

AGRICULTURAL CONTINGENCY PLAN - 2015

DIST: UDALGURI, ASSAM



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Agriculture Contingency Plan for District – 2015, Udalguri

1.0 District Agriculture profile*

1.1	Agro-Climatic/Ecological Zone			
	Agro Ecological Sub Region (ICAR)	Assam and Bengal Plain, Hot sub humid to humid (Inclusion of Perhumid) Eco Region 15.4		
	Agro-Climatic Zone (Planning Commission)	Eastern Himalayan Region		
	Agro Climatic Zone (NARP)	North Bank Plain Zone		
	List all the districts falling under the NARP Zone* (*>50% area falling in the zone)	Udalguri, Darrang, Sonitpur, Lakhimpur, Dhemaji		
	Geographic coordinates of district headquarters	Latitude	Longitude	Altitude
		26°46´ & 26°77´ north latitude	90°08´ & 95°15´ aest longitude	345´ above the mean sea level (MSL)
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTS	RARS, North Lakhimpur, Assam Agricultural University, District: Lakhimpur		
	Mention the KVK located in the district with full address	KVK, Udalguri, AAU, Lalpul, District - Udalguri Assam, PIN:		
	Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro-advisories in the Zone	RARS, North Lakhimpur, Assam Agricultural University, District: Lakhimpur		
1.2	Rainfall	Normal RF (mm)	Normal Rainy days (number)	Normal Onset (specify week and month)
	SW monsoon (June-Sep):	1281.00	55	1st week of June to last week of September.
				Normal Cessation (specify week and month) Last week of Sept.

	NE Monsoon(Oct-Dec):	8.38	2	1st week of Oct. to 2nd week of Nov.	Last week of Nov.
	Winter (Jan-March)			2nd week of March to 4th week of March.	-
	Summer (April-May)	275.00	21	1st week of April to last week of May.	-
	Annual				

1.3	Land use pattern of the district (latest statistics)	Geographical Area ('000 ha)	Cultivable area ('000 ha)	Forest area ('000 ha)	Land under non-agricultural use ('000 ha)	Permanent Pastures ('000 ha)	Cultivable wasteland ('000 ha)	Land under Misc. tree crops and groves ('000 ha)	Barren and uncultivable land ('000 ha)	Current Fallows ('000 ha)	Other fallows ('000 ha)	Land put for non agricultural use
	Area ('000 ha)	167.600	104.572	26.403	17.226	4.256	3.175	5.891	12.332	0.042	0.070	17.226

1.4	Major Soils	Area ('000ha)	Percent (%) of total
	1. Sandy loam	40.56	44.26
	2. Clay loam	45.49	49.65
	3. Silty clay loam	1.23	1.34
	Other (specify)	4.35	4.74
1.5	Agricultural land use	Cropping intensity	
	Net sown area	99.94	137.45
	Area sown more than once	59.36	
	Net irrigated area	3.19	
	Gross cropped area	159.31	

1.6	Irrigation	Area ('000 ha)	Percent (%)
	Net cultivated area	91.68	
	Net irrigated area	24.36	
	Gross cultivated area	-	
	Gross irrigated area	19.03	
	Rainfed area	140.28	

Sources of Irrigation	Number	Area ('000 ha)	% area
Canals	57 nos.	G.C.A.: 60.876	68.47
Tanks		C.C.A.: 41.683	
Open wells			
Bore wells			
Lift irrigation			
Other sources			
Pump sets			
Micro-irrigation			
Groundwater availability and use			
Over exploited			
Critical			
Semi-critical			
Safe			
Wastewater availability and use			

1.6.1 Season-wise Consumption of Fertilizer in Udalguri District

(in Tonnes)

Kharif				Rabi			
N	P	K	Total	N	P	K	Total
559	102	434	1095	509	200	126	835

1.7 Area under major field crops & horticulture (as per latest figures) (Specify year 2013-14)

1.7a	Major field crops cultivated	Area ('000 ha)							
		<i>Kharif</i>			<i>Rabi</i>			Summer	Grand total
		Irrigated	Rainfed	Total	Irrigated	Rainfed	Total		
1	Paddy					57.149		9.046	66.19
2	Wheat					.12			.12
3	Maize		.408			.210			.618
5	Linseed					.234			.234
6	Rapeseed/mustard					2.640			2.640
7.	Black gram		.248			.610			..858
8.	Green gram		.108			.110			.218
10.	Lentil					.636			.636
1.7b	Horticulture crops – Fruits	Total			Irrigated			Rainfed ('000 ha)	
1	Areca nut	6.600						6.600	
2	Banana								

3	Coconut	.650		.650	
4	Lemon				
5.	Pineapple	.100		.100	
6.	Orange	.680		.680	
1.7c	Horticulture crops - Vegetables	Total area ('000 ha)	Irrigated area ('000 ha)	Rainfed area ('000 ha)	
1	<i>Khariif</i> vegetables	.735		.735	
2	<i>Rabi</i> vegetables	.937		.937	
2	Chilli	.288		.288	
6	Onion				
7	Garlic	.350		.350	
1.7d	Medicinal and Aromatic crops	Total area ('000 ha)	Irrigated area ('000 ha)	Rainfed area ('000 ha)	
1	Medicinal and Aromatic crops				
Others					
1.7e	Plantation crops	Total area ('000 ha)	Irrigated area ('000 ha)	Rainfed area ('000 ha)	
1	Turmeric	.662		.662	
2	Ginger	.753		.753	
3	Coriander	.210		.210	
1.7f	Fodder crops	Total area ('000 ha)	Irrigated area ('000 ha)	Rainfed area ('000 ha)	Remarks
1.7g	Grazing land				Information not available
1.7h	Sericulture etc				
1.7i	Others (specify)				

1.8	Livestock (in number)	Male ('000)	Female ('000)	Total ('000)			
	Non descriptive Cattle (local low yielding)	152.811	199.019	351.830			
	Crossbred cattle	1.358	4.846	6.204			
	Non descriptive Buffaloes (local low yielding)	.972	.752	1.724			
	Graded Buffaloes	-	-	-			
	Goat	72.471	111.893	184.364			
	Sheep	3.007	3.837	6.844			
	Others (Camel, Pig, Yak etc.)	-	-	-			
	(i) Pig	39.583	28.668	68.251			
	(ii) Mithun	-	-	-			
	Commercial dairy farms (Number)	-	-	18			
1.9	Poultry	No. of farms	Total No. of birds ('000)				
	Commercial + Backyard	30	734.686				
	Duck		141.590				
1.10	Fisheries (Data source: Chief Planning Officer of district)						
	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)	
			Not applicable				
	ii) Inland (Data Source: Fisheries Department)	No. Farmer owned ponds	No. of Reservoirs	No. of village tanks	No of ponds& tanks		
		1800 ha	-	110 ha	95		
	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)	-	-	-			
	Others						

1.11 Production and Productivity of major crops (Average of last 5 years: 2008 to 2014)

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)										
Crop 1	Rice	3.3	3500	834.40	1324	315.15	3483.86	1318.14	1377.15	
Crop 2	Toria			1.6	1400				1400	
Crop 3	Jute					3	3200	3	3200	
Crop 4	Blackgram					2.5	800	2.5	800	
Crop 5	Wheat			2.6	2400				2400	
Others	Sugarcane					52	52800		52800	
Major Horticultural crops (Crops to be identified based on total acreage)										
Crop 1	Banana	27	27000					27	27000	
Crop 2	Papaya	27	30000					27	30000	
Crop 3	Assam lemon	5	40000					5	40000	
Crop 4	Pineapple	18750 nos.	18000					18750 nos.	18000	
Crop 5	Coconut	18	18750 nos.					18	18750 nos.	
Crop 6	Arecanut	29	29370					29	29370	
Crop 7	Kharif vegetables	30	30000					30	30000	
Crop 8	Rabi vegetables	35	28000					35	28000	

