

State: ASSAM

District Agriculture Contingency Plan for District: DHUBRI

1.0 District Agriculture profile*			
1.1	Agro-Climatic/Ecological Zone		
	Agro Ecological Sub Region (ICAR)	Region: Humid Assam-Bengal Basin	
	Agro-Climatic Zone (Planning Commission)	Eastern Himalayan Region	
	Agro Climatic Zone (NARP)	Lower Brahmaputra Valley Zone (AZ47)	
	List all the districts falling under the NARP Zone* (*>50% area falling in the zone)	Kamrup, Dhubri, Bongaigaon, Nalbari, Barpeta, Kokrajhar, Goalpara	
	Geographic coordinates of district headquarters	Latitude	Longitude
		District: 25.82 to 26.22 degree N	District :89.42 to 90.12 degree E
		District H.Q.: 26° 1' 60 N	District H.Q.: 89° 58' 0 E
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	RARS Gossaingaon, Assam Agricultural University, District: Kokrajhar	
	Mention the KVK located in the district with full address	KVK, Dhubri, AAU, Bilasipara, District - Dhubri Assam, PIN: 783348	
	Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro-advisories in the Zone	RARS Gossaingaon, Assam Agricultural University, District: Kokrajhar	

*Indicate source of data while furnishing information at different places in the district profile

1.2	Rainfall	Normal RF(mm)	Normal Onset (specify week and month)	Normal Cessation (specify week and month)
	SW monsoon (June-Sep):	2015.37	1 st week of June	Last week of september
	NE Monsoon(Oct-Dec):	200.05	2 nd week of October	2 nd Week of November
	Winter (Jan- February)	33.63	-	-
	Summer (March-May)	755.29	-	-
	Annual	3004.34	-	-

(Based on rainfall data from 1990 to 2012)

1.3	Land use pattern of the district (latest statistics)	Geographical area	Cultivable area	Forest area	Land under non-agricultural use	Permanent pastures	Cultivable wasteland	Land under Misc. tree crops and groves	Barren and uncultivable land	Current fallows	Other fallows
	Area ('000 ha)	236.126	144.152	1.664	16.909	2.156	6.558	12.942	-	7.560	58.303

1.4	Soil type	Characteristics	Area in ha
	Sandy loam	Characterized with 50-60% sand, less WHC and CEC, high infiltration rate and hydraulic conductivity	14151
	Sandy	Characterized with more than 80% sand less WHC and CEC, high infiltration rate and hydraulic conductivity low organic matter, less suitable for crops	1248
	Tilla/Red soil	Characterized with predominance of oxide of Fe and AL, lacks crystalline structure, high acidic ,high P fixation low infiltration rate and less hydraulic conductivity less	3307

		CEC, less productive relatively suitable for long duration Horticulture and plantation crops	
	Clay Loam	Characterized with 30-35% clay, high WHC and CEC low infiltration rate and hydraulic conductivity	5118
	Clay	Characterized with 50-55% clay high WHC and CEC low infiltration rate and hydraulic conductivity	1729

* mention colour, depth and texture (heavy, light, sandy, loamy, clayey etc) and give vernacular name, if any, in brackets (data source: Soil Resource Maps of NBSS & LUP); ** Pl. give the details of the major soils occupying more than 5% of total geographical area. Degree of soil acidity (pH) may also be indicated

1.5	Agricultural land use	Area ('000 ha)	Cropping intensity %
1	Net sown area	130.034	203
2	Area sown more than once	-	
3	Gross cropped area	264.497	

1.6	Irrigation	Area ('000 ha)		
	Net irrigated area	39.472		
	Gross irrigated area	43.089		
	Rainfed area	-		
	Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
	Canals		0.505	1.27
	Tanks		Nil	Nil
	Open wells		-	-
	Bore wells		37.672	95.43
	Lift irrigation schemes		-	-
	Micro-irrigation			--
	Other sources (please specify)		1.080	2.73
	Total Irrigated Area		52.078	
	Pump sets			
	No. of Tractors			
	Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	No. of blocks/ Tehsils	(%) area	Quality of water (specify the problem such as high levels of arsenic, fluoride, saline etc)
	Over exploited			
	Critical			
	Semi- critical			

	Safe		
	Wastewater availability and use		
	Ground water quality		
*over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%			

1.6. a.	Fertilizer and Pesticides use	Type	Total quantity (tonnes)
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* If break up is not available, indicate total quantity used in the district for any recent year, mention here the year and source of statistic

District / State	Kharif				Rabi			
	N	P	K	Total	N	P	K	Total
Dhubri	4575	2143	3573	10291	4677	1183	2801	8661
Assam	57705	18456	33630	109791	71605	28776	37798	138179

Source: Statistical hand book of Assam 2011

1.7 Area under major field crops & horticulture (2011-12)

S.No.	Major field crops cultivated	Area ('000 ha)							
		Kharif			Rabi			Summer	Grand total
		Irrigated	Rainfed	Total	Irrigated	Rainfed	Total		
1	Autumn paddy	-	-	-	-	-	-	20.9	20.9
2	Winter paddy	-	-	46.4	-	-	-	-	46.4
3	Summer paddy	-	-	-	-	-	-	50.0	50.0
4	Wheat	-	-	-	-	-	10.3	-	10.3
5	Jute	-	-	17.0	-	-	-	-	17.0
6	Sesamum	-	-	1.545	-	-	-	-	1.545

7	Rapseed/ mustard	-	-	-	-	-	19.2	-	19.2
8	Linseed	--	-	-	-	-	0.883	-	0.883
9	Nizer	-	-	-	-	-	1.655	-	1.655
10	Green gram	-	-	0.170	-	-	-	-	0.170
11	Black gram	-	-	4.5	-	-	-	-	4.5
12	Lentil	-	-	-	-	-	2.0	-	2.0
13	Pea	-	-	-	-	-	0.5	-	0.5

Source : Dept. of Agriculture.

S.No.	Horticulture crops	Area ('000 ha)		
		Total	Irrigated	Rainfed
1	Banana	1.625		1.625
2	Guava	0.180		0.180
3	Jackfruit	0.450		0.450
4	Litchi	0.015		0.015
5	Pineapple	0.100		0.100
	Horticulture crops	Total	Irrigated	Rainfed
	- Fruits			
1	Rabi Vegetable	7.800		
2	Potato	5.850		
3	Kharif Vegetable	3.728		
4				
5				
	Horticulture crops	Total	Irrigated	Rainfed
	- Vegetables			
	Medicinal and	Total	Irrigated	Rainfed

		Aromatic crops			
	1				
	2				
	Others				
		Plantation crops	Total	Irrigated	Rainfed
	1				
	2				
	Others (Specify)	Eg., industrial pulpwood crops etc.			
		Fodder crops	Total	Irrigated	Rainfed
	1				
	2				

1.11 Production and Productivity of major crops (2011-12)

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	Summer Paddy	-	-	-	-	1100.0	2200	1100.0	2200	
Crop 2	Winter Paddy	719.2	1550	-	-	-	-	719.2	1550	
Crop 3	Autumn Paddy	--	-	-	-	194.370	930	194.370	930	
Crop	Rapseed &	-	-	145.92	760	-	-	145.92	760	

4	Mustard									
Crop 5	Wheat	-	-	123.6	1200	-	-	123.6	1200	
Crop 6	Jute	386.75	2280	-	-	-	-	386.75	2280	
Crop 7	Black gram	32.4	720	-	-	-	-	32.4	720	
Crop 8	Nizer	-	-	7.21	410	-	-	7.21	410	
Crop 9	Seasamum	6.92	450			-	-	6.92	450	
Crop 10	Lentil	-	-	10.6	530	-	-	10.6	530	
Crop 11	Linseed	-	-	3.93	450	-	-	3.93	450	
Crop 12	Pea	-	-	2.73	550	-	-	2.73	550	
Major Horticultural crops (Crops to be identified based on total acreage)										
Crop 1	Banana	--	-	-	-	-	-	26.813	16500	
Crop 2	Guava	--	-	-	-	-	-	1.400	14000	
Crop 3	Jackfruit	--	-	-	-	-	-	9.450	21000	
Crop 4	Litchi	--	-	-	-	-	-	7.200	40000	
Crop 5	Pineapple	--	-	-	-	-	-	0.105	7000	

1.12	Sowing window for 5 major field crops (start and end of normal sowing period)	Crop 1: Sali paddy	2: Summer rice (Early Ahu)	3: Mustard	4: Jute	5: Wheat
	Kharif- Rainfed	June-July			March- April	
	Kharif-Irrigated	-	-	-	-	-
	Rabi- Rainfed			October- November		

