197.27	1514	32.84	61.76	1881	14.92	5.57	373
2008-09	138.39	205.62	1515	30.59	58.33	1907	15.62	5.9	378
2009-10	138.39	206.92	1516	30.58	58.31	1907	15.62	5.9	379
2010-11	138.99	207.11	1517	30.50	57.59	1908	15.59	5.9	379
2011-12	139.12	209.02	1517	30.51	58.2	1909	15.57	5.9	379
2012-13	125.41	175.81	28.36	31.80	50.73	15.95	16.26	5.12	3.15
2013-14	121.2	177.2	30.0	31.50	55.45	18.20	16.70	6.20	3.85
2014-15	117.0	162.4	23.34	31.00	55.00	15.40	21.00	6.20	3.50
2018-19	116.89	309.15	26.45	21.77	19.73	42.96	22.50	5.10	11.48

A=Area ('000ha), P=Production ('000 MT), Y=Yield (kg/ha)

1.6 Horticultural and commercial crops – Vegetables

Year	OKRA			BRINJAL			SUGARCANE		
	A	P	Y	A	P	Y	A	P	Y
2002-03	47.8	40.0	8213	38.12	61.5	1391	0.86	47.5	55155
2003-04	49.3	41.0	8324	38.35	62.0	1403	0.88	48.7	55444
2004-05	50.9	42.9	8369	38.87	62.13	1419	0.88	48.8	55446
2005-06	51.82	43.1	8450	40.15	62.83	1429	0.90	49.92	55450
2006-07	51.91	43.3	8439	42.32	63.0	1432	0.92	51.02	55455
2007-08	52.54	44.7	8513	42.72	63.01	1453	1.01	56.01	55453
2008-09	52.64	44.8	8515	42.8	63.8	1455	1.34	8029	59877
2009-10	52.22	44.47	8517	42.94	62.47	1456	1.34	80.23	59877
2010-11	52.19	44.9	8519	42.3	62.87	1459	1.34	80. 2	59877
2011-12	52.10	45.3	8601	42.5	62.99	1451	1.32	80.3	60785
2012-13	54.22	47.4	8760	46.79	78.8	1684	1.32	80.3	60785
2013-14	54.22	47.4	8760	48.79	78.8	1684	1.32	80.3	60785
2014-15	54.22	47.4	8760	46.79	78.8	1684	2.0	80.3	60785
2018-19	49.40	43.07	8720	44.75	75.09	1678	1.87	72.98	13647

A=Area ('000ha), P=Production ('000 tonnes), Y=Yield (kg/ha)

1.7 Horticultural and commercial crops- Fruits

Year	MANGO			BANANA			CASHEW		
	A	P	Y	A	P	Y	A	P	Y
2002-03	1725	7345	4.37	450	7567	19.51	1688	725	0.732
2003-04	1731	7347	4.38	451	7569	19.53	1689	727	0.734
2004-05	1738	7347	4.39	453	7570	19.55	1690	728	0.736
2005-06	1745	7349	4.41	455	7572	19.57	1692	730	0.737
2006-07	1747	7351	4.42	456	7574	19.58	1694	731	0.739
2007-08	1750	7352	4.43	457	7577	19.59	1696	732	0.741
2008-09	1753	7352	4.45	458	7578	19.60	1697	733	0.742
2009-10	1754	7353	4.46	461	7579	19.62	1698	735	0.743
2010-11	1755	7354	4.47	460	7580	19.63	1701	737	0.745
2011-12	1756	7356	4.48	462	7581	19.64	1703	738	0.746
2012-13	1762	8062	4.91	462	7581	19.64	1700		
2018-19	1879	8680	5.28	415	7082	18.16	1650	772.92	0.76

A=Area ('000ha), P=Production ('000 tonnes), Y=Yield (kg/ha)

***Source – ADH 2013-14, Directorate of Horticulture, Govt. of Odisha, 2016-17, Odisha Agricultural Statistics 2018-19**

1.8	Livestock	Male (‘000)	Female (‘000)	Total (‘000)
	Cattle	-	-	649916
	Buffaloes	-	-	3865
	Goat			184711
	Sheep			13208
	Others (Camel, Pig, Yak etc.)			2354
	Commercial dairy farms (Number)			54
1.9	Poultry		Total No. of birds - 591540	
1.10	Fisheries (Data source: Chief Planning Officer)		*Source- Chief District Veterinary Office, Jajpur 2020	

	A. Capture						
	i) Marine (Data Source: Fisheries Department)	No. of fishermen	Boats		Nets		Storage facilities (Ice plants etc.)
			Mechanized	Non-mechanized	Mechanized (Trawl nets, Gill nets)	Non-mechanized (Shore Seines, Stake & trap nets)	
	ii) Inland (Data Source: Fisheries Department)	No. Farmer owned ponds		No. of Reservoirs		No. of village tanks	

	B. Culture			
		Water Spread Area (ha)	Yield (t/ha)	Production (‘000 tons)
	i) Brackish water (Data Source: MPEDA/ Fisheries Department)			
	ii) Fresh water (Data Source: Fisheries Department)	1894.28	2.18	511.07MT
	Others			

*Source: SREP ATMA, Jajpur 2008-09 & Dept. of fishery, Portal: 2012

1.12	Sowing window for 5 major field crops (start and end of normal sowing period)	Crop 1: Paddy	2: Blackgram	3:Groundnut	4:Jute	5:Sugarcane
	Kharif- Rainfed	May June	June-July	June – July	May	
	Kharif-Irrigated	June – July	June-July	June – July	April – May	
	Rabi- Rainfed	-	Nov – Dec	Nov – Dec		
	Rabi-Irrigated	Dec – Jan	Jan – Jan	Nov – Nov		Dec -Feb

1.13	What is the major contingency the district is prone to? (Tick mark)	Regular	Occasional	None
	Drought	√		
	Flood	√		
	Cyclone		√	
	Hail storm		√	
	Heat wave		√	
	Cold wave			√
	Frost			√
	Sea water intrusion			
	Pests and disease outbreak (specify) Tobacco leaf eating cater pillar in greengram, sheath blight & blast in paddy	√	√	
	Sheath blight in paddy		√	
	Blast in paddy	√		
	Others (specify)			

1.14	Include Digital maps of the district for	Location map of district within State as Annexure I	Enclosed District Map of Jajpur

			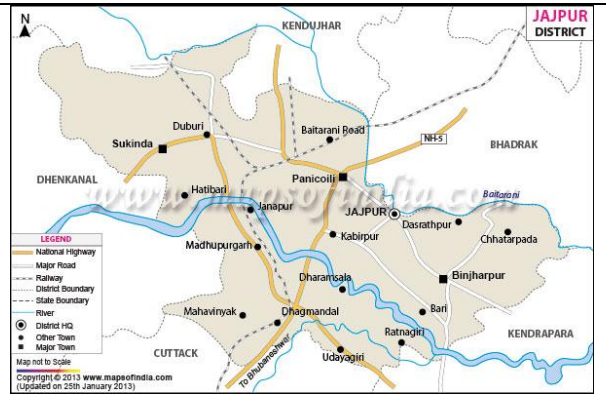
		Mean annual rainfall as Annexure 2	**Enclosed**
		Soil map as Annexure 3	**Enclosed**

Figure 1 - Average Monthly Rainfall in Jajpur District

Month	Normal	Rainfall received during the years (in mm)										
	Rainfall(mm)	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
April	46.1	55.5	45.8	59.2	26	96.4	15.3	25.5	106.99	58.71	156.54	24.74
May	93.7	102.8	75.7	163.5	163.8	74.6	130.8	86.72	157.60	185.22	163.95	413.39
June	238.5	383.3	123.2	226.1	100.1	186.6	177.2	189.48	218.50	253.72	172.34	197.64
July	350.9	136.2	377.8	365.4	400	495.5	348.6	227.46	4968.8	183.6	171.09	139.60
August	341.2	448.7	307.9	148.9	413.5	182.4	363.5	249.26	261.39	446.85	695.52	164.09
September	238	451.6	180.3	228.7	230.2	146.6	290.7	578.4	604.30	307.16	91.49	551.05

October	140.2	29.8	86.1	675.1	142.8	30.1	71.89	250.12	239.12	236.54	215.07	126.65
Total	**1448.6**	**1607.9**	**1196.8**	**1866.9**	**1476.4**	**1212.2**	**1397.99**	**1606.94**	**6556.7**	**1671.8**	**1666**	**1617.16**