1.12	Sowing window for 5 major crops (start and end of sowing period)	1: Rice	2: Toria	3: Jute	4: Blackgram	5: Wheat
	Kharif-Rainfed	June-July		March-May	Mid Aug-Mid Sept	-
	Kharif-Irrigated	-	-	-	-	-
	Rabi-Rainfed	-	Mid Oct-Mid Nov.	-	-	5 th Nov-15 th Dec
	Rabi-Irrigated	Nov-Dec	-	-	-	-

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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)			
	Others (specify)			

6 out of 10 years = Regular

1.14	Include Digital maps of the district for	Location map of district within State as Annexure I	Enclosed: Yes / No
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2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation

Condition			Suggested Contingency measures		
Early season drought (delayed onset of monsoon)	Major Farming situation ^a	Normal Crop / Cropping system ^b	Change in crop / cropping system ^c including variety	Agronomic measures ^d	Remarks on Implementation ^e

<p>Delay by 2 weeks (Specify month)* June 3rd week</p> <p>(REFER TO THE MATRIX TABLE)</p>	<p>Rainfed upland</p>	<p><u>Cropping system 1</u> Summer vegetables/ Blackgram/ Sesame (<i>kharif</i>) - Toria/ Wheat/Potato/<i>Rabi</i> vegetables/chilli/pea</p>	<p>No Change</p> <p>Summer vegetables – Okra, Cucumber, Pumpkin, Ridge gourd <i>etc.</i></p> <p>Blackgram- Pant U 19, T-9, KU-301, T-27</p> <p>Toria- TS-36, TS-38, TS-67, TS-46</p> <p>Wheat- DBW-14, HDR-77</p> <p>Potato-K.Chandramukhi, K.Jyoti, K.Ashoka, K.Megha</p> <p>Sesame-Punjab Til No. 1 , ST 1683</p>	<p>i) Weeding at critical stages of growth.</p> <p>ii) Addition of sufficient organic matter in the soil at the time of land preparation</p> <p>iii) Use of recommended dose of fertilizer</p> <p>iv) Life saving supplemental irrigation at critical stages of crop growth through low cost irrigation system.</p> <p>v) Use of organic mulch</p>	<p>Development of water harvesting structure under NREGS for life saving irrigation</p>
		<p><u>Cropping system 2</u> Jute -Rabi crop</p>	<p>No change</p> <p>Jute variety Tarun</p>	<p>i) Life saving supplemental irrigation</p>	<p>Development of water harvesting structure under NREGS for life saving irrigation</p>
	<p>Rainfed Medium/ medium low land</p>	<p><u>Cropping system 3</u> Winter paddy – fallow</p>	<p>i) Winter paddy –<i>rabi</i> crops (Toria/Lentil/pea/lathyrus)</p>	<p>i) Growing of medium duration rice varieties such as <i>Satyaranjan, Basundhara, Mulagabharu, TTB 404 etc</i></p> <p>ii) Maximum use of organic manure</p>	
		<p><u>Cropping system 4</u> Jute/Rice(<i>Kharif</i>)- Toria/Lentil/ Wheat//Rabi vegetables/Chilli</p>	<p>i) Rice (<i>Kharif</i>)- Toria</p> <p>Rice- <i>Ranjit, Bahadur etc.</i></p> <p>Toria- TS-46, TS-67</p> <p>ii) Rice-wheat</p> <p>Rice- <i>Ranjit, Bahadur etc.</i></p> <p>Wheat- HDR-77, DBW-14</p>	<p>i) Sowing delay, irrigation for timely sowing at nursery bed</p>	<p>i) Seed production of suitable varieties so that these can be made available in time</p> <p>ii) Community nursery for traditional as well as HY short duration/ late planted varieties of paddy</p> <p>iii) Identification & evaluation of suitable varieties specific to prevailing situation</p> <p>iv) Demonstration programme in real field situation for farmers’ motivation</p> <p>v) Identification of ITK if any</p>

		<p><u>Cropping system 5</u> Rice (<i>Kharif</i>) mono-cropping</p>	Rice (<i>Kharif</i>) mono-cropping	<p>i) Addition of sufficient organic matter in the soil at the time of land preparation</p> <p>ii) Use of pre germinated seeds.</p> <p>iii) Growing of high yielding varieties like <i>Ranjit, Bahadur, Mahsuri, Satyaranjan, Basundhara, Ketekijoha etc.</i></p> <p>iv) Prepare dry, well banded, flat seedbed with adequate FYM(30 kg), 80g urea, 80g SSP and 80g MOP per bed of 10mx1.25m</p> <p>v) Seed treatment with 4% MOP (600ml/kg of seed) for 24 hrs, dry it in shade for 24 hrs and sowing</p> <p>vi) Supplemental irrigation in the nursery bed of rice</p>	i)Technology showcasing programme/ seed production programme of AAU
		<p><u>Cropping system 6</u> Blackgram (Kharif) + Toria + summer vegetables</p> <p><u>Cropping system 7</u> Blackgram(Kharif) + Toria + summer vegetables</p>	No Change Summer vegetables – Okra, Cucumber, Pumpkin, Ridge gourd <i>etc</i>	<p>i) Weed management</p> <p>ii) Supply of minimum irrigation,</p> <p>iii) Proper Nutrient management</p>	Low cost polyhouses for off-season vegetables

Notes:

- a. Describe the major farming situation to provide information on growing environment (rainfall and soil information - colour, depth & texture) such as low rainfall shallow red sandy loam soils, high rainfall deep black soils, uplands, medium lands, eroded hill slopes etc. tank fed black soils, shallow acid soils, sodic vertisols etc
- b. Describe the normal crop or cropping system grown in that farming situation including catch crop, sequence, rotation & variety if known
- c. Describe the alternative crop, variety and/or cropping pattern in view of the delay in monsoon and shortening of the growing period including delay in sowing of nurseries in case of paddy.
 - In case of normal onset followed by early season droughts re-sowing may be recommended including variety seed rate etc.
 - In case of early or mid season dry spells indicate crop management techniques to save standing crop.
 - In case of terminal drought indicate giving life saving supplemental irrigation, if available or taking up harvest at physiological maturity with some realizable grain/fodder yield etc.
- d. Describe all agronomic practices which help in coping with late planting like increased or decreased spacing, changes in planting geometry, intercropping in case of sole crops, thinning, mulching, avoid basal nutrient application or split application, reduced fertilizer application, manure addition, tank silt application, spray of anti-transpirants or other chemicals like urea spray or KCl, supplemental irrigation, soil and moisture conservation practices like ridging, conservation furrows, dust mulch etc.
 - In case of early and mid season dry spells indicate moisture conservation techniques to save standing crop.
 - In case of terminal drought indicate early rabi cropping with suitable crops/varieties with a possibility of giving pre-sowing/come up irrigation etc.
- e. Give details on the source of the breeder seed, in case an alternate crop or variety is suggested as part of the contingency. For agronomic measures, indicate any convergence possible with ongoing central or state schemes like National Rural Employment Guarantee Scheme (NREGS), Integrated Watershed Management Programme (IWMP), Rashtriya Krishi Vikas

Yojana (RKVY), National Food Security Mission (NFSM), Integrated Scheme on Oilseeds, Pulses, Oilpalm and National Horticulture Mission (NHM), Community Land Development Programme (CLDP) etc., to meet the cost of materials, labour or implements etc. to carry out any field based activity quickly.