	Rabi-Irrigated					November-December
	Summer-irrigated		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			✓
	Snowfall			
	Landslides			
	Earthquake			
	Pests and disease outbreak (specify)			
	Crop	Severe	Moderate	Mild
	Winter Paddy	Stem borer, Case worm, Leaf folder, Gandhi bug, Rodent, Blast, Sheath rot, Brown spot	Hispa, Gall midge, , BLB, Bakane, , Root knot nematode	BPH, GPH, False smut
	Autumn Paddy(Early ahu and Normal ahua)	Stem borer, Case worm, Leaf folder, Gandhi bug, Blast, Sheath rot, Brown spot, Root knot nematode	Hispa, Gall midge, , BLB, Bakane, Rodent,	BPH, GPH, False smut
	Rapseed & Mustard	Aphid, Saw fly		
	Wheat	Loose smut	Rodent	
	Black gram	YMV	Aphid Jassids	Flea Leaf Beetle, Pod Borer , Pod Bug

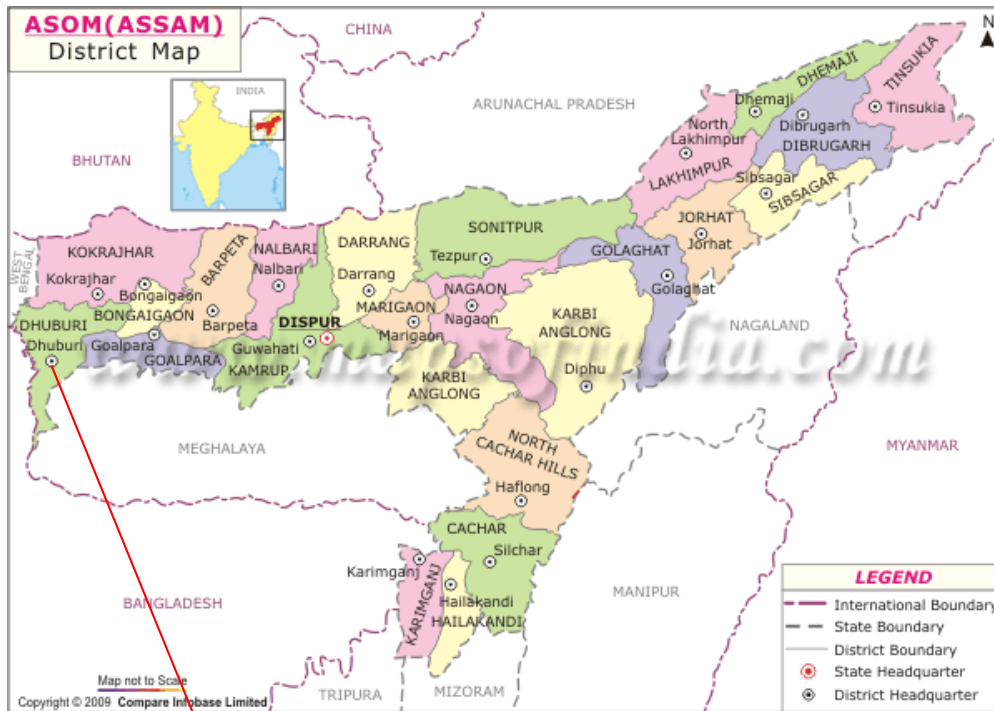
	Jute	Fungal wilt, Stem rot, Semilooper	Caterpillar	
	Banana	Panama wilt	Cercospora leaf spot	
	Arecanut and coconut	Ganoderma wilt , White grub		
	Jack fruit	Fruit rot		
	Vegetables	Bacterial wilt, Fungal wilt, Damping off, Late blight in potato, anthracnose in chilli, White grub, Fruit and shoot borer, TLCV	Collar rot, blight,	

*When contingency occurs in six out of 10 years

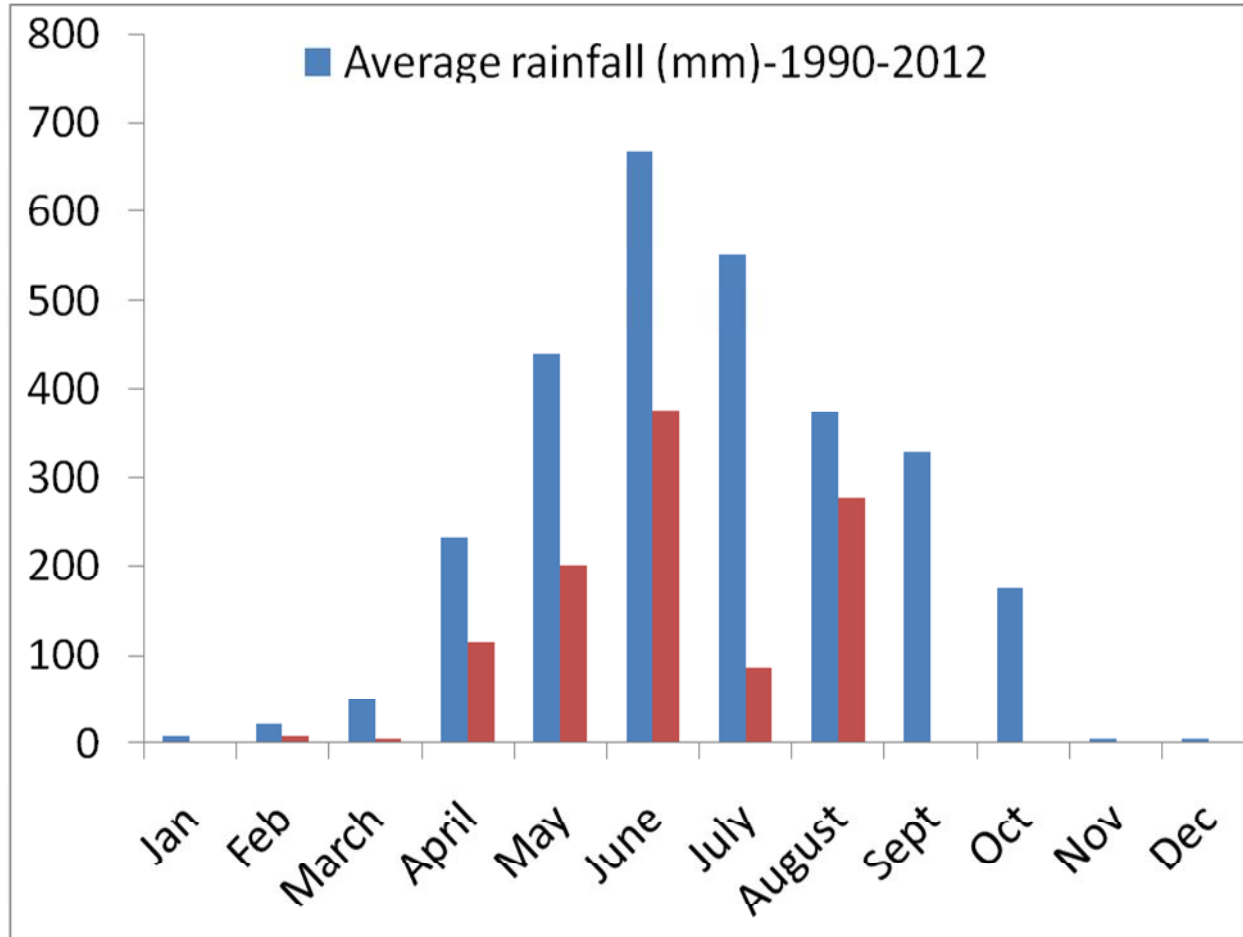
1.14	Include Digital maps of the district for	Location map of district within State as Annexure I	Enclosed: Yes
		Mean annual rainfall as Annexure 2	Enclosed: Yes
		Soil map as Annexure 3	Enclosed: Yes

Annexure – 1: LOCATION MAP OF DHUBURI DISTRICT IN ASSAM

(Source: mapsofindia.com)



Annexure – 2: MEAN ANNUAL RAINFALL OF DHUBRI DISTRICT








Source: - Department of Agriculture, Dhubri, Assam

Annexure – 3: SOIL MAP OF DHUBRI

Source: NBSSLUP (Secondary Source: Assam Agricultural University, Jorhat)



INDEX	
	<i>Very deep, imperfectly drained, coarse loamy soils with slight erosion and moderate flooding</i>
	<i>Very deep, well drained, coarse silty soils with moderate flood hazard</i>
	<i>Very deep, moderately well drained, coarse loamy soils with moderate flooding</i>
	<i>Very deep, well drained, coarse loamy soils with moderate erosion and moderate flooding</i>
	<i>Deep, moderately well drained, coarse silty soils with slight erosion and moderate flooding</i>