2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	**Major Farming situation [a]**	**Normal Crop / Cropping system [b]**	**Change in crop / cropping system [c] including variety**	**Agronomic measures [d]**	**Remarks on Implement ation [e]**
Delay by 2 weeks (July 1st week)	**1) Farming situation: Red laterite rain fed**	**Paddy** **Maize**	➢ **Paddy(Sahabhagi, Bandana, Mandakini, Khandagiri)** ➢ Sowing of arhar on field bunds ➢ **Maize (Deccan-103, Deccan-105, Ganga-2)** ➢ **Intercropping of maize with cow pea and pulses**	• **Inter tillage, conservation furrow, in-situ rain water harvest / conservation** • **Strengthening of field bunds in paddy , weeding and hoeing within 20 days to provide dust mulch** • **Rain water harvesting and recycling** • **Life saving irrigation when needed**	**NFSM, CLDP IWMP, NHM, RKVY, ISOPOM**
	2) Farming situation: High rainfall light laterite	**Maize - Fallow** **Groundnut - Fallow** **Brinjal – Fallow**	➢ **Maize (Deccan-103, Deccan-105, Ganga-2)** ➢ **Groundnut (Devi, Smruti)**	➢ **Inter tillage, conservation furrow for in-situ rain water conservation** ➢ **Strengthening field bunds** ➢ **Apply lime @ 5.0qtl + 5.0 ton FYM per ha** ➢ **Sowing across the slope, ridge and furrow planting** ➢ **Broad bed and furrow planting in groundnut** ➢ **Hoeing within 20days to provide**	**NFSM, CLDP IWMP, NHM, RKVY, ISOPOM**

			➢ Brinjal (Green star /other short duration vegetables like Okra (Mahyco-10)	soil mulch and weeding ➢ Life saving irrigation as needed ➢ Hoeing weeding and ridging ➢ Organic mulch to brinjal & other vegetables	
	3. Rainfed alluvium	Paddy Jute Paddy-Blackgram Paddy-vegetable	➢ Paddy (Ranidhan, Swarna sub-1 for low land and Lalat, Swarna, Pratikshya for medium land) Blackgram (PU 30,PU -31) ➢ Jute (Naveen, Basudev, Baladev) ➢ Blackgram (PU- 30,PU- 31) ➢ Vegetable(cauliflower var. White contesa, pusa early, Deepa, early snowball) tomato var. (Priya, Chiranjibi, Punjab, BT1, BT2) Capsicum var (California wonder) onion var. (Agrifound lightred) radish(japnese white) potato (kufri surya/kufri jyoti)	➢ Strengthening field bunds , in-situ moisture conservation ➢ Raising bund height in paddy ➢ Blocking drainage holes ➢ Community nursery raising and transplanting 3-4 seedlings per hill ➢ weed control, thinning and 2% urea solution spray to jute ➢ Early seedling raising in protected house ➢ Prepare land for rabi vegetable planting	NFSM, CLDP IWMP, NHM, RKVY, ISOPOM

	4. Medium rainfall river valley alluvium	**Paddy – Groundnut** **Jute – Groundnut**	➢ **Paddy (Lalat, Surendra, Swarna sub-1, Pratikhya)** ➢ **Groundnut (Devi,Smruti,TMV-2)** ➢ **Jute (Naveen, Basudev) - Groundnut (Devi,Smruti,TMV-2)**	➢ **Strengthening field bunds , in-situ moisture conservation** ➢ **Raising bund height in paddy** ➢ **Higher seed rate to direct seeded paddy** ➢ **Community nursery raising and transplanting 3-4 seedling per hill** ➢ **Blocking drainage hole** ➢ **weed control, thinning and 2% urea solution spray to jute**	**NFSM, CLDP IWMP, NHM, RKVY, ISOPOM**
	5. low laying flood prone	**Local paddy** **Blackgram** **Rice-vegetable**	➢ **Paddy (Jalamani, Varsadhan, Swarna Sub-1)** **Blackgram(PU-30, PU-31)** ➢ **Vegetable radish(Pusa chetaki, Japanese white)potato var (kufri surya, kufri jyoti) tomato (BT-2, BT-11, Chiranjibi)**	➢ **Strengthening field bunds, plugging drainage holes** ➢ **Transplanting 3-4 seedlings per hill** ➢ **Life saving irrigation at critical stages** ➢ **Pulse seed treatment with bio-fertiliser** ➢ **Select suitable hybrid vegetable varieties for early planting** ➢ **Add sufficient organic manure** ➢ **Polythene mulching to conserve soil moisture to avoid weed growth**	**NFSM, CLDP IWMP, NHM, RKVY, ISOPOM**
	6. Saline soil	**Paddy**	➢ **Paddy (Luna Suvarna, Luna Sampad, Lunishree Luna baial)**	➢ **Strengthening field bonds , checking drainage holes** ➢ **Apply bulky organic manure** ➢ **Transplanting 3-4 seedlings per hill in paddy**	**NFSM, CLDP IWMP, NHM, RKVY, ISOPOM**
Condition			**Suggested Contingency measures**		
Early	**Major**	**Normal**	**Change in crop/cropping system[c]**	**Agronomic measures**	**Remarks on**

season drought (delayed onset)	Farming situation[a]	Crop/ cropping system[b]			Implementation[c]
Delay by 4 weeks (up to July 3rd week)	1) Farming situation: Red laterite rainfed	Paddy Maize	➢ Paddy (KalingaIII, Pathara, Maize (Deccan-103, Deccan-105, Ganga-2 ➢ Intercropping of maize with cow pea and pulses	• Inter tillage, conservation furow, in-situ rain water harvest / conservation • Strengthening of field bunds in paddy • Weeding and hoeing within 20 days to provide dust mulch • Rain water harvesting and recycling • Life saving irrigation when needed	CLDP, IWMP, ISOPOM NFSM, RKVY NHM
	2) Farming situation: High rainfall light laterite	Maize Groundnut	➢ Maize (Deccan-103, Deccan-105, Ganga-2) ➢ Intercropping of maize with cow pea and pulses ➢ Groundnut (Devi, Smruti)	➢ Inter tillage, conservation furrow for in-situ rain water conservation ➢ Strengthening field bunds ➢ Apply lime @ 5.0qtl + 5.0ton FYM per ha ➢ Sowing across the slope, ridge and furrow planting ➢ Hoeing ,weeding and ridging ➢ Broad bed and furrow planting in groundnut	

			➢ **Brinjal (Greenstar) + Maize (Kiran, VL16) / Arhar (UPAS-120 /ICPC 87) (4:2)**	➢ **Hoeing within 20days to provide soil mulch and weeding** ➢ **Application of Oxyfluorofen @ 200gm/ha as PE spray or post emergence spray of Quizalofop Ethyl @ 0.05kg ai/ha to groundnut for weed control** ➢ **Organic mulch to brinjal** ➢ **Provide life saving irrigation when needed**	
	3. Rainfed Alluvium	**Paddy** **Jute** **Blackgram**	➢ **Paddy (Ranidhan, Swarna, Pratikhya Lalat, Konark, Surendra)** ➢ **Jute (Naveen ,Baladev, Basudev)** ➢ **Blackgram(PU-30,PU-31)**	➢ **Strengthening of field bunds , in-situ moisture conservation , raising bund heights in paddy** ➢ **Blocking drainage holes** ➢ **Community nursery raising and transplanting 3-4 seedling per hill** ➢ **Weed control, thinning and 2% urea solution spray to jute** ➢ **Provide life saving irrigation**	**CLDP, IWMP, ISOPOM NFSM, RKVY NHM**