Condition	Major Farming situation ^a	Normal Crop/cropping system ^b	Suggested Contingency measures		
			Change in crop/cropping system ^c	Agronomic measures ^d	Remarks on Implementation ^e
Early season drought (delayed onset)					
Delay by 4 weeks (Specify month) July 1st week	Rainfed up land	<u>Cropping system 1</u> Summer vegetables/ Blackgram/Sesame (<i>kharif</i>) - Toria/ Wheat/Potato/ <i>Rabi</i> vegetables/ chilli	Summer vegetables/ Blackgram/Sesame (<i>kharif</i>) - Toria/Chilli/ Wheat/Potato/ <i>Rabi</i> vegetables	i) Life saving supplemental irrigation ii) Weeding at critical stages of growth. iii) Supplemental irrigation in the nursery bed of <i>Rabi</i> vegetables iv) Addition of sufficient organic matter in the soil at the time of land preparation	
	Rainfed medium land	<u>Cropping system 1</u> Rice-rabi crops <u>Cropping system2</u> Wiinter paddy – fallow <u>Cropping System3</u> Winter paddy – summer / autumn paddy <u>Cropping system 4</u> Winter paddy – rabi crops	i) Medium duration transplanted winter paddy variety like TTB 404, Basundhara etc. - summer / autumn paddy and late sown rice variety like Manoharsali ii)) Late sown/ transplanted & early maturing winter paddy variety like <i>Lachit</i> , <i>Luit</i> etc. . --- summer / autumn paddy / rabi crops iii) Traditional paddy varieties like <i>Monohar Sali</i> , <i>Sial Sali</i> etc. for late sown condition --rabi crops	i) Delayed sowing with high seed rate / transplanting ii) Timely sowing but delayed transplanting of winter paddy iii) Closure spacing during transplanting iv) Increase no. of seedlings / hill v) Mulching in sugarcane & <i>kharif</i> vegetables vi) Use of organic manure vii) Minimise no. of top dressing of fertilizer (not during dry spell) viii.) Staggered planting of rice varieties	i) Seed production of suitable varieties so that these can be made available in time ii) Community nursery for traditional as well as HY short duration/ late planted varieties of paddy iii) Identification & evaluation of suitable varieties specific to prevailing situation iv) Demonstration programme in real field situation for farmers' motivation

	Rainfed low land	<u>Cropping system 1</u> Winter paddy—fallow	<p>i) Late sown/ transplanted winter paddy variety like <i>Gitesh, Prafulla</i> etc. --- summer / autumn paddy</p> <p>ii)) Late sown/ transplanted & early maturing winter paddy variety like <i>Lachit, Luit</i> etc. . --- summer / autumn paddy / rabi crops</p> <p>iii) Traditional paddy varieties like <i>Monohar Sali, Sial Sali</i> etc. for late sown condition --rabi crops</p>	<p>i) Delayed sowing with high seed rate / transplanting</p> <p>ii) Timely sowing but delayed transplanting of winter paddy</p> <p>iii) Closure spacing during transplanting</p> <p>iv) Increase no. of seedlings / hill</p> <p>v) Use of organic manure</p> <p>vii) Minimise no. of top dressing of fertilizer (not during dry spell)</p>	<p>i) Seed production of suitable varieties so that these can be made available in time</p> <p>ii) Community nursery for traditional as well as HY short duration/ late planted varieties of paddy</p> <p>iii) Identification & evaluation of suitable varieties specific to prevailing situation</p> <p>iv) Demonstration programme in real field situation for farmers' motivation</p>
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Condition	Major Farming situation ^a	Normal Crop/cropping system ^b	Suggested Contingency measures		
			Change in crop/cropping system ^c	Agronomic measures ^d	Remarks on Implementation ^e
Early season drought(delay ed onset)	Rainfed upland	<u>Cropping System:1</u> Summer vegetables/ Blackgram/Sesame (kharif) - Toria/ Wheat/Potato/Rabi vegetables/chilli	Summer vegetables/ Blackgram/Sesame (kharif) - - Toria/Chilli/ Wheat/Potato/Rabi vegetables	<p>i) Life saving supplemental irrigation</p> <p>ii) Weeding at critical stages of growth.</p> <p>iii) Supplemental irrigation in the nursery bed of Rabi vegetables</p>	
Delay by 6 weeks (Specify month) July 3rd week					

	Rainfed medium / low land	<p>i) Winter paddy—fallow</p> <p>ii) Winter paddy—summer / autumn paddy</p> <p>iii) Winter paddy—rabi crops/ vegetables</p>	<p>i) Late sown/ transplanted winter paddy variety like <i>Gitesh</i>, <i>Prafulla</i> etc. --- summer / autumn paddy</p> <p>ii) Late sown/ transplanted & early maturing winter paddy variety like <i>Lachit</i>, <i>Luit</i>, <i>Dishang</i> etc. . --- summer / autumn paddy / rabi crops</p> <p>iii) Traditional paddy varieties like <i>Monohar Sali</i>, <i>Sial Sali</i> etc. for late sown condition --rabi crops</p>	<p>i) sowing with high seed rate, 4-5 seedlings/hill</p> <p>ii) Timely sowing but delayed transplanting of winter paddy</p> <p>iii) Closure spacing during transplanting</p> <p>iv) Increase no. of seedlings / hill</p> <p>v) Use of organic mulches in kharif vegetables</p> <p>vi) Use of organic manure</p> <p>vii) Minimise no. of top dressing of fertilizer (not during dry spell)</p> <p>viii) Advocating mat nursery for raising tender aged seedling</p>	<p>i) Seed production of suitable varieties so that these can be made available in time</p> <p>ii) Community nursery for traditional as well as HY short duration/ late planted varieties of paddy</p> <p>iii) Identification & evaluation of suitable varieties specific to prevailing situation</p> <p>iv) Demonstration programme in real field situation for farmers' motivation</p> <p>v) Identification of ITK if any</p>
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Condition	Major Farming situation ^a	Normal Crop/cropping system ^b	Suggested Contingency measures		
Early season drought(delayed onset)			Change in crop/cropping system ^c	Agronomic measures ^d	Remarks on Implementation ^e
<p>Delay by 8 weeks (Specify month)</p> <p>August 1 st week</p>	Rainfed medium / low land	<p><u>Cropping System:1</u> Winter paddy—fallow</p> <p><u>Cropping System: 2</u> Winter paddy—summer / autumn paddy</p> <p><u>Cropping System: 3</u> Winter paddy—rabi crops/ vegetables</p>	<p>i) Late sown/ transplanted & early maturing winter paddy variety like <i>Lachit</i>, <i>Luit</i>, <i>Dishang</i> etc. summer / autumn paddy / rabi crops</p> <p>ii) Traditional paddy varieties like <i>Monohar Sali</i>, <i>Andrew Sali</i> etc. for late sown condition -- rabi crops</p>	<p>i)Delayed sowing with high seed rate / transplanting</p> <p>ii) Timely sowing but delayed transplanting of winter paddy</p> <p>iii) Closure spacing during transplanting</p> <p>iv) Increase no. of seedlings / hill</p> <p>v) Use of organic mulches in rabi vegetables</p> <p>vi) Use of organic manure</p> <p>vii) Minimise no. of top dressing of fertilizer (not during dry spell)</p> <p>viii) Advocating mat nursery for raising tender aged seedling</p>	<p>i) Seed production of suitable varieties so that these can be made available in time</p> <p>ii) Community nursery for traditional as well as HY short duration/ late planted varieties of paddy</p> <p>iii) Identification & evaluation of suitable varieties specific to prevailing situation</p> <p>iv) Demonstration programme in real field situation for farmers' motivation</p> <p>v) Identification of ITK if any</p>