2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation

Condition		Suggested Contingency measures			
		Crop/ cropping system ^b	Change in crop/ cropping system ^c	Agronomic measures ^d	Remarks on Implementation ^e
Early season drought (delayed onset) Delay by 2 weeks (Specify month)* Month: 3rd week of June (REFER TO THE MATRIX TABLE)	Rainfed upland, (Sandy loam to clay loam)	Rice (DS) - Toria/ Lentil / Wheat / Potato / Rabi vegetables / Chilli	No Change	-Recommended package of practices for normal sowing.	-
		Rice (DS) / summer vegetables - Black gram/Sesamum	No Change	-Recommended package of practices for normal sowing.	-
		Summer vegetables - Toria / Lentil / Wheat / Potato / Rabi vegetables/chilli	No Change	-Recommended package of practices for normal sowing.	-
	Rainfed medium / medium lowland (Sandy loam to clay loam)	Rice(Kharif) monocropping	No Change	-Recommended package of practices for normal sowing.	-
		Jute / Rice(Kharif)- Toria / Lentil/ Wheat / Potato / Rabi vegetables/Chilli	No Change	-Recommended package of practices for normal sowing.	-
		Rice (kharif) – Rice (summer)	No Change	-Recommended package of practices for normal sowing.	-
	Flood prone (sandy loam to clay loam)	Summer vegetables/Jute – Toria/Lentil/ Wheat/Potato/Rabi vegetables/Chilli	No Change	-Recommended package of practices for normal sowing.	-

		<p>Kharif (Kharif) –Wheat/Potato/Rabi vegetables/Chilli</p>	<p>No Change</p>	<ul style="list-style-type: none"> - Growing of submergence tolerant rice varieties such as Jalashree, Jalkuwari which can tolerate 12-15 days submergence (transplanting within July). Seedlings should be raised in non flood prone or high land area. -If flood water recedes early and transplanting can be done by mid August, select varieties like Satyaranjan, Basundhara, IR -36, Jaya etc. Seedlings should be raised in non flood prone or high land area. - If transplanting is possible during last part of August, short duration varieties such as Luit, Kolong, Dishang etc. can also be selected (transplanting up to last part of August). 20-25 days old seedling should be transplanted at 20x15 cm spacing with 4-5 seedlings/hill. - For chronically flood affected areas, Manohar Sali, Andrew Sali, Salpona etc. and traditional photosensitive coarse grain rice varieties with up to 60 days old seedlings can be grown up to last part of August. About 10 kg seed/ha is required with closer spacing (20 cm x 20 cm) and 6-8 seedlings/hill. Community nursery may be raised in non- flood prone or high land for raising of rice seedlings. - Select delayed planting rice varieties like Prafulla and Gitesh with up to 60 days old seedlings (Sowing in the nursery bed within June). Seedlings should be raised in non flood prone or high land area. 	<p>- Technology showcasing programme of AAU and other seed production programmes of state dept of agriculture, Assam as source of seed</p>
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Condition	Major Farming situation ^a	Suggested Contingency measures			
		Crop/ cropping system ^b	Change in crop/ cropping system ^c	Agronomic measures ^d	Remarks on Implementation ^e
Early season drought (delayed onset) Delay by 4 weeks (Specify month)* Month: 1st week of July (REFER TO THE MATRIX TABLE)	Rainfed upland, (Sandy loam to clay loam)	Rice (DS) - Toria/ Lentil / Wheat / Potato / Rabi vegetables / Chilli	No Change	-Recommended package of practices for normal sowing.	-
		Rice (DS) / summer vegetables - Black gram/Sesamum	No Change	-Recommended package of practices for normal sowing.	-
		Summer vegetables - Toria / Lentil / Wheat / Potato / Rabi vegetables/chilli	No Change	-Recommended package of practices for normal sowing.	-
	Rainfed medium/medium lowland (Sandy loam to clay loam)	Rice(Kharif) monocropping	No change	-If transplanting is possible within July, HYVs of rice like Ranjit, Bahadur, Mahsuri, Piolee, Kushal, Moniram etc can be selected. -Growing of medium duration rice varieties such as Satyaranjan, Basundhara, IR-36, Jaya etc (transplanting up to mid August). - Short duration rice varieties such as Luit, Kolong, Dishang etc. can also be selected (transplanting up to last part of August). 20-25 days old seedling should be transplanted at 20x15 cm spacing with 4-5 seedlings/hill. - Rice varieties such as Pankaj, Kushal, Lakhimi can be grown up to August 15 with 45 -50 days old	- Technology showcasing programme of AAU and other seed production programmes of state dept of agriculture, Assam as source of seed

				<p>seedlings.</p> <p>-Rice varieties that can be grown as late Sali up to last part of August are Manohar Sali, Andrew Sali, Salpona etc. and traditional photosensitive coarse grain varieties with up to 60 days old seedlings. About 10 kg seed/ha is required with closer spacing (20 cm x 20 cm) and 6-8 seedlings/hill.</p>	
		Jute / Rice(Kharif)- Torina / Lentil/ Wheat / Potato / Rabi vegetables/Chilli	No change	<p>-Growing of medium duration rice varieties such as Satyaranjan, Basundhara, IR-36, Jaya etc (transplanting up to mid August).</p> <p>- Short duration rice varieties such as Luit, Kolong, Dishang etc. can also be selected (transplanting up to last part of August). 20-25 days old seedling should be transplanted at 20x15 cm spacing with 4-5 seedlings/hill.</p> <p>- Rice varieties such as Pankaj, Kushal, Lakhimi can be grown up to August 15 with 45 -50 days old seedlings.</p> <p>--Rice varieties that can be grown as late Sali up to last part of August are Manohar Sali, Andrew Sali, Salpona etc. and traditional photosensitive coarse grain varieties with up to 60 days old seedlings. About 10 kg seed/ha is required with closer spacing (20 cm x 20 cm) and 6-8 seedlings/hill.</p>	<p>- Technology showcasing programme of AAU and other seed production programmes of state dept of agriculture, Assam as source of seed</p>

		Rice (kharif) – Rice (summer)	No change	<p>-Growing of medium duration rice varieties such as Satyaranjan, Basundhara, IR-36, Jaya etc (transplanting up to mid August).</p> <p>- Short duration rice varieties such as Luit, Kolong, Dishang etc. can also be selected (transplanting up to last part of August). 20-25 days old seedling should be transplanted at 20x15 cm spacing with 4-5 seedlings/hill.</p> <p>- Rice varieties such as Pankaj, Kushal, Lakhimi can be grown up to August 15 with 45 -50 days old seedlings.</p> <p>--Rice varieties that can be grown as late Sali up to last part of August are Manohar Sali, Andrew Sali, Salpona etc. and traditional photosensitive coarse grain varieties with up to 60 days old seedlings. About 10 kg seed/ha is required with closer spacing (20 cm x 20 cm) and 6-8 seedlings/hill.</p>	- Technology showcasing programme of AAU and other seed production programmes of state dept of agriculture, Assam as source of seed
	Flood prone (Sandy loam to clay loam)	Summer vegetables/Jute – Toria/Lentil/ Wheat/Potato/Rabi vegetables/Chilli	No Change	-Recommended package of practices for normal sowing.	-
		Rice (Late Kharif) –Wheat/Potato/Rabi vegetables/Chilli	No change	<p>--If flood water recedes early and transplanting can be done by mid August, select rice varieties like Satyaranjan, Basundhara, IR -36, Jaya etc. Seedlings should be raised in non flood prone or high land area.</p> <p>- If transplanting is possible during last part of August, short duration rice varieties such as Luit, Kolong, Dishang etc. can also be selected (transplanting up to last part of August). 20-25 days old seedling should be transplanted at 20x15 cm spacing with 4-5 seedlings/hill.</p> <p>- For chronically flood affected areas, Manohar Sali, Andrew Sali, Salpona etc. and traditional photosensitive coarse grain rice varieties with up to</p>	- Technology showcasing programme of AAU and other seed production programmes of state dept of agriculture, Assam as source of seed

				<p>60 days old seedlings can be grown up to last part of August. About 10 kg seed/ha is required with closer spacing (20 cm x 20 cm) and 6-8 seedlings/hill. Community nursery may be raised in non- flood prone or high land for raising of rice seedlings.</p> <p>-If flood damages crop during last part of August and there is no time to raise seedlings, direct seeding (wet seeding) of extra short duration high yielding varieties such as Luit, Kolong, Dichang etc or any traditional photo period sensitive coarse grain varieties can also be done up to 1st week of September. Sprouted seed of 75 kg/ha is to be broadcast in puddle field.</p>	
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CONDITION	Major Farming situation ^a	SUGGESTED CONTINGENCY MEASURES			
		Crop/ cropping system ^b	Change in crop/ cropping system ^c	Agronomic measures ^d	Remarks on Implementation ^e
Early season drought (delayed onset) Delay by 6 weeks (Specify month)* Month: 3rd week of July (REFER TO THE MATRIX TABLE)	Rainfed upland, (Sandy loam to clay loam)	Rice (DS) - Toria/ Lentil / Wheat / Potato / Rabi vegetables / Chilli	No Change	-Recommended package of practices for normal sowing.	-
		Rice (DS) / summer vegetables - Black gram/Sesamum	No Change	-Recommended package of practices for normal sowing.	-
		Summer vegetables - Toria / Lentil / Wheat / Potato / Rabi vegetables/chilli	No Change	-Recommended package of practices for normal sowing.	-