	4. Medium rainfall river valley alluvium	**Paddy** **Jute** **Groundnut**	➢ **Paddy (Jogesh,Sidhhant, Lalata, Surendra, Konark, Khandagiri) –** ➢ **Jute (Naveen, Basudev)** ➢ **Groundnut (Devi,Smruti)**	➢ **Strengthening field bunds , in-situ moisture conservation , raising bund height in paddy** ➢ **Blocking drainage holes** ➢ **Higher seed rate to direct seeded paddy** ➢ **Community nursery raising and transplanting 3-4 seedling per hill** ➢ **Weed control , thining and 2% urea solution spray to jute** ➢ **Provide life saving irrigation**	**CLDP, IWMP, ISOPOM NFSM, RKVY NHM**
	5. low laying flood prone	**Local paddy** **- Blackgram**	➢ **Paddy (Varsadhan, Swarna sub-1, Jalamani)** **Blackgram (PU-30, PU-31)**	➢ **Strengthening field bunds, plugging drainage holes, raising bund height** ➢ **Transplant 3-4 seedling per hill** ➢ **Life saving irrigation at critical stage s** ➢ **Raising community nursery and transplanting** ➢ **Pulse seed treatment with bio fertiliser**	**CLDP, IWMP, ISOPOM NFSM, RKVY NHM**

	6. Saline soil	**Paddy**	➢ **Paddy (Luna Suvarna, Luna Sampad, Lunishree, Luna barial)**	➢ **Strengthening field bunds , checking drainage holes** ➢ **Apply bulky organic manure** ➢ **Raising community nursery and transplanting 3-4 seedling per hill** ➢ **Provide life saving irrigation**	**CLDP, IWMP, ISOPOM NFSM, RKVY NHM**

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Change in crop/cropping system[c]**	**Agronomic measures[d]**	**Remarks on Implementation[e]**

Delay by 6 weeks (August 1nd week)	**1) Farming situation: Red laterite rainfed**	**Paddy** **Maize**	➢ **Sesamum (Uma , ,Prachi)** ➢ **Cowpea(Utakala Manika, Pusa Barsati)** ➢ **Ricebean(RBL -6, KRB-1)** ➢ **Radish -Pusa Chetki** ➢ **Arhar (UPAS-120,ICPL-87) + Cowpea (2:2) / Sesamum(2:4)/ Radish(2:2)**	• **inter tillage, conservation furrow, in-situ rain water conservation** • **Strengthening of field bunds, weeding and hoeing within 20 days to provide dust mulch** • **Well decomposed FYM in seed rows. Ridge & forrow planting** • **Spraying 2%KCl + 0.1 PPM Boron to pulse crop,** • **Foliar application of 2% urea at pre flowering and flowering stage** • **Rainwater harvesting and recycling as life saving irrigation**	**IWMP, CLDP ISOPOM NHM NFSM RKVY**
	2) Farming situation: High rainfall light laterite	**Sesamum** **Cow pea** **Arhar**	➢ **Sesamum (Uma, Prachi)** ➢ **Cowpea(Utakala Manika, Pusa Barsati)** ➢ **Arhar (Upas 120,ICPL-87) + Cowpea (2:2) / Sesamum(2:4)/ Radish(2:2)**	• **inter tillage, conservation furow, in-situ rain water harvest / conservation** • **Strengthening of field bunds, weeding and hoeing within 20 days to provide dust mulch** • **Well decomposed FYM in seed rows. Ridge & forrow planting** • **Rainwater harvesting and recycling as life saving irrigation** • **Spraying 2%KCl + 0.1PPM Boron to pulse crop,** • **Foliar application of 2% urea at preflowering and flowering stage**	**IWMP, CLDP ISOPOM NHM NFSM RKVY**

	3. Rainfed alluvium	**Paddy** **Jute** **Paddy - Greengram**	➢ **Paddy (Jogesh , Khandagiri, Lalata, Surendra, Konarka) - Blackgram (PU-30,PU-19)** ➢ **Jute (Naveen ,Basudev, Baladev) - Greengram(PDM-54,OBGG-52,TARM-2) /**	➢ **Strengthening field bunds , raising bund height in paddy and blocking drainage holes** ➢ **Community nursery raising and transplanting** ➢ **closer spacing and 4-5 seedlings per hill** ➢ **Sowing pregerminated seeds & weed control** ➢ **Spraying 2% urea solution to jute** ➢ **Rain water harvest & life saving irrigation when needed**	**IWMP, CLDP ISOPOM NHM NFSM RKVY**
	4. Medium rainfall river valley alluvium	**Paddy –** **Groundnut** **Jute – Groundnut**	➢ **Paddy (Jogesh, Sidhhant, Khandagiri) – Groundnut (Devi,Smruti,TMV-2)** ➢ **Jute (Naveen, Basudev) - Groundnut (Devi, Smruti, TMV-2)**	➢ **Strengthening field bunds , raising bund height in paddy and blocking drainage holes** ➢ **Community nursery raising and transplanting** ➢ **closer spacing and 4-5 seedlings per hill** ➢ **Sowing pregerminated seeds & weed control** ➢ **Spraying 2% urea solution to jute** ➢ **Rain water harvest & life saving irrigation when needed**	**IWMP, CLDP ISOPOM NHM NFSM RKVY**

	5. low laying flood prone	**Local paddy – Blackgram**	➢ **Paddy (Swarna Sub-1) – Blackgram-(PU-30, PU-31)**	➢ **Strengthening field bunds, plugging drain-age holes** ➢ **Life saving irrigation at critical stages** ➢ **Raising community nursery and transpla-nting 3-4 seedling /hill** ➢ **Closer spacing to clonal tillers and aged seedlings** ➢ **Apply 50% N as basal** ➢ **Pulse seed treatment with bio-fertiliser**	**IWMP, CLDP ISOPOM NHM NFSM RKVY**
	6. Saline soil	**Paddy**	➢ **Paddy (Luni Shankhi, Luna barial)**	➢ **Strengthening field bunds, plugging drain-age holes** ➢ **Life saving irrigation at critical stages** ➢ **Apply bulky organic manure** ➢ **Raising community nursery and transplanting 3-4 seedling /hill** ➢ **Closer spacing to clonal tiller and aged seedlings** ➢ **Apply 50% N as basal**	**IWMP, CLDP ISOPOM NHM NFSM RKVY**

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop /cropping system[b]**	**Change in crop/cropping system[c]**	**Agronomic measures[d]**	**Remarks on Implement ation[e]**

Delay by 8 weeks (August 3r^{d} week)	**1) Farming situation: Red laterite rainfed**	**Paddy** **Maize**	➢ **Niger (Deomali)** ➢ **Blackgram (T-9,PU-30)** ➢ **Cowpea (Utakala Manika, Pusa Barsati)** ➢ **Sesamum (Uma , Prachi)** ➢ **Horsegram (Urmi)** ➢ **Arhar (Upas 120,ICPL-87) + Cowpea (2:2) / Sesamum(2:4)/ Blackgram/ Horsegram(2:3)**	• **Summer ploughing, inter tillage, in-situ rain water harvest and conservation** • **Strengthening of field bunds, weeding and hoeing within 20 days to provide dust mulch** • **Rainwater harvesting and recycling as life saving irrigation when needed** • **Apply full P & K along with 20% N** • **Well decomposed FYM in seed rows.** • **Spraying 2%KCl + 0.1PPM Boron to pulse crop,** • **Foliar application of 2% urea at preflowering and flowering stage**	**IWMP, CLDP ISOPOM NHM NFSM RKVY**
	2) Farming situation: High rainfall light laterite	**Blackgram** **Sesamum** **Arhar**	➢ **Blackgram (T9, PU-30)** ➢ **Cowpea(Utakala Manika, Pusa Barsati)** ➢ **Sesamum (Uma ,Nirmala, Prachi)** ➢ **Horsegram (Urmi)** ➢ **Arhar (Upas 120,ICPL-87) + Cowpea (2:2) / Sesamum(2:4)/ Blackgram/ Horsegram(2:3)**	• **Summer ploughing, inter tillage, in-situ rain water harvest and conservation** • **Strengthening of field bunds, weeding and hoeing within 20 days to provide dust mulch** • **Well decomposed FYM in seed rows.** • **Spraying 2%KCl + 0.1PPM Boron to pulse crop,** • **Foliar application of 2% urea at preflowering and flowering stage** • **Rainwater harvesting and recycling as life saving irrigation when needed**	**IWMP, CLDP ISOPOM NHM NFSM RKVY**
	3. Rainfed alluvium	**Paddy** **Blackgram**	➢ **Paddy (Jogesh , Khandagiri,) Blackgram (PU-30,T-9, PU-31)** ➢ **Sesamum**	➢ **Strengthening field bunds , raising bund height in paddy and blocking drainage holes** ➢ **Community nursery raising and transplanting**	**IWMP, CLDP ISOPOM NHM**