Season drought due to delayed onset of monsoon (2, 4, 6 & 8 weeks) compared to normal onset (2.1.1)

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

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 measures ^d	Remarks on Implementation ^e

<p>Normal onset followed by 15-20 days dry spell after sowing- leading to poor germination /crop stand etc.</p>	<p>Rainfed high / medium land</p>	<p><u>Cropping system 2</u> Winter paddy – fallow</p> <p><u>Cropping System3</u> <i>Kharif</i> vegetables – <i>rabi</i> vegetables/ <i>rabi</i> crops</p> <p><u>Cropping system4</u> Winter paddy – summer / autumn paddy</p> <p><u>Cropping system 5</u> Winter paddy – <i>rabi</i> crops</p> <p><u>Cropping system 1</u> Sugarcane as mono crop</p>	<p>i) Seed production of suitable varieties</p> <p>iii) promote Community nursery for traditional as well as HY varieties</p> <p>ii) Identification & evaluation of suitable varieties</p> <p>iii) Life saving irrigation</p>	<p>i) Maximum use of organic manure</p> <p>ii) Use of organic mulch</p> <p>iii) RDF in respective crops</p>	<p>i) Seed production of suitable varieties so that these can be made available in time</p> <p>ii) promote Community nursery for traditional as well as HY short duration/ late planted varieties of paddy</p> <p>iii) Identification & evaluation of suitable varieties specific to prevailing situation</p>
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Condition			Suggested Contingency measures		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	Major Farming situation ^a	Normal Crop/cropping system ^b	Crop management ^c	Soil nutrient & moisture conservation measues ^d	Remarks on Implementation ^e
At vegetative stage	Rainfed high / medium land	<p><u>Cropping system 1</u> Sugarcane as mono crop</p> <p><u>Cropping system 2</u> Winter paddy – fallow</p> <p><u>Cropping system 3</u> <i>Kharif</i> vegetables – <i>rabi</i> vegetables/ <i>rabi</i> crops</p> <p><u>Cropping system 4</u> Winter paddy – summer/</p>	<p>i) Weeding and thinning</p> <p>ii) Top dressing of fertilizer is delayed & minimized only when there is water/ available moisture</p> <p>iii) Life saving irrigation</p> <p>iv) Use of draught tolerant varieties</p>	<p>i) Maximum use of organic manure</p> <p>ii) Use of organic mulch in <i>kharif</i> vegetables/sugarcane</p>	<p>i) Identification & evaluation of suitable varieties specific to prevailing situation</p> <p>ii) Demonstration programme in real field situation for farmers’ motivation</p> <p>iii) Identification of ITK if any</p>

		autumn paddy			
		<u>Cropping system 5</u>			
		Winter paddy – <i>rabi</i> crops			
	Rainfed medium / low land	<u>Cropping system 1</u>) Weeding and thinning ii) Top dressing of fertilizer is delayed & minimized only when there is water/ available moisture iii) Life saving irrigation iv) Use of draught tolerant varieties	i) Maximum use of organic manure ii) Use of organic mulch in vegetables iii) Minimising no. of top dressing (not during dry spell)	i) Identification & evaluation of suitable varieties specific to prevailing situation ii) Demonstration programme in real field situation for farmers' motivation iii) Identification of ITK if any
		Winter paddy—fallow			
		<u>Cropping system 2</u>			
		Winter paddy—summer / autumn paddy			
		<u>Cropping system 4</u>			
	Winter paddy— <i>rabi</i> crops/				
		<u>Cropping system 5</u>			
		<i>Kharif</i> vegetables – <i>rabi</i> vegetables			

Condition	Major Farming situation ^a	Normal Crop/cropping system ^b	Suggested Contingency measures		
			Crop management ^c	Soil nutrient & moisture conservation measures ^d	Remarks on Implementation ^e
Mid season drought (long dry spell)					
At flowering/ fruiting stage	Rainfed high / medium land	<u>Cropping system 1</u> Sugarcane as mono crop	i) Weeding at critical stages. ii) Irrigate the field	i) Maximum use of organic manure ii) Use of organic mulch in kharif vegetables / sugarcane iii) Minimising no. of top dressing (not during dry spell)	i) Method demonstration ii) Identification & evaluation of suitable varieties specific to prevailing situation iii) Identification of ITK if any
		<u>Cropping system 2</u> Winter paddy – fallow			
		<u>Cropping system 3</u> <i>Kharif</i> vegetables – <i>rabi</i> vegetables/ <i>rabi</i> crops			

		<p><u>Cropping system 4</u> Winter paddy – summer / autumn paddy</p>			
		<p><u>Cropping system 5</u> Winter paddy – <i>rabi</i> crops</p>			
	Rainfed medium / low land	<p><u>Cropping system 1</u> Winter paddy—fallow</p> <p><u>Cropping system 2</u> Winter paddy—summer/ autumn paddy</p> <p><u>Cropping system 3</u> iii) Winter paddy—<i>rabi</i> crops/vegetables</p> <p><u>Cropping system 4</u> iv) <i>Kharif</i> vegetables – <i>rabi</i> vegetables</p>	<p>i) Weeding at critical stages.</p> <p>ii) Irrigate the field</p>	<p>i) Maximum use of organic manure</p> <p>ii) Use of organic mulch in vegetables</p> <p>iii) Minimising no. of top dressing (not during dry spell)</p>	<p>i) Method demonstration</p> <p>ii) Identification & evaluation of suitable varieties specific to prevailing situation</p> <p>iii) Identification of ITK if any</p>

Condition	Major Farming situation ^a	Normal Crop/cropping system ^b	Suggested Contingency measures		
			Crop management ^c	Rabi Crop planning ^d	Remarks on Implementation ^e
Terminal drought (Early withdrawal of monsoon)	Rainfed high / medium land	<p><u>Cropping system 1</u> Sugarcane as mono crop</p>	i) See for alternative sources of water	i) Zero-tillage / optimum tillage cultivation of rabi crops	i) Method demonstration
		<p><u>Cropping system 2</u> Winter paddy – fallow</p>	ii) Application of water through low cost irrigation system such as treadle pump.	ii) Practice of relay cropping	ii) Identification & evaluation of suitable varieties specific to prevailing situation
		<p><u>Cropping system 3</u> <i>Kharif</i> vegetables – <i>rabi</i> vegetables/ <i>rabi</i> crops</p>	iii) Follow fertigation	ii) Use of organic mulch in <i>rabi</i> vegetables / crops	iii) Identification of ITK if any
				iii) Application of organic manures as much as possible	iv) Construction of water harvesting tank