	Rainfed medium/medium lowland (Sandy loam to clay loam)	Rice(Kharif) monocropping	No change	- Short duration rice varieties such as Luit, Kolong, Dishang etc. can also be selected (transplanting up to last part of August). 20-25 days old seedling should be transplanted at 20x15 cm spacing with 4-5 seedlings/hill. --Rice varieties that can be grown as late Sali up to last part of August are Manohar Sali, Andrew Sali, Salpona etc. and traditional photosensitive coarse grain varieties with up to 60 days old seedlings. About 10 kg seed/ha is required with closer spacing (20 cm x 20 cm) and 6-8 seedlings/hill.	- Technology showcasing programme of AAU and other seed production programmes of state dept of agriculture, Assam as source of seed
		Jute / Rice(Kharif)- Toria / Lentil/ Wheat / Potato / Rabi vegetables/Chilli	No change	- Short duration rice varieties such as Luit, Kolong, Dishang etc. can also be selected (transplanting up to last part of August). 20-25 days old seedling should be transplanted at 20x15 cm spacing with 4-5 seedlings/hill. --Rice varieties that can be grown as late Sali up to last part of August are Manohar Sali, Andrew Sali, Salpona etc. and traditional photosensitive coarse grain varieties with up to 60 days old seedlings. About 10 kg seed/ha is required with closer spacing (20 cm x 20 cm) and 6-8 seedlings/hill.	- Technology showcasing programme of AAU and other seed production programmes of state dept of agriculture, Assam as source of seed
		Rice (kharif) – Rice (summer)	No change	- Short duration rice varieties such as Luit, Kolong, Dishang etc. can also be selected (transplanting up to last part of August). 20-25 days old seedling should be transplanted at 20x15 cm spacing with 4-5 seedlings/hill. --Rice varieties that can be grown as late Sali up to last part of August are Manohar Sali, Andrew Sali, Salpona etc. and traditional photosensitive coarse grain varieties with up to 60 days old seedlings. About 10 kg seed/ha is required with closer spacing (20 cm x 20 cm) and 6-8 seedlings/hill.	- Technology showcasing programme of AAU and other seed production programmes of state dept of agriculture, Assam as source of seed
	Flood	Summer vegetables/Jute –	No Change	-Recommended package of practices for normal sowing.	-

	prone (Sandy loam to clay loam)	Toria/Lentil/ Wheat/Potato/Rabi vegetables/Chilli			
		Rice (Late Kharif) –Wheat/Potato/Rabi vegetables/Chilli	No change	<p>- If transplanting is possible during last part of August, short duration varieties such as Luit, Kolong, Dishang etc. can also be selected (transplanting up to last part of August). 20-25 days old seedling should be transplanted at 20x15 cm spacing with 4-5 seedlings/hill.</p> <p>- For chronically flood affected areas, Manohar Sali, Andrew Sali, Salpona etc. and traditional photosensitive coarse grain varieties with up to 60 days old seedlings can be grown up to last part of August. About 10 kg seed/ha is required with closer spacing (20 cm x 20 cm) and 6-8 seedlings/hill. Community nursery may be raised in non-flood prone or high land for raising of rice seedlings.</p> <p>-If flood damages crop during last part of August and there is no time to raise seedlings, direct seeding (wet seeding) of extra short duration high yielding varieties such as Luit, Kolong, Dichang etc or any traditional photo period sensitive coarse grain varieties can also be done up to 1st week of September. Sprouted seed of 75 kg/ha is to be broadcast in puddle field.</p>	- Technology showcasing programme of AAU and other seed production programmes of state dept of agriculture, Assam as source of seed

Condition		Suggested Contingency measures			
Early season drought (delayed onset)	Major Farming situation ^a	Crop/ cropping system ^b	Change in crop/ cropping system ^c	Agronomic measures ^d	Remarks on Implementation ^e
Delay by 8 weeks (Specify month)* MONTH: 1ST WEEK OF AUGUST (REFER TO THE MATRIX TABLE)	Rainfed upland, (Sandy loam to clay loam)	Rice (DS) - Toria/ Lentil / Wheat / Potato / Rabi vegetables / Chilli	No Change	-Recommended package of practices for normal sowing.	-
		Rice (DS) / summer vegetables - Black gram/Sesamum	No Change	-Recommended package of practices for normal sowing.	-
		Summer vegetables - Toria / Lentil / Wheat / Potato / Rabi vegetables/chilli	No Change	-Recommended package of practices for normal sowing.	-
	Rainfed medium /medium lowland (Sandy loam to clay loam)	Rice(Kharif) monocropping	No change	<p>- Short duration rice varieties such as Luit, Kolong, Dishang etc. can also be selected (transplanting up to last part of August). 20-25 days old seedling should be transplanted at 20x15 cm spacing with 4-5 seedlings/hill.</p> <p>--Rice varieties that can be grown as late Sali up to last part of August are Manohar Sali, Andrew Sali, Salpona etc. and traditional photosensitive coarse grain varieties with up to 60 days old seedlings. About 10 kg seed/ha is required with closer spacing (20 cm x 20 cm) and 6-8 seedlings/hill</p> <p>-Direct seeding (wet seeding) of extra short duration high yielding rice varieties such as Luit, Kolong, Dichang etc or any traditional photo period sensitive coarse grain varieties can also be done up to 1st week of September. Sprouted seed of 75 kg/ha is to be broadcast in puddle field.</p>	- Technology showcasing programme of AAU and other seed production programmes of state dept of agriculture, Assam as source of seed.

		Jute / Rice(Kharif)- Toria / Lentil/ Wheat / Potato / Rabi vegetables/Chilli	No change	<p>- Short duration rice varieties such as Luit, Kolong, Dishang etc. can also be selected (transplanting up to last part of August). 20-25 days old seedling should be transplanted at 20x15 cm spacing with 4-5 seedlings/hill.</p> <p>--Rice varieties that can be grown as late Sali up to last part of August are Manohar Sali, Andrew Sali, Salpona etc. and traditional photosensitive coarse grain varieties with up to 60 days old seedlings. About 10 kg seed/ha is required with closer spacing (20 cm x 20 cm) and 6-8 seedlings/hill</p> <p>-Direct seeding (wet seeding) of extra short duration high yielding rice varieties such as Luit, Kolong, Dichang etc or any traditional photo period sensitive coarse grain varieties can also be done up to 1st week of September. Sprouted seed of 75 kg/ha is to be broadcast in puddle field.</p>	- Technology showcasing programme of AAU and other seed production programmes of state dept of agriculture, Assam
		Rice (kharif) – Rice (summer)	No change	<p>- Short duration rice varieties such as Luit, Kolong, Dishang etc. can also be selected (transplanting up to last part of August). 20-25 days old seedling should be transplanted at 20x15 cm spacing with 4-5 seedlings/hill.</p> <p>--Rice varieties that can be grown as late Sali up to last part of August are Manohar Sali, Andrew Sali, Salpona etc. and traditional photosensitive coarse grain varieties with up to 60 days old seedlings. About 10 kg seed/ha is required with closer spacing (20 cm x 20 cm) and 6-8 seedlings/hill</p> <p>-Direct seeding (wet seeding) of extra short duration high yielding rice varieties</p>	- Technology showcasing programme of AAU and other seed production programmes of state dept of agriculture, Assam as source of seed.

				such as Luit, Kolong, Dichang etc or any traditional photo period sensitive coarse grain varieties can also be done up to 1 st week of September. Sprouted seed of 75 kg/ha is to be broadcast in puddle field.	
	Flood prone (Sandy loam to clay loam)	Summer vegetables/Jute – Toria/Lentil/ Wheat/Potato/Rabi vegetables/Chilli	No Change	-Recommended package of practices for normal sowing.	-
		Rice (Late Kharif) –Wheat/Potato/Rabi vegetables/Chilli	No change	<p>- If transplanting is possible during last part of August, short duration rice varieties such as Luit, Kolong, Dishang etc. can also be selected (transplanting up to last part of August). 20-25 days old seedling should be transplanted at 20x15 cm spacing with 4-5 seedlings/hill.</p> <p>- For chronically flood affected areas, Manohar Sali, Andrew Sali, Salpona etc. and traditional photosensitive coarse grain rice varieties with up to 60 days old seedlings can be grown up to last part of August. About 10 kg seed/ha is required with closer spacing (20 cm x 20 cm) and 6-8 seedlings/hill. Community nursery may be raised in non- flood prone or high land for raising of rice seedlings.</p> <p>-If flood damages crop during last part of August and there is no time to raise seedlings, direct seeding (wet seeding) of extra short duration high yielding rice varieties such as Luit, Kolong, Dichang etc or any traditional photo period sensitive coarse grain varieties can also be done up to 1st week of September. Sprouted seed of 75 kg/ha is to be broadcast in puddle field.</p>	- Technology showcasing programme of AAU and other seed production programmes of state dept of agriculture, Assam as source of seed.