		Paddy - Greengram	**(Uma,Nirmala, Prachi)** **- Greengram(PDM-54,OBGG-52)**	➢ **Closer spacing and 4-5 seedlings per hill** ➢ **Sowing pregerminated seeds & weed control** ➢ **Spraying 2% urea solution to jute** ➢ **Rain water harvest & life saving irrigation when needed**	**NFSM RKVY**
	4. Medium Rainfall river valley alluvium	**Paddy – Groundnut**	➢ **Paddy (Jogesh, Sidhhant, Khandagiri) – Groundnut (Devi,Smruti,TMV-2)** ➢ **Groundnut (Devi, Smruti, TMV-2)**	➢ **Strengthening field bunds ,raising field bund in paddy** ➢ **Higher seed rate to direct sown paddy and weed control** ➢ **Community nursery raising and transplanting, 4-5 seedling per hill** ➢ **Application of 50% N as basal** ➢ **2% urea solution spray to jute** ➢ **Bio fertiliser to pulse and oilseeds along with drainage** ➢ **Rainwater harvesting and life saving irrigation when needed**	**IWMP, CLDP ISOPOM NHM NFSM RKVY**
	5. Low laying flood prone	**Local paddy - Blackgram**	➢ **Swarna champa** ➢ **Blackgram-(PU-30, PU-31)**	➢ **Strengthening field bunds raising field bund in paddy** ➢ **Higher seed rate to direct Sown paddy plugging drainage holes** ➢ **Life saving irrigation at critical stages** ➢ **Raising community nursery and transplanting 4-5 seedling /hill** ➢ **Closer spacing to clonal tiller apply 50% N as basal** ➢ **Pulse seed treatment with bio fertiliser**	**IWMP, CLDP ISOPOM NHM NFSM RKVY**

	6. Saline soil	**Paddy**	➢ **Paddy (Luni Shankhi, Luna barial)**	➢ **Strengthening field bunds , checking drainage holes** ➢ **Apply bulky organic manure** ➢ **Raising community nursery and transplanting 3-4 seedling /hill** ➢ **Closer spacing to clonal tiller** ➢ **Apply 50% N as basal**	**IWMP, CLDP ISOPOM NHM NFSM RKVY**

Condition			Suggested Contingency measures		
Early season drought (Normal onset)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measues[d]**	**Remarks on Implementation[e]**
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination /crop stand etc.	**1) Farming situation: Red Laterite Rainfed**	**Paddy** **Maize**	➢ **Resowing with variety Sahabhagidhan, Khnadagiri if more than 50% population damaged other wise gap filling.** ➢ **Seed treatment with $CaCl_2$ for drought tolerance** ➢ **Hoeing and weeding after 20 DAS for in-situ moisture conservation**	➢ **Application of FYM and lime @ 5.0qtl/ha** ➢ **Sowing across the slope** ➢ **Water harvesting and recycling for life saving irrigation** ➢ **Bed -furrow and strip - furrow system of planting** ➢ **Inter tillage and hoeing for dust mulching** ➢ **Strengthening field bunds** ➢ **Blocking seepage holes & gully plugging in paddy**	**IWMP RKVY NHM NFSM**
	2) High rainfall lilght laterite	**Maize** **Groundnut**	➢ **Weed control** ➢ **Resowing if more than 50% population damaged other wise gap filling** ➢ **FYM : SSP @ 10:1placed at seeding point to avoid seedling mortality** ➢ **Sowing in furrows across the slope** ➢ **Hoeing and weeding after 20 DAS for in-situ moisture**	➢ **Water harvesting and recycling** ➢ **Inter tillage and hoeing for dust mulching** ➢ **Weeding , hoeing, ridging in maize**	**IWMP RKVY NHM NFSM**

			conservation		
	3) Rain fed alluvium	Paddy Paddy – Blackgram/ Greengram	➢ Gap filling by Khelua and by clonal propagation ➢ Resowing if more than 50% population damaged other wise gap filling. ➢ Sow sprouted seeds ➢ Community nursery raising and transplanting ➢ Application of 2% urea solution to jute ➢ Providing life saving irrigation ➢ Resowing if more than 50% population damaged ➢ FYM : SSP @ 10:1placed at seeding point to avoid seedling mortality sowing in furrows across the slope ➢ Weed control to check transpiration loss	➢ Strengthening of field bunds ➢ In-situ water harvesting and recycling ➢ Blocking seepage hole ➢ Gully plugging	IWMP RKVY NHM NFSM
	4) Medium rainfall river valley alluvium	Paddy – Jute -	➢ Resowing if more than 50% population damaged. ➢ Prefer varieties like Jogesh, Sidhhant, Khandagiri ➢ Community nursery raising and transplanting ➢ Sow sprouted seeds ➢ Application of 2% urea solution to jute ➢ Providing life saving irrigation	➢ Strengthening of field bunds ➢ Insitu water harvesting and recycling ➢ Blocking seepage hole ➢ Gully plugging	IWMP RKVY NHM NFSM

			➢ FYM : SSP @ 10:1placed at seeding point to avoid seedling mortality sowing in furrows across the slope ➢ Gap filling by Khelua and by clonal propagation ➢ Weed control to check the transpiration loss		
	5)Low laying flood prone	Paddy – Blackgram	➢ Resowing if more than 50% population damaged ➢ Prefer varieties like Pratikhya, Ranidhan, Swarna sub-1 ➢ Community nursery raising and transplanting ➢ Providing life saving irrigation ➢ Gap filling by Khelua and clonal propagation ➢ Sow sprouted seeds	➢ Strengthening of field bunds ➢ In-situ water harvesting and recycling ➢ Blocking seepage holes ➢ Gully plugging	IWMP RKVY NHM NFSM
	6) Saline Soil	Paddy	➢ Resowing if more than 50% population damaged ➢ Prefer varieties like Luna Subarna, Luna Sampad, Lunishree, Luna barial ➢ Community nursery raising and transplanting 3-4 seedling/hill ➢ Providing life saving irrigation ➢ Gap filling by Khelua and clonal propagation	➢ Strengthening of field bunds ➢ In-situ water harvesting and recycling ➢ Blocking seepage holes ➢ Gully plugging ➢ Raising bund height in paddy	IWMP RKVY NHM NFSM

			➢ Application of bulky organic manure/ green leaf manure as basal		

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 managemt[c]	Soil nutrient & moisture conservation measure[s]	Remarks on Implementation
At vegetative stage	1) Farming situation: Red laterite rain fed	Paddy Maize	➢ Spray 2% urea and withhold topdressing till receipt of rain ➢ Spraying 2%KCl and 0.1% Boron to pulses ➢ Providing life saving irrigation	➢ Strengthening bunds with compartmental bunding ➢ Insitu water harvesting and recycling for life saving irrigation ➢ Plugging drainage lines ➢ application of FYM 5t and lime 5qtl per ha	RKVY NFSM ISOPOM NREGS IWMP
	2) High rainfall light laterite	Maize Groundnut	➢ Weed control and mulching in maize ➢ Apply Quizalo-fopethyl 5% EC@ 0.05kg ai/ha at 20 DAS to control weeds ➢ Top dress after receipt of rain ➢ Thin out 25% plants in groundnut and provide organic	➢ Strengthening bunds with compartmental bunding ➢ In-situ water harvesting and recycling for life saving irrigation ➢ Sowing across the slope with bed- furrow /ridge -- furrow method	RKVY NFSM ISOPOM NREGS IWMP