		<p><u>Cropping system 4</u> iii) Winter paddy – summer / autumn paddy</p>			
		<p><u>Cropping system 5</u> Winter paddy – rabi crops</p>			
	Rainfed medium / low land	<p><u>Cropping system 1</u> Winter paddy—fallow</p> <p><u>Cropping system 2</u> Winter paddy—summer / autumn paddy</p> <p><u>Cropping system 3</u> Winter paddy—rabi crops/ vegetables</p> <p><u>Cropping system 4</u> Kharif vegetables – rabi vegetables</p>	<p>i) See for alternative sources of water</p> <p>ii) Avoid burning of leftovers of paddy after harvest</p> <p>iii) Follow fertigation</p>	<p>i) Zero-tillage / optimum tillage cultivation of rabi crops (Relay cropping of lentil, Lathyrus with rice)</p> <p>ii) Avoid burning of leftovers of paddy after harvest & incorporation in the field during ploughing</p> <p>ii) Use of organic mulch in rabi vegetables / crops</p> <p>iii) Application of organic manures as much as possible</p>	<p>i) Identification & evaluation of suitable varieties specific to prevailing situation</p> <p>ii) Demonstration programme in real field situation for farmers' motivation</p> <p>v) Identification of ITK if any</p>

2.1.2 . Drought - Irrigated situation-- not applicable

Condition	Major Farming situation ^f	Normal Crop/cropping system ^g	Suggested Contingency measures		
			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	Cropping System:1			
	2) Farming Situation	Cropping System:1			

Condition	Major Farming situation ^f	Normal Crop/cropping system ^g	Suggested Contingency measures		
			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	Cropping System: 1			
Non release of water in canals under delayed onset of monsoon in catchment	1) Farming Situation	Cropping System: 1			
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	Upland / medium land	<p><u>Cropping system 1</u> Winter paddy – fallow</p> <p><u>Cropping system 2</u> Winter paddy – summer / autumn paddy</p> <p><u>Cropping system 3</u> Winter paddy – <i>rabi</i> crops</p> <p><u>Cropping system 4</u> <i>Kharif</i> vegetables – <i>rabi</i> vegetables/ <i>rabi</i> crops</p>	<p>i) Late sown / transplanted winter paddy – fallow</p> <p>ii) Late sown / transplanted winter paddy – summer / autumn paddy</p> <p>iii) Fallow – <i>kharif</i> oilseeds / pulses—late sown <i>rabi</i> crops</p> <p>iv) Fallow – timely sown <i>rabi</i> crops / vegetables</p>	<p>i) Application of organic manures as much s possible</p> <p>ii) Removal of weeds</p> <p>iii) Use of organic mulches</p> <p>iv) Incorporation of crop residues</p> <p>v) Multiple cropping</p> <p>vi) Practice of zero/minimum tillage cultivation</p> <p>vii) Avoidance of use of agro-chemicals during dry spells</p> <p>viii) Measures to minimize percolation loss of water from tank</p> <p>ix) Economic use of water at critical stage of crop</p>	

	Medium / low land	<p><u>Cropping system 1</u> Winter paddy—fallow</p> <p><u>Cropping system 2</u> Winter paddy—summer / autumn paddy</p> <p><u>Cropping system 3</u> Winter paddy—<i>rabi</i> crops/ vegetables</p> <p><u>Cropping system 4</u> <i>Kharif</i> vegetables – <i>rabi</i> vegetables</p>	<p>i) Late sown / transplanted winter paddy – fallow</p> <p>ii) Late sown / transplanted winter paddy – summer / autumn paddy</p> <p>iii) Fallow – <i>kharif</i> oilseeds / pulses—late sown <i>rabi</i> crops</p> <p>iv) Fallow – timely sown <i>rabi</i> crops / vegetables</p>	<p>i) Application of organic manures as much s possible</p> <p>ii) Removal of weeds</p> <p>iii) Use of organic mulches</p> <p>iv) Incorporation of crop residues</p> <p>v) Multiple cropping</p> <p>vi) Practice of zero / minimum tillage cultivation</p> <p>vii) Avoidance of use of agro-chemicals during dry spells</p> <p>viii) Measures to minimize percolation loss of water from tank</p> <p>ix) Economic use of water and life saving irrigation at critical stage of crop</p>	
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Condition	Major Farming situation ^f	Normal Crop/cropping system ^g	Suggested Contingency measures		
			Change in crop/cropping system ^h	Agronomic measures ⁱ	Remarks on Implementation ^j
Insufficient groundwater recharge due to low rainfall	Upland / medium land	<p><u>Cropping system 1</u> Winter paddy – fallow</p> <p><u>Cropping system 2</u> Winter paddy – summer / autumn paddy</p> <p><u>Cropping system 3</u> Winter paddy – <i>rabi</i> crops</p> <p><u>Cropping system 4</u> <i>Kharif</i> vegetables – <i>rabi</i> vegetables/ <i>rabi</i> crops</p>	<p>i) Late sown / transplanted winter paddy – fallow</p> <p>ii) Late sown / transplanted winter paddy – summer / autumn paddy</p> <p>iii) Fallow – kharif oilseeds / pulses—late sown <i>rabi</i> crops</p> <p>iv) Fallow – timely sown <i>rabi</i> crops / vegetables</p>	<p>i) Application of organic manures as much s possible</p> <p>ii) Removal of weeds</p> <p>iii) Use of organic mulches</p> <p>iv) Incorporation of crop residues</p> <p>v) Multiple cropping</p> <p>vi) Practice of zero / minimum tillage cultivation</p> <p>vii) Avoidance of use of agro-chemicals during dry spells</p> <p>viii) Measures to minimize percolation loss of water from well & distribution loss through delivery pipes</p> <p>ix) Economic use of water at critical stage of crop</p>	
	Medium / low land	<p><u>Cropping system 1</u> Winter paddy—fallow</p> <p><u>Cropping system 2</u> Winter paddy—summer / autumn paddy</p> <p><u>Cropping system 3</u> Winter paddy—<i>rabi</i> crops/ vegetables</p> <p><u>Cropping system 4</u> <i>Kharif</i> vegetables – <i>rabi</i> vegetables</p>	<p>i) Late sown / transplanted winter paddy – fallow</p> <p>ii) Late sown / transplanted winter paddy – summer / autumn paddy</p> <p>iii) Fallow – kharif oilseeds / pulses—late sown <i>rabi</i> crops</p> <p>iv) Fallow – timely sown <i>rabi</i> crops / vegetables</p>	<p>i) Application of organic manures as much s possible</p> <p>ii) Removal of weeds</p> <p>iii) Use of organic mulches</p> <p>iv) Incorporation of crop residues</p> <p>v) Multiple cropping</p> <p>vi) Practice of zero/ minimum tillage cultivation</p> <p>vii) Avoidance of use of agro-chemicals during dry spells</p> <p>viii) Measures to minimize percolation loss of water from well & distribution loss through delivery pipes</p> <p>ix) Economic use of water at critical stage of crop</p>	

Notes:

^f Describe such as uplands, medium and low lands and source of irrigation such as tank fed medium or deep black/loamy/red soils, tube well irrigated red soils, canal irrigated red soils, well irrigated black soils etc.,

^g The normal crop or cropping systems grown in a given irrigated situation

^h Suggested change in the crop, variety or cropping system in view of delay in release of irrigation water, less water availability etc.,

ⁱ All agronomic measures like improved methods of irrigation (skip row etc.), micro irrigation (drip/sprinkler/sub-surface), deficit irrigation, limited area irrigation, mulching etc, that improve water use efficiency and make best use of limited water including methods of ground water recharge and sharing.

^j Comments on source of availability of seed of the alternate crop or variety, any constraints in marketing of alternative crop implications for livestock and dairy sectors and details of state or central schemes like National Rural Employment Guarantee Scheme (NREGS), Rashtriya Krishi Vikas Yojana (RKVY), National Food Security Mission (NFSM), Integrated Scheme on Oilseeds, Pulses, Oilpalm and Maize (ISOPOM), National Horticulture Mission (NHM) etc., which facilitate implementation of the agronomic measures suggested.