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***Matrix for specifying condition of early season drought due to delayed onset of monsoon (2, 4, 6 & 8 weeks) compared to normal onset (2.1.1)**

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

Condition	Suggested Contingency measures				
	Major Farming situation ^a	Crop/ cropping system ^b	Change in crop/ cropping system ^c	Soil nutrient & moisture conservation measures ^d	Remarks on Implementation ^e
Early season drought (Normal onset)					
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/ crop stand etc.	Rainfed upland, (Sandy loam to clay loam)	Rice (DS) - Toria/ Lentil / Wheat / Potato / Rabi vegetables / Chilli	No Change	-Life saving supplemental irrigation -Weeding at critical stages of growth.	-Development of water harvesting structure under NREGS - Arrangements of pump sets under NFSM and RKVY
		Rice (DS) / summer vegetables - Black gram/Sesamum	No Change	-Life saving supplemental irrigation -Weeding at critical stages of growth.	-Development of water harvesting structure under NREGS - Arrangements of pump sets under NFSM and RKVY

		Summer vegetables - Toria / Lentil / Wheat / Potato / Rabi vegetables/chilli	No Change	-Life saving supplemental irrigation -Weeding at critical stages of growth.	-Development of water harvesting structure under NREGS - Arrangements of pump sets under NFSM and RKVY
	Rainfed medium /medium lowland (Sandy loam to clay loam)	Rice(Kharif) monocropping	No change	-Supplemental irrigation in the nursery bed of rice. -The gap of 30 cm between two beds may be converted into channel to supply water to keep the raised beds moist in the event of drought occurs. -Application of sufficient quantity of FYM or compost in the nursery bed and main field. -Where germination is severely affected, re-sowing of rice seed may also be recommended. Varieties suitable for normal sowing should be selected. -Spraying of Mancozeb @ 2.5g/l or Edinophos 2 1ml/l or Carbendazim @ 1g/l against brown spot disease in rice.	-Development of water harvesting structure under NREGS - Arrangements of pump sets under NFSM and RKVY
		Jute / Rice(Kharif)- Toria / Lentil/ Wheat / Potato / Rabi vegetables/Chilli	No change		
		Rice (kharif) – Rice (summer)	No change		
	Flood prone	Summer vegetables/Jute – Toria/Lentil/ Wheat/Potato/Rabi vegetables/Chilli	No Change	-Supplementary life saving irrigation at critical crop stages	-Development of water harvesting structure under NREGS

		<p>Rice (Late Kharif) –Wheat/Potato/Rabi vegetables/Chilli</p>	No change	<p>-In chronically flood affected areas, where rice nursery is raised in upland/ non flood prone areas to grow recommended rice varieties as late sali with higher seedling age, re-sowing of rice seed may also be recommended where germination is severely affected.</p> <p>- Seed treatment with 4% MOP (600ml/kg of seed) for 24 hrs, dry it in shade for 24 hrs and sowing - Supplemental irrigation in the nursery bed of rice.</p> <p>-The gap of 30 cm between two beds of rice nursery may be converted into channel to supply water to keep the raised beds moist in the event of drought occurs.</p> <p>-Application of sufficient quantity of FYM or compost in the nursery bed and main field.</p>	<p>- Technology showcasing programme/ seed production programme of AAU and National Food Security Mission (NFSM) as source of seed</p> <p>-Development of water harvesting structure under NREGS</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	Crop/ cropping system ^b	Change in crop/ cropping system ^c	Soil nutrient & moisture conservation measures ^d	Remarks on Implementation ^e
At vegetative stage	Rainfed upland, (Sandy loam to clay loam)	Rice (DS) - Toria/ Lentil / Wheat / Potato / Rabi vegetables / Chilli	No Change	-Life saving supplemental irrigation -Weeding at critical stages of growth. - Thinning to maintain optimum plant population. -Mulching in horticultural crops	-Development of water harvesting structure under NREGS for life saving irrigation
		Rice (DS) / summer vegetables - Black gram/Sesamum	No Change		
		Summer vegetables - Toria / Lentil / Wheat / Potato / Rabi vegetables/chilli	No Change		
	Rainfed medium /medium lowland (Sandy loam to clay loam)	Rice(Kharif) monocropping	No change	-Top dressing of additional quantities of MOP @ 37.5 kg/ha and incorporation is recommended in rice -Spraying of 2% KCL solution on leaves of rice if and when drought appears. -Top dressing of urea may be delayed upto heading stage of rice if drought prevails at tillering stage. -Life saving supplemental irrigation at critical stages of crop growth	--Development of water harvesting structure under NREGS for life saving irrigation - Arrangements of pump sets
		Jute / Rice(Kharif)- Toria / Lentil/ Wheat / Potato / Rabi vegetables/Chilli	No change		

		Rice (kharif) – Rice (summer)	No change	-Spraying of Mancozeb @ 2.5g/l or Edinophos 2 1ml/l or Carbendazim @ 1g/l against brown spot disease in rice. -Weeding at critical stages of growth.	under NFSM and RKVY
	Flood prone	Summer vegetables/Jute – Toria/Lentil/ Wheat/Potato/Rabi vegetables/Chilli	No Change	-Supplementary life saving irrigation at critical crop stages	--Development of water harvesting structure under NREGS for life saving irrigation - Arrangements of pump sets under NFSM and RKVY
		Rice (Late Kharif) – Wheat/Potato/Rabi vegetables/Chilli	No change	-Supplementary life saving irrigation at critical crop stages --Top dressing of additional quantities of MOP @ 37.5 kg/ha and incorporation is recommended in rice -Spraying of 2% KCL solution on leaves of rice if and when drought appears. -Top dressing of urea may be delayed upto heading stage of rice if drought prevails at the stages of top dressing	--Development of water harvesting structure under NREGS for life saving irrigation - Arrangements of pump sets under NFSM and RKVY

Condition		Suggested Contingency measures			
Mid season drought (long dry spell)	Major Farming situation ^a	Crop/ cropping system ^b	cropping system ^c	Soil nutrient & moisture conservation measures ^d	Remarks on Implementation ^e
At reproductive stage	Rainfed upland, (Sandy loam to clay loam)	Rice (DS) - Toria/ Lentil / Wheat / Potato / Rabi vegetables / Chilli	No Change	-Life saving supplemental irrigation -Weeding at critical stages of growth. -Mulching with crop residue in horticultural crops	--Development of water harvesting structure under NREGS for life saving irrigation - Arrangements of pump sets under NFSM and RKVY
		Rice (DS) / summer vegetables - Black gram/Sesamum	No Change		
		Summer vegetables - Toria / Lentil / Wheat / Potato / Rabi vegetables/chilli	No Change		

	Rainfed medium /medium lowland (Sandy loam to clay loam)	Rice(Kharif) monocropping	No change	<p>-Top dressing of additional quantities of MOP @ 37.5 kg/ha and incorporation is recommended in rice before flowering.</p> <p>-Spraying of 2% KCL solution on leaves of rice if and when drought appear before flowering.</p> <p>-Top dressing of urea may be delayed up to heading stage of rice if drought prevails at the stages of top dressing</p> <p>-Life saving supplemental irrigation at critical stages of crop growth</p> <p>- If crop fails, plan for rabi vegetables, oilseeds, pulses etc.</p>	<p>--Development of water harvesting structure under NREGS for life saving irrigation</p> <p>- Arrangements of pump sets under NFSM and RKVY</p>
		Jute / Rice(Kharif)- Toria / Lentil/ Wheat / Potato / Rabi vegetables/Chilli	No change		
		Rice (kharif) – Rice (summer)	No change		
	Flood prone	Summer vegetables/Jute – Toria/Lentil/ Wheat/Potato/Rabi vegetables/Chilli	No Change		
		Rice (Late Kharif) –Wheat/Potato/Rabi vegetables/Chilli	No change	<p>-Supplementary life saving irrigation at critical crop stages</p> <p>--Top dressing of additional quantities of MOP @ 37.5 kg/ha and incorporation is recommended in rice</p> <p>-Spraying of 2% KCL solution on leaves of rice if and when drought appears.</p> <p>-Top dressing of urea may be delayed upto heading stage of rice if drought prevails at the stages of top dressing</p> <p>- If crop fails, plan for rabi vegetables, oilseeds, pulses etc.</p>	-Development of water harvesting structure under NREGS