		Brinjal	mulch ➢ Organic mulching to wide row crops. ➢ Intercropping arhar with maize (2:2) ,groundnut (2:6) ➢ bed furrow and ridge furrow system of planting ➢ Spray 1% urea to brinjal ➢ Spraying anti transpirant (Kaoline) to brinjal ➢ Spray 2% KCL and 0.1 % Boron to pulses	➢ Summer ploughing and application of FYM 5t and lime 5qtl Per ha	
	3) Rain fed alluvium	Paddy Jute Paddy - Blackgram/ Greengram	➢ No beaushaning if crop is more than 45 days old ➢ Weed out field without waiting for rain ➢ Gap filling with clonal tillers and topdressing after receipt of rain ➢ Transplant up to 35 days old seedlings for medium duration paddy if mortality is more than 50% ➢ Remove weeds in nursery with blast management and life saving irrigation ➢ Close transplanting with 4-5 seedlings per hill ➢ Spray 2% urea as foliar spray and apply potasic fertiliser	➢ Close the drainage lines ➢ Strengthening the field bund ➢ In-situ water harvesting and recycling for protective irrigation	RKVY NFSM ISOPOM NREGS IWMP
	4) Medium rainfall	Paddy – Groundnut Jute –	➢ Weed out field without waiting for rain ➢ Gap filling with clonal tillers	➢ Close the drainage lines ➢ Strengthening the field bund	RKVY NFSM ISOPOM

	river valley alluvium	Groundnut	after receipt of rain ➢ Transplant up to 35 days old seedlings for medium duration paddy if mortality is more than 50% ➢ Remove weeds in nursery , thrips and blast management and life saving irrigation ➢ Close transplanting with 4-5 seedlings per hill ➢ Spray 2% urea as foliar spray	➢ In-situ water harvesting and recycling for protective irrigation ➢ Close drainage hole and check seepage losses	IWMP
	5) low laying flood prone	Paddy – Blackgram/ Greengram	➢ No beaushaning to 45 days old paddy crop ➢ Weed out field without waiting for rain ➢ Gap filling with clonal tillers after receipt of rain ➢ Community nursery raising ➢ Remove weeds in nursery , thrips and blast management and life saving irrigation ➢ Close transplanting with 4-5 seedlings per hill with up to 35 days old seedling of Swarna, ranidhan etc. if mortality is more than 50% ➢ Foliar spray with 2% urea	➢ Close the drainage lines ➢ Strengthening the field bunds ➢ In-situ water harvesting and recycling for protective irrigation	RKVY NFSM ISOPOM IWMP

	6) Saline soil	**Paddy – Fallow**	➢ **No beaushaning crop is above 45 days old** ➢ **Weed out field** ➢ **Gap filling with clonal tillers after receipt of rain** ➢ **Community nursery raising** ➢ **Remove weeds in nursery, thrips and blast management and life saving irrigation** ➢ **Sow sprouted seeds of Luna, Luna barial, Subarna, Luna Sampad varieties** ➢ **Planting 3- 4 seedlings /hill** ➢ **Foliar spray with 2% urea** ➢ **Apply bulky organic manure /green leaf manure as basal**	➢ **Close the drainage lines** ➢ **Strengthening the field bund** ➢ **In-situ water harvesting and recycling for protective irrigation** ➢ **Irrigate with good quality water**	**RKVY** **NFSM** **ISOPOM** **IWMP**

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measues[d]**	**Remarks on Implementation[e]**
At flowering/ fruiting stage	**1) Farming situation: Red laterite rain fed**	**Paddy** **Maize**	➢ Sprinkling of water to keep micro climate moist ➢ Spraying of 2% urea solution ➢ Application of life saving irrigation ➢ Maize may be harvested for cobs ➢ Grow pre rabi pulse crop in case of crop failure ➢ Application of life saving irrigation	➢ **Strengthening of field bunds, blocking drainage and seepage holes,Compartmental bunding** ➢ **In-situ water harvesting and recycling** ➢ **Application of FYM(5t) and lime(5qtl) per ha** ➢ **Provide dust mulching by hoeing with mechanical weeder**	**RKVY IWMP, ISOPOM NFSM**
	2) High rainfall light laterite	**Maize – Fallow Groundnut – Fallow Brinjal - Fallow**	➢ **Sprinkling of water to keep micro climate moist** ➢ **Spraying of 1% urea solution to brinjal** ➢ **Spraying 2% KCL and 0.1% boron to pulses and vegetables** ➢ **Application of protective life saving irrigation** ➢ **Maize may be harvested for cobs** ➢ **Spraying anti transpirant (Kaoline) to brinjal** ➢ **Organic mulching to wide row crops**	➢ **Strengthening of field bunds, blocking drainage and seepage holes,Compartmental bunds** ➢ **In-situ water harvest and recycling** ➢ **Application of FYM (5t) and lime (5qtl) / ha** ➢ **Provide dust mulching by hoeing with mechanical weeder**	**RKVY IWMP, ISOPOM NFSM**

	3) Rain fed alluvium	**Paddy** **Jute** **Paddy – Blackgram/ Greengram**	➢ **Provide life saving irrigation** ➢ **Sprinkling of water to keep micro climate moist** ➢ **Spraying of 2% urea solutions after weeding the plot** ➢ **Top dressing with receipt of rain**	➢ **Strengthening of field bunds** ➢ **Blocking drainage and seepage hole** ➢ **In-situ water harvesting in small ditches to recycle as protective irrigation**	**RKVY IWMP, ISOPOM NFSM**
	4) Mid rainfall river valley alluvium	**Paddy – Groundnut** **Jute – Groundnut**	➢ **Provide life saving irrigation** ➢ **Sprinkling of water to keep micro climate moist** ➢ **Spraying of 2% urea solutions after weeding the plot** ➢ **Top dressing with receipt of rain**	➢ **Strengthening of field bunds** ➢ **Blocking drainage and seepage holes** ➢ **Insitu water harvesting in small ditches to recycle as protective irrigation**	**RKVY IWMP, ISOPOM NFSM**
	5) Low laying flood prone	**Paddy – Blackgram / Greengram**	➢ **Provide life saving irrigation** ➢ **Sprinkling of water to keep micro climate moist** ➢ **Spraying of 2% urea solutions after weeding the plot** ➢ **Top dressing with receipt of rain**	➢ **Strengthening of field bunds** ➢ **Blocking drainage and seepage holes** ➢ **Compartmental bunds** ➢ **In-situ water harvesting in small ditches to recycle as protective irrigation**	**RKVY IWMP, ISOPOM NFSM**
	6)Saline soils	**Paddy**	➢ **Provide life saving irrigation** ➢ **Spraying of 2% urea solutions after weeding the plot**	➢ **Strengthening of field bunds** ➢ **Blocking drainage and seepage holes**	**RKVY IWMP, ISOPOM NFSM**

			➢ Top dressing with receipt of rain ➢ Apply bulky organic manure & green leaf manure as basal	➢ Compartmental bunds ➢ In-situ water harvesting in small ditches to recycle as protective irrigation	

Condition			Suggested Contingency measures		
Terminal drought (Early withdrawal of monsoon)	Major Farming situation[a]	Normal Crop/cropping system[b]	Crop management[c]	Rabi Crop planning[d]	Remarks on Implementation[e]
	1) Farming situation: Redlaterite rainfed	Paddy Maize	➢ Harvest paddy at physiological maturity stage ➢ Provide protective I life saving irrigation from the harvested rain water preferably in root zones ➢ Maize may be harvested as cobs ➢ Strengthening field bunds blocking drainage channel and seepage holes	➢ sow / dibble pre-rabi crops like sesamum (Uma, Nirmala,Prachi) incase of complete crop failure	RKVY, IWMP, NREGS, ISOPOM NFSM

	2) High rainfall light laterite	**Maize** **Groundnut** **Brinjal**	➢ **Provide protective life saving irrigation from the harvested rain water preferably in root zones** ➢ **Maize may be harvested as cobs** ➢ **Strengthening field bunds, blocking drainage channels and seepage holes**	➢ **sow dibble prerabi crops like sesamum (Uma, Nirmala,Prachi) incase of complete crop failure**	**RKVY, IWMP, NREGS, ISOPOM NFSM**
	3) Rain fed alluvium	**Paddy** **Jute** **Paddy – Blackgram/ Greengram**	➢ **Provide protective life saving irrigation from the harvested rain water** ➢ **Harvest paddy at physiological maturity stage** ➢ **Application of potassium fertilizer** ➢ **Strengthening field bunds , cheak runoff and seepage loss and block drainage channels**	➢ **Sow prerabi crops like** ➢ **Sesamum(Prachi), Blackgram(PU-30,PU-31,PU-35),** ➢ **Greengram(TARM-1, SML-668, PDM-54)** ➢ **Arhar(UPAS-120)**	**RKVY, IWMP, ISOPOM NFSM**
	4) Medium rainfall river valley lluvium	**Paddy – Groundnut Jute - Groundnut**	➢ **Provide protective life saving irrigation from the harvested rain water** ➢ **Harvest paddy at physiological maturity stage** ➢ **Strengthening field bunds ,check runoff and seepage loss and block drainage channels**	➢ **Sow groundnut (Smruti, Devi, TMV-2) as pre rabi crop utiliing residual moisture** ➢ **Planting of tuber crops like Sweet potato, Potato, and other vegetables like Onion** ➢ **In extreme case sow horsegram (DS-1, DS-2**	**RKVY, IWMP, ISOPOM NFM**