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

Condition	Suggested Contingency Measures			
	Vegetative stage ^k	Flowering stage ^l	Crop maturity stage ^m	Post harvest ⁿ
Continuous high rainfall in a short span leading to water logging				
Rice	No Problem	-	Drainage of stagnant water	i.Harvesting should be done before rain as per as possible ii.Drying of produces before storage to optimum moisture level iii.Seed treatment with insecticide and fungicide against insects & diseases respectively during the period of storage Treated seeds be kept in polythene bags with outer covering of gunny bags iv.Timely sowing to avoid rain during harvesting period.
Wheat	No Problem	-	-	
Jute	i. No problem ii.Foliar application of urea instead of top dressing is advocated	No problem	No problem	
Boro Rice	No Problem	-	Drainage of stagnant water	
Toria	Drainage	-	Drainage	
Horticulture				
Tomato	Drainage	Drainage, foliar application of hormones, micronutrients to prevent flower drop.	Drainage	Shifting of the produce to drier place, Cold storage.
Okra	Drainage	Drainage, foliar application of	Drainage	Shifting of the produce to drier place,

		hormones, micronutrients to prevent flower drop		Cold storage
Bitter gourd	Drainage	Drainage, foliar application of hormones, micronutrients to prevent flower drop.	Drainage	Shifting of the produce to drier place, Cold storage
Papaya	Drainage	Drainage, foliar application of hormones, micronutrients to prevent flower drop.	Drainage	Shifting of the produce to drier place, Cold storage
Heavy rainfall with high speed winds in a short span²				
Rice	No problem	-	Harvesting should be done at physiological maturity stage	Drying of produces to optimum moisture level Seed treatment with insecticide like malathion 5% dust and fungicide like bevestin @1g/kg seeds against insects-pest & diseases respectively during the period of storage Treated seeds be kept in polythene bags with outer covering of gunny bags
Sesamum	Drainage	Drainage	Drainage	
Blackgram/Arhar	Drainage	Drainage	Drainage	
Jute	No problem Foliar application of urea instead of top dressing is advocated Propping: crop should be provided mechanical support to prevent lodging	No problem Propping: crop should be provided mechanical support to prevent lodging	No problem Propping: crop should be provided mechanical support to prevent lodging	No problem
Sugarcane	Drainage First & second earthing up Make trenches/furrows in between ridges to facilitate drainage of excess water during high rainfall. Striping & propping	Drainage Striping & propping	Drainage Striping & propping	Harvesting should be done before rain as far as possible Drying to remove excess moisture of canes
Horticulture				
Banana	Earthing up, Bamboo stacking, Planting Wind break tree.	Drainage, foliar application of hormones, micronutrients to	Drainage	Shifting of the produce to drier place, Cold storage, packing in transparent

		prevent flower drop.		and nontransparent polythene bags.
Papaya	Earthing up, Bamboo stacking, Planting Wind break tree.	Drainage, foliar application of hormones, micronutrients to prevent flower drop.	Drainage	Shifting of the produce to drier place, Cold storage, packing in transparent and nontransparent polythene bags.
Assam Lemon	Earthing up, Bamboo stacking	Drainage, foliar application of hormones, micronutrients to prevent flower drop.	Drainage	Shifting of the produce to drier place, Cold storage, packing in transparent and nontransparent polythene bags.
Guava	Earthing up, Bamboo stacking, Planting Wind break tree.	Drainage, foliar application of hormones, micronutrients to prevent flower drop.	Drainage	Shifting of the produce to drier place, Cold storage, packing in transparent and nontransparent polythene bags.

^k Such as drainage in black soils, indicate taking up need based inter-culture operations, outbreak of pests/diseases along with their management etc.

^l Such as drainage in black soils, application of hormones/nutrient sprays to prevent flower drop or promote quick flowering/fruitletting and indicate possibility of pest/disease outbreak with need based prophylactic / curative management etc.

^m Such as drainage in black soils, measures for preventing seed germination etc and Indicate possibility of harvesting at physiological maturity immediately and shifting produce to safer place and protection against pest/disease damage in storage etc.

ⁿ Such as shifting of produce to safer place for drying and maintaining the quality of grain/fodder and protection against pest/disease damage in storage etc

2.3 Floods:

Condition	Suggested Contingency Measures ⁰			
	Seedling/ nursery stage	Vegetative stage	Reproductive stage	At harvest
Transient water logging/partial inundation ¹				
Rice	No problem	No problem	No problem	No problem
Jute	-do-	-do-	-do-	-do-
Sugarcane	-do-	-do-	-do-	-do-
Toria	Drainage	Drainage	Drainage	-do-
Pulses	Drainage	Drainage	Drainage	-do-
Horticulture				
Assam lemon	Making trenches/furrows in between ridges to drain out the excess water.	Earthing up.	Earthing up	Shifting of the produce to drier place
Pineapple	-do-	Earthing up.	drainage	Shifting of the produce to drier place

Kharif vegetables(watermelon, snakegourd, dolichos bean, okra).	Crop cannot survive.	-	-	-
Continous submergence for more than 2 days²				
Rice	Growing of submergence tolerant rice varieties like Swarna Sub 1, Jalkunwari, Jalashree			
Jute		No problem	No problem	No problem
Pulses	• Crop cannot survive			
Oilseed	-do-	-do-	-do-	
Horticulture				
Assam lemon	Crop cannot survive.	No problem	Flower drop	Fruit drop
Kharif vegetables(watermelon, snakegourd, dolichosbean, okra).	do			
Sea water inundation³				
Crop 1 (specify)				

Notes:

¹ Water logging due to heavy rainfall, poor drainage in vertisols, flash floods in streams and rivers due to high rainfall, breach of embankments

² If the water remains in the field due to continuous rains, poor infiltration and push back effect

³ Entry of sea water into cultivated fields in coastal districts due to tidal wave during cyclones or tsunami; intrusion of seawater into groundwater in coastal districts

^o Crop/field management depends on nature of material (sand or silt) deposited during floods. In sand deposited crop fields/ fallows indicate ameliorative measures such as early removal of sand for facilitating *rabi* crop or next kharif. In silt deposited indo-gangetic plains, indicate early *rabi* crop plan in current cropped areas and current fallow lands. Indicate drainage of stagnating water and strengthening of field bunds etc. In diara land areas indicate crop plans for receding situations. Usually rice cropped areas are flood prone causing loss of nurseries, delayed transplanting or damage to the already transplanted fields etc. Indicate community nursery raising, scheduling bushenings, re-transplanting in damaged fields and transplanting new areas or direct seeding including seed availability so that the season is not lost. Indicate steps for preventing pre-mature germination of submerged crop at maturity or harvested produce.

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

Not encountered

Extreme event type	Suggested contingency measure ^r			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Heat Wave^p				
Crop1				
Horticulture				
Crop1 (specify)				

Cold wave^q				
Crop1				
Horticulture				
Crop1 (specify)				
Frost				
Crop1				
Horticulture				
Crop1 (specify)				
Hailstorm				
Crop1				
Horticulture				
Crop1 (specify)				
Cyclone				
Crop1				
Horticulture				
Crop1 (specify)				

^p In regions where the normal maximum temperature is more than 40⁰C, if the day temperature exceeds 3⁰C above normal for 5 days it is defined as heat wave. Similarly, in regions where the normal temperature is less than 40⁰C, if the day temperature remains 5⁰C above normal for 5 days, it is defined as heat wave.