Condition	Major Farming situation ^a	Suggested Contingency measures					
		Crop/ cropping system ^b	Crop management ^c	Rabi crop planning ^d	Remarks on Implementation ^e		
Terminal drought	Rainfed upland, (Sandy loam to clay loam)	Rice (DS) - Toria/ Lentil / Wheat / Potato / Rabi vegetables / Chilli	-	<p>- Rabi cropping with cole crops such as Cauliflower (mid season varieties – Improved japaneses, Pusa Synthetic, Pusa snowball etc.) and Cabbage (Varieties – Golden acre, Pride of india, Pusa Mukta etc.), Knolkhol (White viena) etc.</p> <p>- Growing of Tomato, Brinjal, pea, potato and Leafy vegetables like Spinach, Radish etc. with recommended varieties and package of practices.</p> <p>--Growing of rabi field crops like toria, lentil, wheat etc. in time with pre-sowing irrigation if required with recommended varieties and package of practices.</p>	<p>--Development of water harvesting structure under NREGS for life saving irrigation</p> <p>- Arrangements of pump sets under NFSM and RKVY</p> <p>-Arrangement of seed under National Horticultural Mission</p>		
		Rice (DS) / summer vegetables - Black gram/Sesamum	-Life saving supplemental irrigation -Harvesting of kharif crops at physiological maturity stage.				
		Summer vegetables - Toria / Lentil / Wheat / Potato / Rabi vegetables/chilli	-				
	Rainfed medium /medium lowland (Sandy loam to clay loam)	Rice(Kharif) monocropping	-Life saving supplemental - irrigation - Harvesting of kharif crops at physiological maturity stage.			<p>- Rabi cropping with cole crops such as Cauliflower (mid season varieties – Improved japaneses, Pusa Synthetic, Pusa snowball etc.) and Cabbage (Varieties – Golden acre, Pride of india, Pusa Mukta etc.), Knolkhol (White viena) etc.</p> <p>- Growing of Tomato, Brinjal, pea, potato and Leafy vegetables like Spinach, Radish etc. with recommended varieties and package of practices.</p> <p>--Growing of rabi field crops like toria, lentil, wheat etc. in time with pre-sowing irrigation if required with recommended varieties and package of practices.</p>	<p>--Development of water harvesting structure under NREGS for life saving irrigation</p> <p>- Arrangement of seed under National Horticultural Mission</p>
		Jute / Rice(Kharif)- Toria / Lentil/ Wheat / Potato / Rabi vegetables/Chilli					
		Rice (kharif) – Rice (summer)					

	Flood prone	Summer vegetables/Jute – Toria/Lentil/ Wheat/Potato/Rabi vegetables/Chilli	-Life saving supplemental irrigation -- Harvesting of kharif crops at physiological maturity stage.	- Rabi cropping with cole crops such as Cauliflower (mid season varieties – Improved japaneses, Pusa Synthetic, Pusa snowball etc.) and Cabbage (Varieties – Golden acre, Pride of india, Pusa Mukta etc.), Knolkhol (White viena) etc. - Growing of Tomato, Brinjal, pea, potato and Leafy vegetables like Spinach, Radish etc. with recommended varieties and package of practices. --Growing of rabi field crops like toria, lentil, wheat etc. in time with pre-sowing irrigation if required with recommended varieties and package of practices.	--Development of water harvesting structure under NREGS for life saving irrigation - Arrangement of seed under National Horticultural Mission -
		Rice (Late Kharif) – Toria/Lentil/ Wheat/Potato/Rabi vegetables/Chilli			

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 slops 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, spray of anti-transpirants or other chemicals, 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 Maize (ISOPOM), 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.

2.1.2 Drought - Irrigated situation

As the source of irrigation is basically STW and there is no any report on ground water depletion in the district; hence the question of draught-irrigated situation does not arise.

Some other situation like pre monsoon flood and hailstorm often experienced for which contingency plans are necessary and mentioned under 2.2.3

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: Mention source of irrigation, topography (upland/lowland) and soil colour & depth Eg; canal irrigated shallow red soils; tankfed medium deep black soils	Cropping system 1:			
		Cropping system 2:			
		Cropping system 3:	NA		
	2) Farming situation:	Cropping system 1:			
		Cropping system 2:			
		Cropping system 3:			

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: Mention source of irrigation, topography (upland/lowland) and soil colour & depth Eg; canal irrigated shallow red soils; tankfed medium deep black soils	Cropping system 1:	NA		
		Cropping system 2:			
		Cropping system 3:			
	2) Farming situation:	Cropping system 1:			
		Cropping system 2:			
		Cropping system 3:			

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
Non release of water in canals under delayed onset of monsoon in catchment	1) Farming situation: Mention source of irrigation, topography (upland/lowland) and soil colour & depth Eg; canal irrigated shallow red soils; tankfed medium deep black soils	Cropping system 1:	NA		
		Cropping system 2:			
		Cropping system 3:			

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
	2) Farming situation:	Cropping system 1:			
		Cropping system 2:			
		Cropping system 3:			

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
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	1) Farming situation: Mention source of irrigation, topography (upland/lowland) and soil colour & depth Eg; canal irrigated shallow red soils; Tube well irrigated medium red soils	Cropping system 1:	NA		
		Cropping system 2:			
		Cropping system 3:			
	2) Farming situation:	Cropping system 1:			
		Cropping system 2:			
		Cropping system 3:			
Insufficiency of surface water for irrigation					

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	1) Farming	Cropping system 1:	NA		

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
groundwater recharge due to low rainfall	situation: Mention source of irrigation, topography (upland/lowland) and soil colour & depth Eg; canal irrigated shallow red soils; tankfed medium deep black soils	Cropping system 2:			
		Cropping system 3:			
		2) Farming situation:	Cropping system 1:		
		Cropping system 2:			
		Cropping system 3:			
Any other condition (specify)					

2.1.3 Pre monsoon flood and hailstorm under irrigated situation

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
Pre monsoon flood	1) Medium / medium low /lowland land (sandy loam to clay loam)	Summer rice/ Early ahu with long duration local cultivars and hybrid rice variety	- Adoption of Short duration rice varieties like Luit, Kolong, dichang etc in case of summer rice/ early ahu rice	-Provision for drainage channel to remove excess water. - If crop attains maturity stage, harvest the crop at physiological maturity stage.	Preparation of drainage channel under MGNREGA
		Jute	Jute	- Provision for drainage channel to	Preparation of drainage channel

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
				remove excess water. - If top dressing of N fertilizer is not possible, foliar spray of urea (11.5 kgN/ha) at 40-45 days and 55-60 days after sowing.,	under MGNREGA
	2) Upland (sandy loam to clay loam)	Summer vegetables	- Summer vegetables - If crop fails, plan for rabi crops	Provision for drainage channel to remove excess water.	Preparation of drainage channel under MGNREGA
		Fruits (bananana, citrus etc)	-Fruits (bananana, citrus etc - if crop fails, replanting of crops	Provision for drainage channel to remove excess water.	Preparation of drainage channel under MGNREGA
	3) Flood prone (sandy loam to clay loam)	Summer rice/ Early ahu with long duration local cultivars and hybrid rice variety	- Adoption of Short duration rice varieties like Luit, Kolong, dichang etc in case of summer rice/ early ahu rice	-Provision for drainage channel to remove excess water. - If crop attains maturity stage, harvest the crop at physiological maturity stage.	Preparation of drainage channel under MGNREGA

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
Hail storm under irrigated condition	1) Medium / medium low /lowland land (sandy loam to clay loam)	Summer rice/ Early ahu with long duration local cultivars and hybrid rice variety	Adoption of Short duration rice varieties like Luit Kolong, Dichang etc.	-	-
		Jute	Jute	<ul style="list-style-type: none"> • Growing of green manure 	-

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
				crops like Dhaincha along the border as wind barrier.	
	2) Upland (sandy loam to clay loam)	Summer vegetables	Summer vegetables/ high valued vegetable crops	<ul style="list-style-type: none"> • Installation of hail net • Plantation of wind break • Protected cultivation of high valued vegetable cro 	-Departmental schemes like NFSM, Technology Mission, RKVY for protected cultivation.
		Fruits (bananana, citrus etc)	Mulbhoog banana cultivation	<ul style="list-style-type: none"> • Installation of hail net • Plantation of wind break 	
	3) Flood prone	Summer rice/ Early ahu with long duration local cultivars and hybrid rice variety	Adoption of Short duration rice varieties like Luit Kolong, Dichang etc.	-	-

Notes:

^f Describe such as uplands, medium and low lands and source of irrigation

n 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 rain-fed and irrigated situations)