				Urmi), ➢ sesamum(Prachi), Blackgram(PU-30,PU-31,) ➢ Green gram (PDM-54, TARM-1, SML-668) as pre rabi crops	
	5) Low laying flood prone	Paddy-Blackgram/ Greengram	➢ Provide protective life saving irrigation from the harvested rain water ➢ Harvest paddy at physiological maturity stage ➢ Strengthening field bunds , check runoff and seepage loss and block drainage channels	➢ Sow pre-rabi crops – Safflower (A-300), Sunflower (Surya)	RKVY, IWMP, ISOPOM NFSM
	6) Saline soils	Paddy-fallow	➢ Provide protective life saving irrigation from the harvested rain water ➢ Harvest paddy at physiological maturity stage ➢ Strengthening field bunds , check runoff and seepage loss and block drainage channels	➢ Sow pre-rabi crops – Safflower(A-300), Sunflower(Surya)	RKVY, IWMP, ISOPOM NFSM

2.1.2 Drought - Irrigated situation

Condition			Suggested Contingency measures

	Major Farming situation[f]	Normal Crop/cropping system[g]	Change in crop/cropping system[h]	Agronomic measures[i]	Remarks on Implementation[j]
Delayed release of water in canals due to low rainfall	**1) Farming situation: alluv ium**	**Paddy** **Paddy – Moong** **Paddy / Jute – Groundnut**	**Paddy-blackgram and grren gram Moong/ vegetable/Groundnut-moong** **Paddy – Sugarcane + moong – Ratoon** ➢ **Varieties for Moong- TARM-2,PDM-54, Groundnut- Devi, Smruti,TMV-2 Sunflower – KBSH-1, MSH-1**	➢ **Raising community nursery** ➢ **Water harvesting and recycling** ➢ **Preferring shorter duration paddy (Lalata,Konarka,Surendra in place of Swarma,Pratikhya and Ranidhan and Kandagiri, Jogesh in place of Lalata and Surendra)** ➢ **Maintaining higher plant stand through closer spacing 3-4 seedling per hill in delayed transplanting of already raised nursery** ➢ **Planting pregerminated seeds** ➢ **Growing green gram intercropped with sugarcane** ➢ **2% urea spray to jute** ➢ **Weeding to direct seeded paddy without beusuning** ➢ **Nitrogen top dressing after receipt of rain / irrigation**	**RKVY, IWMP, ISOPOM**

Condition			Suggested Contingency measures		
	Major Farming situation[f]	Normal Crop/cropping system[g]	Change in crop/cropping system[h]	Agronomic measures[i]	Remarks on Implementation[j]
Limited release of water in canals due to low rainfall	1) Farming situation: Rain fed alluvium	Paddy Paddy – Moong Paddy / Jute – Groundnut	Paddy – Moong Paddy - G.nut Jute - G.nut /- Vegetable ➢ Varieties for Moong- TARM-2, PDM-54, Groundnut - Devi, Smruti, TMV-2 Sunflower – KBSH-1, MSH-1	➢ Strengthening field bunds, water harvesting and recycling ➢ Application of irrigation at critical crop growth stages ➢ Preferring short duration paddy (var. Lalata, Konarka, Surendra, Khandagiri, Jogesh, Sidhhant) ➢ Opt for SRI method using cono weeder ➢ Direct seeding with pregerminated seeds ➢ Foliar nutrient application ➢ Bed - furrow system of planting in groundnut ➢ Skip row irrigation in vegetables , sprinkler irrigation to groundnut and moong	RKVY, IWMP, ISOPOM

Condition			Suggested Contingency measures		
	Major Farming situation[f]	Normal Crop/ cropping system[g]	Change in crop/cropping system[h]	Agronomic measure	Remarks on Implementation[j]
Non release of water in canals under delayed onset of monsoon in catchment	Farming situation: Rain fed alluvium	Paddy Paddy – Moong Paddy / Jute – Groundnut	Paddy – moong/ groundnut Jute- moong/ groundnut ➢ Varieties for Moong- TARM-2, PDM-54, Groundnut- Devi, Smruti,TMV-2 Sunflower – KBSH-1, MSH-1	➢ Strengthening field bunds ➢ Water harvesting and recycling at critical stages for life saving ➢ Community nursery raising and transplanting 4-5 seedling /hill ➢ Growing short duration paddy (varieties, Lalata, Konarka, Surenda and Khandagiri, Jogesh, Sidhhant) ➢ Chemical weed control to direct seeded paddy ➢ Foliar nutrient application ➢ 2% urea spray to jute ➢ Nitrogen top dressing to paddy after receipt of rain	RKVY, IWMP, ISOPOM

Condition			Suggested Contingency measures		
	Major Farming situation[f]	Normal Crop/cropping system[g]	Change in crop/cropping system[h]	Agronomic measures[i]	Remarks on Implementation[j]
Insufficient groundwater recharge due to low rainfall	Farming situation: Rain fed Alluvium	Paddy Paddy – Moong Paddy / Jute – Groundnut	Paddy – moong Jute- moong / groundnut ➢ Varieties for Moong- TARM-2, PDM-54, Groundnut- Devi, Smruti,TMV-2 Sunflower – KBSH-1, MSH-1	➢ Strengthening field bunds , water harvesting and recycling ➢ Transpl anting paddy(Khandagiri, Sidhhant, Jogesh) ➢ Opt for SRI method using cono weeder ➢ Foliar nutrient application(2% urea spray to jute) ➢ Sprinkler irrigation to jute ➢ Bed furrow system of planting groundnut ➢ Skip row irrigation ➢ Application of irrigation at critical growth stages	RKVY, IWMP, ISOPOM

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

Condition	Suggested contingency measure			
Continuous high rainfall in a short span leading to water logging	Vegetative stage[k]	Flowering stage[l]	Crop maturity stage[m]	Post harvest[n]

Crop1 (Paddy)	**Provide drainage** **Gap filling for damaged seedling** **Varieties : Swarna sub-1, CR-1014, CR-1018**	**Intermittent drainage**	**Provide drainage** **Apply potassic fertiliser** **Harvest at physiological maturity**	**Drying** **Safe storage** **Early disposal**
Crop2(Blackgram/ Greengram)	**Provide drainage** **Higher seed rate**	**Provide drainage**	**Provide drainage**	**Drying** **Safe storage** **Early disposal**
Crop3(Groundnut)	**Provide drainage**	**Provide drainage**	**Provide drainage**	**Drying** **Safe storage** **Early disposal**
Crop4(Jute)	**Provide drainage**	**Provide drainage**	**Provide drainage**	**Drying** **Safe storage** **Early disposal**
Crop5(Sugarcane)	**It escapes**	**Provide drainage** **Earthing up**	**Provide drainage** **Earthing up**	**Provide drainage** **Safe storage and transportation**
Horticulture				
Crop1 (Mango)	**Drainage system should be developed**	**Drainage system should be developed**	**Drainage system should be developed**	**Keeping Fruit in a well ventilated drier place**
Crop2(Cashew)	**Drainage system should be developed**	**Drainage system should be developed**	**Drainage system should be developed**	**Keeping Fruit in a well ventilated drier place**
Crop3(Banana)	**Drainage system should be developed**	**Drainage system should be developed**	**Drainage system should be developed**	**Keeping Fruit in a well ventilated drier place**
Heavy rainfall with high speed winds in a short span[2]	**Weather forecasting like harvesting of maturated crops, shifting the harvested crops to safer places, stacking of banana, papaya etc., wrapping and propping of sugarcane**			