^q In regions where normal minimum temperature remains 10⁰C or above, if the minimum temperature remains 5⁰C lower than normal continuously for 3 days or more it is considered as cold wave. Similarly in regions with normal minimum temperature is less than 10⁰C, if the minimum temperature remains 3⁰C lower than normal it is considered as cold wave

^r Indicate appropriate crop/soil management measures depending upon the crop and its stage for alleviating the specified stress.

Contingent strategies for Livestock, Poultry & Fisheries						
2.5.1 Livestock						
Condition	Suggested contingency measures					
	Before the event^s		During the event		After the event	
Drought						
Feed and fodder availability	a.	Increasing animal feed reserves in the district.	a.	Feeding of occasional surplus grains or grains damaged during processing	a.	Cultivation of short duration fodder crops (sorghum, maize)
	b.	Increase cultivation of perennial fodder varieties.	b.	Harvesting & use of all failed field crops as animal feed.	b.	Providing concentrates to all animals supplementary feed.

	c.	Consideration of a larger area under fodder cultivation.	c.	Use of harvested tree/top of fodder as feed for livestock animals.	c.	Feeding of molasses
	d.	Selection and plantation of deep rooted, drought tolerant bushes, trees & grasses for feeding livestock.	d.	Processing and preservation of fodders as hay & silage	d.	Allowing rest to selected pastures or delay grazing in all pastures periodically.
	e.	Utilization of waste lands for fodder cultivation.	e.	Feeding of UMMB, hay conc, vitamins & mineral mixtures		
	f.	Improving yield & quality of non-conventional fodder available in drought prone areas.	f.	Adopting special care and feed management measures for lactating, pregnant & productive animals		
	g.	Raising drought tolerant perennial grasses, trees, shrubs & bushes in field boundaries	g.	Feeding of concentrates like oilseed cakes as supplementary feed.		
	h.	Creation of fodder bank and fodder seed banks.	h.	Utilization of crop byproducts like sugarcane tops and bagasse for animal feeding.		
	i.	Preventing the practice of burning paddy straw, maize stover and sugarcane tress.	i.	Feeding of Molasses		
	j.	Preservation of processed fodders.	j.	Use of herbaceous or tree legumes as supplements		
	k.	Backyard production of Azolla for animal feed.				
	l.	Improvement of the cattle feed manufacturing units to cope up with the demand of concentrate feed.				
	m.	Production of hay and silage				
	o.	Balancing animal numbers with available feed resources and reducing animal numbers through destocking of unproductive livestock.				
	p.	Maintenance of emergency pastures that can only be used during the emergency.				
Drinking water	a.	Identification of natural water resources and their use in a planned way.	a.	Prevent water wastage	a.	Identification of place/ area for establishment of drinking water reserves
	b.	Creation of water reserves in grazing land.	b.	Prevent wallowing by animals in water bodies/ resources		
	c.	Rain water harvesting for water conservation.				
	d.	Improvement of natural pastures/ grazing land by <i>in situ</i> rain water conservation				
	e.	Use of drip irrigation in agriculture to prevent wastage of ground water.				
Health and disease management	a.	Prompt recognition of endemic animal diseases and timely vaccination against them.	a.	Prompt response in emergencies to save the lives of productive livestock.	a.	Organizing need based animal health camps.
	b.	Regular de-worming of animals to minimize the parasitic burden and improve the productivity of farm livestock.	b.	Organizing mass animal health camps wherever necessary.	b.	Organizing mass animal de-worming camps

	c.	Popularizing the concept of animal insurance and its implementation.	c.	Vaccination of animals against all the endemic diseases.	c.	Minimizing cases of anestrous and repeat breeding in productive animals by organizing mass animal fertility camps.
	d.	Constituting efficient team of workers to act as a Rapid Action Force during emergencies	d.	Providing anthelmintics and mineral mixtures to productive animals.	d.	Vaccination of animals against endemic diseases.
	e.	Collaboration of the district veterinary officials to handle endemic animal diseases.	e.	Balanced feeding of the productive animals by inclusion of suitable concentrates to maintain sound health condition.	e.	Culling of unproductive livestock to improve economic status of livestock owners.
	f.	Creation of repositories to store a sizeable stock of veterinary medicines for emergencies.	f.	Segregation of suspicious and disease animals from the herd and their early treatment.		
	g.	Provision for preservation of thermolabile animal and poultry vaccines with maintenance of the cold chain.	g.	Regular health monitoring of the animal herd within the endemic areas.		
	h.	Provision for maximizing the use of thermostable animal and poultry vaccines which are often handy at the field level.				
	i.	Establishing well-organized quarantine facilities for disease suspected and affected animals.				
Floods						
Feed and fodder availability		NA		NA		NA
Drinking water						
Health and disease management						
Cyclone						
Feed and fodder availability		NA		NA		NA
Drinking water						
Health and disease management						
Heat wave and cold wave						
Shelter/environment management						
Health and disease management						
s based on forewarning wherever available						

2.5.2. Poultry		
Condition	Suggested contingency measures	Convergen

	Before the event ^a	During the event	After the event	ce/linkages with ongoing programs, if any
Drought				
Shortage of feed ingredients	i) Culling of unproductive poultry for efficient utilization of poultry feed.	i) Supplementation of household grains to poultry.	i) Supplementation of household grains to the birds.	i) Various training programmes
	ii) Storage of household grains like broken rice, maize, pulses, oilseeds etc. iii) Use of good quality poultry feed to obtain optimum growth, body weight gain and productivity.	ii) Supplementation of shell girit/ calcium to the laying birds	ii) Use of good quality poultry feed to obtain optimum growth	ii) OFTs & FLDs
		iii) Utilization of kitchen wastes for feeding small sized backyard poultry flocks	iii) Proper storage of poultry feed.	
		iv) Prompt marketing of the meat type birds with optimum body weight gain.		
		v) Selling of poultry wastes and gunny bags to contribute for the feed costs.		
		vi) Minimizing the feed wastage.		
Drinking water	i) Rain water harvesting.	i) Judicious use of drinking water.	i) Providing water ad-libitum.	i) Training programmes
	ii) Provision for storage of drinking water.	ii) Minimizing wastage of drinking water.	ii) Developing drinking water storage facilities.	
	iii) Utilization of ground water reserves for drinking purposes after purification.			
Health and disease management	i) Culling of weak and diseased birds. ii) Timely de-worming. iii) Vaccination against endemic diseases especially Ranikhet disease. iv) Insurance of birds. v) Arrangement of brooding facilities for young chicks. vi) Construction of good quality poultry houses or farms to minimize disease incidences and to avoid predation by carnivores. vii) Proper waste disposal system in poultry farms possessing large flocks. viii) Provision for balanced feeding of productive birds.	i) Regular supplementation of necessary vitamins to the birds for improving productivity. ii) Immediate segregation of disease affected and suspicious birds from the flock. iii) Maintenance of proper hygiene and sanitation in the commercial poultry farms. iv) Regular cleaning of poultry houses to minimize disease incidence. v) Restricting trade of poultry, poultry meat and eggs during outbreak of a disease having potential to take an epidemic form.e.g. Bird flu. vi) Restriction against needless movement of individuals in the farm premises. vii) Use of fly proof netting in poultry sheds to prevent arthropod borne diseases. viii) Use of foot baths in front of the farm entrance to minimize disease transmission.	i) Maintenance of proper hygiene and sanitation in the poultry sheds. ii) Disposal of dead birds by burning or by deep burial with lime in pits of optimum sizes. iii) Timely vaccination of all the birds. iv) Culling of unproductive poultry. vii) Timely marketing of meat type poultry and poultry eggs to minimize losses due to mortality.	i) Various training programmes ii) OFTs & FLDs