Condition	Suggested contingency measure			
	Vegetative stage ^k	Flowering stage ^l	Crop maturity stage ^m	Post harvest ⁿ
Continuous high rainfall in a short span leading to water logging				
Crop1 Summer rice	-Sow rice seed in raised nursery bed with 30cm gap between two beds which can be utilized to drain out excess water. - Excess rain water to be drained out through surface drainage channel to avoid submergence in the main field. -Light hoeing and weeding	Excess rain water to be drained out through surface drainage channel to avoid submergence	-Excess rain water to be drained out through surface drainage channel to avoid submergence -Crop to be harvested at physiological maturity stage.	-Proper drying of grains to maintain optimum moisture percentage (12-14%) for storage
Crop2 Winter rice	-Sow rice seed in raised nursery bed with 30cm gap between two beds which can be utilized to drain out excess water. - Excess rain water to be drained out through surface drainage channel to avoid submergence in the main field. -Light hoeing and weeding	Excess rain water to be drained out through surface drainage channel to avoid submergence	-Excess rain water to be drained out through surface drainage channel to avoid submergence. -Crop to be harvested at physiological maturity stage	-Proper drying of grains to maintain optimum moisture percentage (12-14%) for storage
Crop3 Sesame	-Excess rain water to be drained out through surface drainage channel of 25cm wide, 15cm deep spaced at 6 m	Excess rain water to be drained out through surface drainage channel of 25cm wide, 15cm deep spaced at 6 m	-Excess rain water to be drained out through surface drainage channel of 25cm wide, 15cm deep spaced at 6 m.	-Proper drying of grains to maintain optimum moisture percentage for storage

	-Light hoeing and weeding		-Crop to be harvested at physiological maturity stage.	
Crop4 Jute	- Drainage -If top dressing of N fertilizer is not possible, foliar spray of urea (11.5 kgN/ha) at 40-45 days and 55-60 days after sowing.,	Drainage	Drainage	Proper drying
Crop5 Sugarcane	-First & second earthing up at 45-60 and 90-120 days after planting, respectively. --Make trenches/furrows in between ridges to facilitate drainage of excess water during high rainfall.	Drainage - Make trenches/furrows in between ridges to facilitate drainage of excess water during high rainfall.	Drainage- Make trenches/furrows in between ridges to facilitate drainage of excess water during high rainfall.	-
Horticulture				
Crop1 Chilli	-Drainage - Plant protection measures against anthracnose	-Drainage - Application of hormones, nutrient, sprays to prevent flower drop.	-Drainage -Plant protection measures against fruit rot --Crop to be harvested at physiological maturity stage.	-Shifting of the produce to drier place. - sell the produce immediately.
Crop2 Potato	-Drainage -Proper plant protection measure against late blight -Earthing up at 25 and 60 days after planting.	-Drainage -Proper plant protection measure against late blight	-Drainage -Harvesting of tuber	-proper drying of the produce. -Keep drier place before storage
Crop3 Vegetables	-Drainage - Application of hormones, nutrient, sprays to prevent	-Drainage - Application of hormones, nutrient, sprays to prevent	Drainage	Shifting of the produce to drier place, cold storage.

	flower drop.	flower drop.		
Heavy rainfall with high speed winds in a short span²				
Crop1 Summer rice	<ul style="list-style-type: none"> -Sow rice seed in raised nursery bed with 30cm gap between two beds which can be utilized to drain out excess water. - Excess rain water to be drained out through surface drainage channel to avoid submergence in the main field. 	<ul style="list-style-type: none"> - Excess rain water to be drained out through surface drainage channel to avoid submergence in the main field 	<ul style="list-style-type: none"> -Crop to be harvested at physiological maturity stage. 	<ul style="list-style-type: none"> -Proper drying of grains to maintain optimum moisture percentage (12-14%) for storage
Crop2 Jute	<ul style="list-style-type: none"> - If top dressing of N fertilizer is not possible, foliar spray of urea (11.5 kgN/ha) at 40-45 days and 55-60 days after sowing., -Propping: crop should be provided mechanical support to prevent lodging - Growing of green manure crops like Dhaincha along the border as wind barrier. 	<ul style="list-style-type: none"> -Propping: crop should be provided mechanical support to prevent lodging - Growing of green manure crops like Dhaincha along the border as wind barrier. 	<ul style="list-style-type: none"> -Propping: crop should be provided mechanical support to prevent lodging - Growing of green manure crops like Dhaincha along the border as wind barrier. 	<ul style="list-style-type: none"> -Proper drying
Crop3 Maize	<ul style="list-style-type: none"> - Proper drainage - Provision for wind breaks 	<ul style="list-style-type: none"> - Proper drainage - Provision for wind breaks 	<ul style="list-style-type: none"> -Crop to be harvested at physiological maturity stage. 	<ul style="list-style-type: none"> -proper drying
Crop4 Sugarcane	<ul style="list-style-type: none"> -First & second earthing up at 45-60 and 90-120 days after planting, respectively. --Make trenches/furrows in between ridges to facilitate 	<ul style="list-style-type: none"> -Drainage -Striping & propping 	<ul style="list-style-type: none"> -Drainage -Striping & propping 	<ul style="list-style-type: none"> Harvesting should be done before rain as far as possible Drying to remove excess moisture of

	drainage of excess water during high rainfall.			canes
Crop5 Winter rice	-Sow rice seed in raised nursery bed with 30cm gap between two beds which can be utilized to drain out excess water. - Excess rain water to be drained out through surface drainage channel to avoid submergence in the main field.	- Excess rain water to be drained out through surface drainage channel to avoid submergence in the main field	-Crop to be harvested at physiological maturity stage.	-Proper drying of grains to maintain optimum moisture percentage (12-14%) for storage
Horticulture				
Crop1 Banana	Drainage, Make trenches/furrows in between ridges to facilitate drainage of excess water, propping.	Drainage, Make trenches/furrows in between ridges to facilitate drainage of excess water, propping.	Drainage, Make trenches/furrows in between ridges to facilitate drainage of excess water, propping.	Shifting of the produce to drier place
Crop2 Vegetable (climbers)	Drainage, make trenches/furrows in between ridges to facilitate drainage of excess water, propping.	Drainage ,Application of hormones, nutrient, sprays to prevent flower drop.	Drainage	Shifting of the produce to drier place, Cold storage.
Crop3 Okra	Drainage	Drainage , Application of hormones, nutrient, sprays to prevent flower drop.	Drainage	Shifting of the produce to drier place ,Harvesting should be done before rain as far as possible, Drying to remove excess moisture of produce.
Outbreak of pests and diseases due to unseasonal rains				
Crop1 summer rice	-Application of pesticides like chloropyriphos or Monochrotophos @ 2 ml/lit	-Rouging if infected plant , - Application of pesticides like chloropyriphos or	-	-Insect pest and disease infested seed/grains should be discarded

	<p>against stem borer, leaf folder, case worm.</p> <ul style="list-style-type: none"> -Adoption IPM module. -Alternate flooding and drying against case worm. -Application of carbendazim @ 1g/l against blast and sheath blight. Water from the sheath blight infested field should not be allowed to enter disease free field. 	<p>Monochrotophos @ 2 ml/lit against stem borer</p> <ul style="list-style-type: none"> -Adoption IPM module against stem borer -Spraying of pesticide should not coincide pollination time. -Application of carbendazim @ 1g/l against blast and sheath blight. Water from the sheath blight infested field should not be allowed to enter disease free field. 		
Crop2 Winter rice	<ul style="list-style-type: none"> -Application of pesticides like chloropyriphos or Monochrotophos @ 2 ml/lit against stem borer, leaf folder, case worm. -Adoption IPM module. -Alternate flooding and drying against case worm. -Application of carbendazim @ 1g/l against blast and sheath blight. Water from the sheath blight infested field should not be allowed to enter disease free field. 	<ul style="list-style-type: none"> -Rouging if infected plant , - Application of pesticides like chloropyriphos or Monochrotophos @ 2 ml/lit against stem borer -Adoption IPM module against stem borer -Spraying of pesticide should not coincide pollination time. -Application of carbendazim @ 1g/l against blast and sheath blight. Water from the sheath blight infested field should not be allowed to enter disease free field. 	-	Insect pest and disease infested seed/grains should be discarded
Crop3 Jute	<ul style="list-style-type: none"> - Jute hairy caterpillar, semi looper etc. are to be hand picked and destroyed by putting in kerosinazed water. - Alternatively, apply Fenitrothion 50 Ec @ 1ml/l(3 sprayings) - In case of root rot, stem rot, seedling blight, apply carbendazim @ 1g/l of water. Application of potash should 	-	-	-Discard insect pest and disease infested plants to maintain the quality.

	be increased up to 50 kg/ha			
Crop4 Black gram	<ul style="list-style-type: none"> - Against YMV, spray Dimethoate @ 2ml/l (2 -3 spraying) - Against jassids, aphids, flee beetle, leaf folder, spray Malathion 50 Ec @ 2 ml/l of water. - Against damping off, root rot and seedling blight, apply carbendazim @ 1g/l of water. 	<ul style="list-style-type: none"> - Against YMV, spray Dimethoate @ 2ml/l (2 -3 spraying) - Against jassids, aphids, flee beetle, leaf folder, spray Malathion 50 Ec @ 2 ml/l of water. 	<ul style="list-style-type: none"> - Against pod borer & pod bug, spray Malathion 50 Ec @ 2 ml/l of water. 	Insect pest and disease infested seed/grains should be discarded

Horticulture				
Crop1 Potato	<ul style="list-style-type: none"> -Depending on the weather condition, Mancozeb @ 2.5 g/l should be sprayed as prophylactic measures against late blight. -Against late blight, 6 spraying with Mancozeb 2.5g/l of water at an interval of 12 days. -Use of sticker is essential in the spray solution for spraying during rainy weather. -Drainage of excess water 	-	-	-Discard disease and insect infested tubers.
Crop2 Tomato	<ul style="list-style-type: none"> -Depending on the weather condition, Mancozeb @ 2.5 g/l should be sprayed as prophylactic measures against late blight. -Against late blight, 6 spraying with Mancozeb 2.5g/l of water at an interval of 12 days. -Use of sticker is essential in the spray solution for spraying during rainy weather. -Drainage of excess water 	-	-	-Discard disease and insect infested fruits.