Crop1(Paddy)	**Provide drainage** **Gap filling for damaged seedling** **Varieties : Swarna sub-1, CR-1014, CR-1018**	**Intermitant drainage**	**Provide drainage** **Apply potassic fertiliser** **Harvest at physiological maturity**	**Drying** **Safe storage** **Early disposal**
Crop2(Blackgram)	**Provide drainage** **Higher seed rate**	**Provide drainage**	**Provide drainage**	**Drying** **Safe storage** **Early disposal**
Crop3(Groundnut)	**Provide drainage**	**Provide drainage**	**Provide drainage**	**Drying** **Safe storage** **Early disposal**
Crop4(Jute)	**Provide drainage**	**Provide drainage**	**Early harvest**	**Drying** **Safe storage** **Early disposal**
Crop5(Sugarcane)	**It escapes**	**Provide drainage** **Earthing up** **Wrapping and propping**	**Provide drainage** **Earthing up** **Wrapping and propping**	**Provide drainage** **Safe storage and transportation** **Wrapping and propping**
Horticulture				
Crop1 (Mango)	**Drainage of excess water**	**Drainage of excess water**	**Drainage of excess water**	**Keeping Fruit in a well ventilated drier place**
Crop2(Cashew)	**Drainage of excess water**	**Drainage of excess water**	**Drainage of excess water**	**Keeping Fruit in a well ventilated drier place**
Crop3(Banana)	**Drainage of excess water**	**Drainage of excess water**	**Drainage of excess water**	**Keeping Fruit in a well ventilated drier place**
Outbreak of pests and				

diseases due to unseasonal rains				
Crop(Paddy)	**Swarming caterpillar spray cartap hydrochloride @ 1.5 gm/l of water. Disease – sheath blight spray hexaconazol @2ml/l of water and adopt need based pesticide**	**BPH- Apply thiomethoxam @ 4gm/10 l of water and adopt need based pesticide**	**Adopt need based pesticide**	**Drying Safe storage Early disposal**
Crop2(Blackgram)	**Tobacco leaf eating caterpillar and hairy caterpillars- spraying of Traizophos or Lambda cyhalothrin @ 2ml/l of water at evening**	**High incidence of jassids may cause hopper burn. Apply thiomethoxam @ 4gm/10 l of water and adopt need based pesticide**	**Adopt need based pesticide**	**Drying Safe storage Early disposal**
Crop3(Groundnut)	**Tobacco leaf eating caterpillar and hairy caterpillars- spraying of Traizophos or Lambda cyhalothrin @ 2ml/l of water at evening**	**Tikka disease – apply Carbendazim+Mancozeb @ 1gm/ltr of water and adopt need based pesticide**	**Adopt need based pesticide**	**Drying Safe storage Early disposal**
Crop4(Jute)	**Semilooper - spray Chloropyriphs/Lamda cyhalothrin @ 2ml/l of water.**	**Adopt need based pesticide**	**Adopt need based pesticide**	**Drying Safe storage Early disposal**
Crop5(Sugarcane)	**Interned Borer- Spraying of cartap hydrochloride @ 1.5gm/l**	**Adopt need based pesticide**	**Adopt need based pesticide**	**Drying Safe storage Early disposal**
Horticulture				
Crop1 (Mango)	**Adopt need based**	**Adopt need based**	**Adopt need based**	**Drying**

	pesticide	**pesticide**	**pesticide**	**Safe storage** **Early disposal**
Crop2 (Cashewnut)	**Adopt need based pesticide**	**Adopt need based pesticide**	**Adopt need based pesticide**	**Drying** **Safe storage** **Early disposal**
Crop3 (Banana)	**Adopt need based pesticide**	**Adopt need based pesticide**	**Adopt need based pesticide**	**Drying** **Safe storage** **Early disposal**

2.3 Floods

Condition	**Suggested contingency measure[o]**			
Transient water logging/ partial inundation[1]	**Seedling / nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Crop1 (paddy)	• **Provide drainage** • **Spray clean water to clear the muds on the leaves** • **If seedling damaged go for reseeding by dapog method** • **Community nursery raising** • **Select varieties like**	• **Provide drainage** • **If damage is more than 50% retransplant or put pregerminated sprouted seeds on puddle soil with higher seed rate and closer spacing** • **Use short duration variety like Lalata , Khandagiri , Konark ,Surendra ,Jogesh Sidhhant .** • **Transplant 40 – 60 days old seedling after flood water recedes with close spacing and 4-5 seedlings per hill** • **Drainage excess water** • **Transplant clonal tillers .do not go for beusaning** • **Never apply urea just after recede of**	• **Provide drainage** • **Rinsing the top leaves and floral parts** • **Foliar spray of K_2SO_4 @10g/litre of water** • **Harvest at physiological maturity** • **If revival not possible go for sowing blackgram /greengram** • **Paira cropping blackgram after**	• **Provide drainage** • **Preventing premature germination by hormonal spray** • **Plan for rabi crop – blackgram, greengram or groundnut** • **Safe storage** • **Threshing by power thresher and drying of the produce**

	Swarna Sub-1 & Sarasa for flood prone areas • Protect the seedlings from swarming caterpillar	flood and apply potassic fertilizer • Weeding out and gap filling by clonal tillers • Weed out rice field • Apply N&K to boost the growth • Redistribution of seedling • Protect the crop from swarming caterpillar, leaf folder and case worm	recede of flood water	
Crop2- Jute (water logging/ partial irrigated)	• It escapes	• Spray application of N & K fertiliser (2%) • Early draining out of flood water	• Provide drainage • Early harvest at physiological maturity stage • planning for rabi groundnut & Blackgram	• Provide drainage • Safe stacking after drying
Crop3- Sugarcane	• It escapes	• Provide drainage • Spraying of 2% urea after recede of food water • Higher K application • Application of Carbendazim to previous red rot infected field • Weed out the infected / diseased shoots to prevent lodging	• Quick drain out of flood water by deep drains • Early harvest • Gap filling for ratoon • Basal fertiliser to be followed by earthing up	• Provide drainage • Safe harvest washing & crushing • Deep drains for ratoon crop
Continuous submergence for more 2 weeks				
Crop1 (specify)paddy	• Provide drainage • Spray clean	• Provide drainage • If damage is more than 50% re trans plant or put pregerminated sprouted	• Early drainage • Rinsing the top leaves and floral	• Provide drainage • Preventing premature

	water to clear up the leaves • If seedlings damaged reseeding • Community nursery raising	seeds on puddle soil with higher seed rate and closer spacing • Use short duration variety like Lalata , Khandagiri, Konarka , Surendra , Jogesh Sidhhant etc. • Transplant 40 – 60 days old seedling after flood water residues • Weed ing and gap filling by clonal tillers • Apply N&K to boost the growth • Never apply urea just after recede of flood and apply potassic fertilizer • Protect the crop from swarming caterpillar, leaf folder and case worm	parts • Foliar spray of K_2SO_4 @10g/litre of water • If revival is not possible go for paira cropping blackgram/sowing greengram	germination by hormonal spray • Plan for rabi crop – blackgram, greengram or groundnut • Drying of the produce
Crop2- Jute	• It escapes	• Spray application of N & K fertiliser (2%) • Early draining out of flood water	• Provide drainage • Early harvest at physiological maturity stage • planning for rabi groundnut & Blackgram	• Provide drainage • Safe stacking after drying
Crop3- Sugarcane	• It escapes	• Provide drainage • Spraying of 2% urea • Higher K application • Application of Carbendazim to previous red rot infected field • Weed out the infected / diseased shoots to prevent lodging	• Quick drain out of flood water by deep drains • Early harvest • Gap filling for ratoon • Basal fertiliser to be followed by earthing up	• Provide drainage • Safe harvest washing & crushing • Deep drains for ratoon crop

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

Extreme event type	Suggested contingency measure[r]			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Heat Wave[p]				
Crop1(Paddy)	Shading of nursery Sprinkling irrigation	Sprinkling water Soil mulching	Sprinkling water Frequent irrigation	NA
Crop2 (Blackgram)	Sprinkling water	Sprinkling water Soil mulching	Sprinkling water Frequent irrigation	NA
Crop3 (Groundnut)	Sprinkling water	Sprinkling water Soil mulching	Sprinkling water Frequent irrigation	NA
Crop4(Jute)	Frequent irrigation	Frequent irrigation	Frequent irrigation	NA
Crop 5 (Sugarcane)	Frequent irrigation	Frequent irrigation	Frequent irrigation	NA
Horticulture	Frequent irrigation	Frequent irrigation	Frequent irrigation	NA
Crop1 (Mango)	Watering through rose cane	Pitcher Irrigation	Pitcher Irrigation with water spraying	Harvest mature fruits and keep them in well ventilated place
Crop2 (Cashewnut)	Watering through rose cane	Pitcher Irrigation	Pitcher Irrigation with water spraying	Harsest mature fruits and keep them in well ventilated place
Crop3(Banana)	Watering through rose cane	Pitcher Irrigation	Pitcher Irrigation with water spraying	Harsest mature fruits and keep them in well ventilated place
Cold wave[q]	NA	NA	NA	NA
Crop1	NA	NA	NA	NA