Floods Shortage of feed ingredients	NA	NA	NA	
Drinking water				
Health and disease management				
Cyclone				
Shortage of feed ingredients				
Drinking water				
Health and disease management				
Heat wave and cold wave				
Shelter/environment management				
Health and disease management				
^a based on forewarning wherever available				

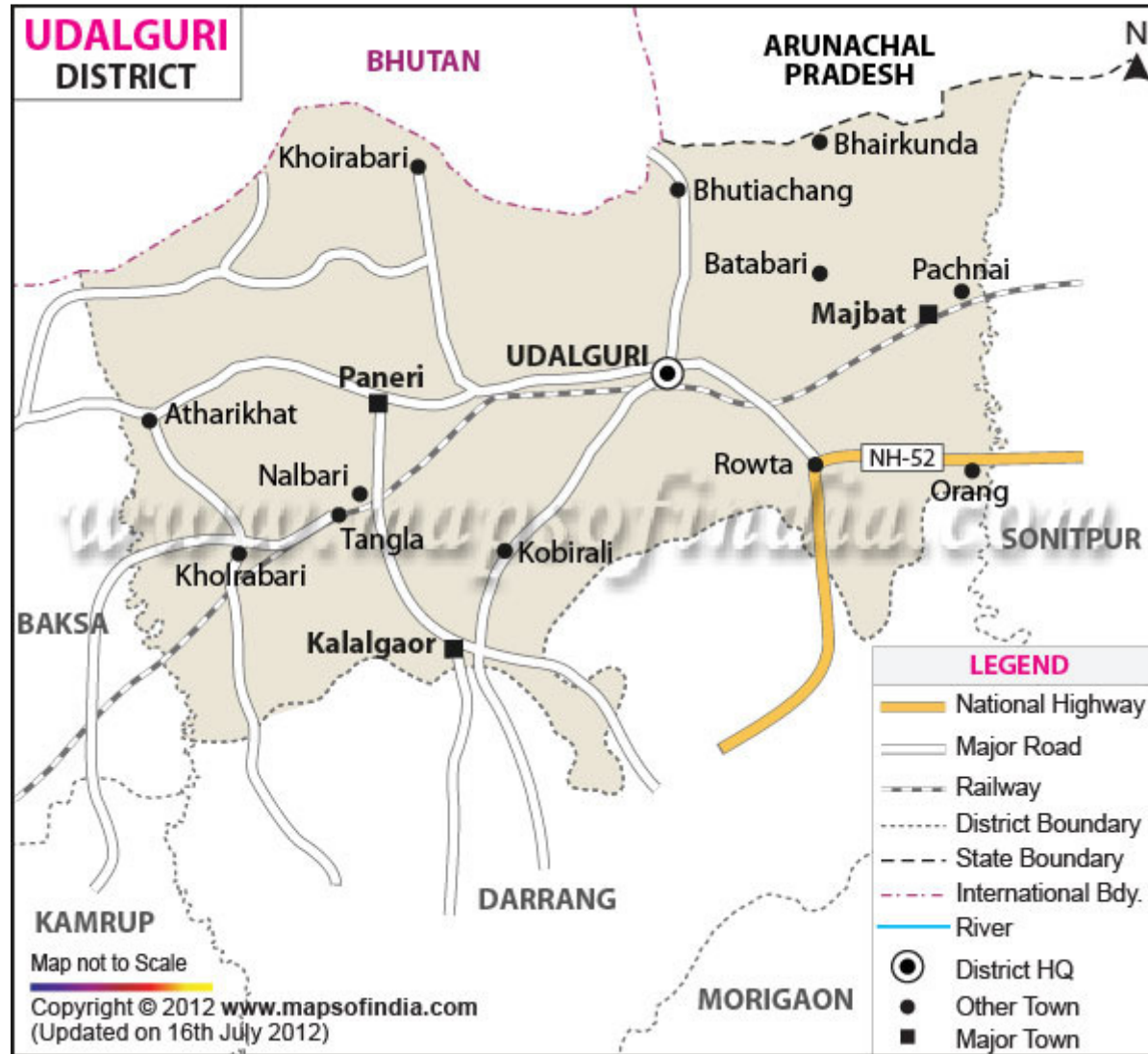
2.5.3 Fisheries/ Aquaculture			
Condition	Suggested contingency measures		
	Before the event	During the event	After the event
1) Drought			
A. Capture			
Marine	NA	NA	NA
Inland			
(i) Shallow water depth due to insufficient rains/inflow			
(ii) Changes in water quality			
(iii) Any other			
B. Aquaculture			
(i) Shallow water in ponds due to insufficient rains/inflow	i) Capturing some amount of fishes and keeping few to minimize quantity of fishes in the pond ii) Digging of ponds to increase depth	i) Digging of ponds/ middle of ponds to increase depth for saving life of the fishes ii) Add water to the ponds from	i) Cleaning and digging of ponds to increase depth ii) Use of clay material in pond beds to minimize water loss through percolation

	iii) Follow measures like addition of cow dung etc. to stop/minimize downward percolation of water iv) Enquiring alternative water sources to add to the ponds	alternative source if available iii) Minimizing quantity of fishes	
(ii) Impact of salt load build up in ponds / change in water quality			
(iii) Any other			
2) Floods			
A. Capture			
Marine	NA	NA	NA
Inland			
(i) Average compensation paid due to loss of human life			
(ii) No. of boats / nets/damaged			
(iii) No. of houses damaged			
(iv) Loss of stock			
(v) Changes in water quality			
(vi) Health and diseases			
B. Aquaculture			
(i) Inundation with flood water	Dyke should be strongly constructed above the maximum flood level.	Encircling the fishery with fish net to prevent the escaping of fishes.	Dyke should be renovated strongly above the maximum flood level.
(ii) Water contamination and changes in water quality	Dyke should be strongly constructed above the maximum flood level.	Use disinfectant	Use disinfectant, Remove all unwanted exotic fishes
(iii) Health and diseases	Provided vitamin, mineral with feed,	Provided vitamin, mineral, protein with feed, use bactericide	Use bactericide and disinfectant and feed with balance diets.
(iv) Loss of stock and inputs (feed, chemicals etc)	Dyke should be strongly constructed above the maximum flood level.	Catch the some amount of fishes to reduce the stock.	Dyke should be strongly renovated and apply disinfectant and fish out the unwanted exotic fishes
(v) Infrastructure damage (pumps, aerators, huts etc)			
(vi) Any other			
3. Cyclone / Tsunami			
A. Capture			
Marine	NA	NA	NA
(i) Average compensation paid due to loss of fishermen lives			
(ii) Avg. no. of boats / nets/damaged			
(iii) Avg. no. of houses damaged			

Inland			
B. Aquaculture			
(i) Overflow / flooding of ponds			
(ii) Changes in water quality (fresh water / brackish water ratio)			
(iii) Health and diseases			
(iv) Loss of stock and inputs (feed, chemicals etc)			
(v) Infrastructure damage (pumps, aerators, shelters/huts etc)			
(vi) Any other			
4. Heat wave and cold wave			
A. Capture			
Marine	NA	NA	NA
Inland			
B. Aquaculture			
(i) Changes in pond environment (water quality)			
(ii) Health and Disease management			
(iii) Any other			

^a based on forewarning wherever available

Location map of district within State as Annexure I



Data source:: All line department of the Udalguri District