Crop2	**NA**	**NA**	**NA**	**NA**
Crop3	**NA**	**NA**	**NA**	**NA**
Crop4	**NA**	**NA**	**NA**	**NA**
Crop 5	**NA**	**NA**	**NA**	**NA**
Horticulture				
Crop1 (specify)				
Crop2				
Crop3				
Frost				
Crop1	**NA**	**NA**	**NA**	**NA**
Crop2	**NA**	**NA**	**NA**	**NA**
Crop3	**NA**	**NA**	**NA**	**NA**
Crop4	**NA**	**NA**	**NA**	**NA**
Crop 5	**NA**	**NA**	**NA**	**NA**
Horticulture	**NA**	**NA**	**NA**	**NA**
Crop1 (specify)	**NA**	**NA**	**NA**	**NA**
Crop2	**NA**	**NA**	**NA**	**NA**
Crop3	**NA**	**NA**	**NA**	**NA**
Hailstorm	**NA**	**NA**	**NA**	**NA**
Crop1	**NA**	**NA**	**NA**	**NA**
Crop2	**NA**	**NA**	**NA**	**NA**
Crop3	**NA**	**NA**	**NA**	**NA**
Crop4	**NA**	**NA**	**NA**	**NA**
Crop 5	**NA**	**NA**	**NA**	**NA**
Horticulture	**NA**	**NA**	**NA**	**NA**
Crop1 (specify)	**NA**	**NA**	**NA**	**NA**

Crop2	**NA**	**NA**	**NA**	**NA**
Crop3	**NA**	**NA**	**NA**	**NA**
Cyclone				
Crop1(Paddy)	**Drainage Reseeding**	**Cleaning**	**Cleaning**	**Immediate harvest and drying**
Crop2 (Blackgram/ Green gram)	**Escapes**	**Drainage**	**Drainage**	**Immediate harvest and drying**
Crop3 (Groundnut)	**Escapes**	**Drainage**	**Drainage**	**Immediate harvest and drying**
Crop4(Jute)	**Cleanning &earthing**	**Cleanning &earthing**	**Cleanning &earthing**	**Immediate harvest and drying**
Crop 5 (Sugarcane)	**Draiage Wrapping & propping**	**Drainage Wrapping & propping**	**Drainage Wrapping & propping**	**Immediate harvest and drying**
Horticulture				
Crop1 (specify)	**Shift the planting material to safer shed place**	**Stacking in case of smaller plants**	**Stacking in case of smaller plants**	**Immediate harvest of mature fruits**
Crop2	**Shift the planting material to safer shed place**	**Stacking in case of smaller plants**	**Stacking in case of smaller plants**	**Immediate harvest of mature fruits**
Crop3	**Shift the planting material to safer shed place**	**Stacking**	**Stacking**	**Immediate harvest of mature fruits**

2.51 Livestock

	Suggested contingency measures		
	Before the event[$]	**During the event**	**After the event**
Health and disease management	**Veterinary preparedness with vaccine and medicines.**	**Conducting animal health camps and treating the affected animals Supplementation of mineral and vitamin mixtures**	**Supplementary feeding of remaining livestock and the replacement stock**
Floods			
Feed and fodder availability	• **Procured feeds and fodders should be fed to all animals on the order of priority of animals.**	• **Straws and stoves that got soaked during floods need not be thrown away out right. They can be fed to animals as long as rotting or fungal growth has not set in. Partial drying choffing and sprinkling concentrate mixture can improve intake and utility.**	• **Provision of supplementary feeding (concentrate / Roughage) with vitamin & minerals.**
Drinking water	• **Drinking water be made available to the animals in any kind of clean container available with the farmer.**	• **Drinking water be made available to the animals in any kind of clean container available with the farmer.**	• **Provision of clean drinking water.**
Health and disease management	• **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 tethered.** • **Releasing animals from the unnatural and harmful position or situation, stopping bleeding, binding broken limbs, administering painkillers, anti-poison and anti-shock drugs, sedating**	• **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**

		difficult animals and even performing euthanasia on hopelessly injured and suffering animals with the consent of their owners.	personals. • Improving shed hygiene especially in the farmers household through cleaning and disinfection
Cyclone			
Feed and fodder availability	• Procured feeds and fodders should be fed to all animals on the order of priority of animals.	• Straws and stoves that got soaked during floods need not be thrown away out right. They can be fed to animals as long as rotting or fungal growth has not set in. Partial drying choffing and sprinkling concentrate mixture can improve intake and utility.	• Provision of supplementary feeding (concentrate / Roughage) with vitamin & minerals.
Drinking water	• Drinking water be made available to the animals in any kind of clean container available with the farmer.	• Drinking water be made available to the animals in any kind of clean container available with the farmer.	• Provision of clean drinking water.
Health and disease management	• 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 tethered. • 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	• 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

		even performing euthanasia on hopelessly injured and suffering animals with the consent of their owners.	personals. • Improving shed hygiene especially in the farmers household through cleaning and disinfection

2.5.2 Poultry

	Suggested contingency measures			Convergence /linkages with ongoing programs, if any
	Before the event	During the event	After the event	
Drought				
Shortage of feed ingredients	Ensure procurement of feed ingredients sufficient ahead	Feed supplementation will be made to the farms	Attempt will be made for available of feed ingredient or compound feed to the farmers	
Drinking water	Check water source for ensuring sufficient portable water during draught	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 agent.	Continue feeding of antistress agent		

	Feeding antibiotics **Procurement of litter materials**			
Floods				
Shortage of feed ingredients	**Ensure procurement of feed ingredients / compound feed sufficient 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**	**Supply will continued till the situation is under control**	
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 affected area**	**Supply will continued till the situation is under control**	
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 available of sanitized water**	**Water sources will sanitized with bleaching powder or any water sanitizer**	
Shelter/environment management	**Pruning of big trees in the farm.** **Putting curtains on open sides of the shed.** **Procurement of electrical accessories**	**Water proof materials will be supplied to protect the poultry sheds** **Provision of generator should be made to ensure electric supply for brooding of chicks and preparation of feed.**	**Renovation and reconstruction of affected sheds** **Repair of damaged electric connection**	
Heat wave and cold wave				
feed Resource	**Procurement of high protein**	**Feeding during cooler hour**	**Feeding will be continued**	

	and low energy diet **Procurement of medicine, antistress agent and vitamin C and E.**	**of the day.** **Supplementation of vitamin E and C, antistress agent with water**	**with high protein and low energy till heat waves ends and then feeding will be done with normal diet** **Antistress agents will be continued in drinking water for some days**	
Water resource	**Provision should be made for continuous available of water**	**Sufficient cool drinking water with sodium bicarbonate or electrolytes.**	**Availability of cold water will be made for some days**	
Health and disease management	**Procurement of Antistress drugs**	**Supplementation of antistress drug**	**Vaccination of birds against RD**	
Shelter and environment management	**Pruning of big trees in the farm.** **Putting curtains on open sides of the shed.** **Procurement of electrical accessories** **Providing shed 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**	
Cold waves				
Feed resources	**Procurement of high energy**	**Feed high energy diet**		

	diet			
Water resources	**Proper water supply will be ensured**			
Health and disease management	**Procurement of Antistress drugs and vaccine**	**Feeding of antistress drugs in drinking water** **Vaccination with fowl pox**	**Vaccination against IBD and RD**	

2.5.3. Fisheries/ Aquaculture:

B. Aquaculture			
(i) Inundation with flood water	**1.Strengthening and increase in dyke height.** **2. The 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 KmnO4**

(iii) Health and diseases	**1. Application of lime**	**-**	**1. Application of lime and KmnO4. 2. Assessment of the health status of fish and accordingly control measure should be taken. 3. Control on transport of brooders and seeds.**
(iv) Loss of stock and inputs (feed, chemicals ets)	**1. Strengthening and increase in dyke height. 2. Before flood the stock should be harvested and sold in flood prone areas. 3. Transport of feed and chemicals to safer place. 4. Purchase of feeds and chemicals on weekly or fortnightly basis. 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 cam 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. Assessment of quality of feed and fertilizer. 4. Assessment 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.**