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^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 measure			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Transient water logging/ partial inundation¹				
Crop1 Summer rice	-Raised nursery bed with 30 cm gap in between two beds so that excess water can be removed.	-Drainage of excess water	-Drainage of excess water	Harvesting at physiological maturity stage, tying the harvested head and transferred to dry place for drying
Crop2 Winter rice	-Raised nursery bed with 30 cm gap in between two beds so that excess water can be removed.	-Drainage of excess water	-Drainage of excess water	Harvesting at physiological maturity stage, tying the harvested head and transferred to dry place for drying
Crop3 Jute	-Drainage of flood water	-Drainage of flood water -Folia application of urea instead of top dressing is advocated	-	-Harvested plants should be made in bundles and to be kept in standing position for 2-4 days.
Crop4 Sesame	-Drainage of flood water -Hoeing in between lines for aeration in root zone after flood	- Drainage of flood water -Hoeing in between lines for aeration in root zone after flood.	- Drainage of flood water -Hoeing in between lines for aeration in root zone after flood.	-Harvesting at physiological maturity stage. -Proper drying of produce

Crop5 Black gram	-Drainage of flood water -Hoeing in between lines for aeration in root zone after flood	- Drainage of flood water -Hoeing in between lines for aeration in root zone after flood.	- Drainage of flood water -Hoeing in between lines for aeration in root zone after flood.	-Harvesting at physiological maturity stage. -Proper drying of produce
Horticulture /Plantation crops				
Crop1 Banana	-Drainage, -Make trenches/furrows in between rows to facilitate drainage of excess water, propping.	-Drainage, -Make trenches/furrows in between rows to facilitate drainage of excess water, propping.	-Drainage, -Make trenches/furrows in between rows to facilitate drainage of excess water, propping.	-Drainage, -Make trenches/furrows in between rows to facilitate drainage of excess water, propping.
Crop2 Kharif Vegetable	-Drainage of flood water -Hoeing in between lines for aeration in root zone after flood	-Drainage of flood water -Hoeing in between lines for aeration in root zone after flood	-Drainage of flood water -Hoeing in between lines for aeration in root zone after flood	-Harvesting of produce as early as possible
Crop3 Arecanut	Drainage, Make trenches/furrows in between rows to facilitate drainage of excess water	Drainage, Make trenches/furrows in between rows to facilitate drainage of excess water	Drainage, Make trenches/furrows in between rows to facilitate drainage of excess water	-
Continuous submergence for more than 2 days²				
Crop1 Summer rice	-Raised nursery bed with 30 cm gap in between two beds so that excess water can be removed.	-Drainage of excess water	-Drainage of excess water	Harvesting at physiological maturity stage, tying the harvested head and transferred to dry place for drying

Crop2 Winter rice	<p>-Raised nursery bed with 30 cm gap in between two beds so that excess water can be removed.</p> <p>-If seedlings are damaged by flood water, resowing may be done with the following varieties-</p> <p>-If transplanting can be done by mid August, select varieties like Satyaranjan, Basundhara, IR -36, Jaya etc. Seedlings should be raised in non flood prone or high land area.</p> <p>- If transplanting is possible during last part of August, short duration varieties such as Luit, Kolong, Dishang etc. can also be selected (transplanting up to last part of August). 20-25 days old seedling should be transplanted at 20x15 cm spacing with 4-5 seedlings/hill.</p> <p>.</p>	<p>-Drainage of excess water</p> <p>-If crop is damaged by flood, the nursery may be raised with the following varieties-</p> <p>- If transplanting is possible during last part of August, short duration varieties such as Luit, Kolong, Dishang etc. can also be selected (transplanting up to last part of August). 20-25 days old seedling should be transplanted at 20x15 cm spacing with 4-5 seedlings/hill.</p> <p>-If flood damages crop during last part of August and there is no time to raise seedlings, direct seeding (wet seeding) of extra short duration high yielding varieties such as Luit, Kolong, Dichang etc or any traditional photo period sensitive coarse grain varieties can also be done up to 1st week of September. Sprouted seed of 75 kg/ha is to be broadcast in puddle field.</p>	-Drainage of excess water	Harvesting at physiological maturity stage, tying the harvested head and transferred to dry place for drying
Crop3 Jute	<p>-Drainage of flood water</p> <p>- Re sowing may required if crop is damaged by flood.</p>	<p>-Drainage of flood water</p> <p>-Folia application of urea instead of top dressing is advocated</p>	-	-Harvested plants should be made in bundles and to be kept in standing position for 2-4 days.

Crop4 Sesame	-Drainage of flood water - Re sowing may required if crop is damaged by flood. -Hoeing in between lines for aeration in root zone after flood	- Drainage of flood water -Hoeing in between lines for aeration in root zone after flood.	- Drainage of flood water -Hoeing in between lines for aeration in root zone after flood.	-Harvesting at physiological maturity stage. -Proper drying of produce
Crop5 Black gram	-Drainage of flood water - Re sowing may required if crop is damaged by flood. -Hoeing in between lines for aeration in root zone after flood	- Drainage of flood water -Hoeing in between lines for aeration in root zone after flood.	- Drainage of flood water -Hoeing in between lines for aeration in root zone after flood.	-Harvesting at physiological maturity stage. -Proper drying of produce
Horticulture / Plantation crops				
Crop1 Banana	-Drainage, -Make trenches/furrows in between rows to facilitate drainage of excess water, propping. -Replanting if crop is damaged by flood	-Drainage, -Make trenches/furrows in between rows to facilitate drainage of excess water, propping.	-Drainage, -Make trenches/furrows in between rows to facilitate drainage of excess water, propping.	-Drainage, -Make trenches/furrows in between rows to facilitate drainage of excess water, propping.
Crop2 Kharif Vegetable	-Drainage of flood water - Re sowing may required if crop is damaged by flood. -Hoeing in between lines for aeration in root zone after flood	-Drainage of flood water -Hoeing in between lines for aeration in root zone after flood	-Drainage of flood water -Hoeing in between lines for aeration in root zone after flood	-Harvesting of produce as early as possible
Crop3 Areca nut	Drainage, Make trenches/furrows in between rows to facilitate drainage of excess water Replanting	Drainage, Make trenches/furrows in between rows to facilitate drainage of excess water	Drainage, Make trenches/furrows in between rows to facilitate drainage of excess water	-

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Notes:

Flood situation could arise during early season (eg. summer season) or in the main season; Accordingly contingency measures could be suggested

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 : NA

Does not arise for Dhubri district

Extreme event type	Suggested contingency measure ^f			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Heat Wave^p				
Crop1				
Crop2				
Crop3				
Crop4				
Crop 5				
Horticulture				
Crop1 (specify)				

Crop2				
Crop3				
Cold wave^a				
Crop1				
Crop2				
Crop3				
Crop4				
Crop 5				
Horticulture				
Crop1 (specify)				
Crop2				
Crop3				
Frost				
Crop1				
Crop2				
Crop3				
Crop4				
Crop 5				
Horticulture				
Crop1 (specify)				
Crop2				
Crop3				
Hailstorm				
Crop1				
Crop2				
Crop3				
Crop4				
Crop 5				

Horticulture				
Crop1 (specify)				
Crop2				
Crop3				
Cyclone				
Crop1				
Crop2				
Crop3				
Crop4				
Crop 5				
Horticulture				
Crop1 (specify)				
Crop2				
Crop3				
Sand deposition or heavy siltation				
Specify crop/horticulture/plantation				

Notes:

^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.

2.5 Contingent strategies for Livestock, Poultry & Fisheries

2.5.1 Livestock

	Suggested contingency measures		
	Before the event ^s	During the event	After the event
Drought			
Feed and fodder availability	<ul style="list-style-type: none"> ➤ Cultivation of perennial fodder ➤ Encouraging hay making ➤ Silage preparation ➤ Making facility for block feed ➤ Quality up gradation of inferior quality roughages like paddy straw, wheat straw etc. with urea treatment. ➤ Mass awareness on feeding the livestock unconventional feeds and various byproducts. ➤ Insurance 	<ul style="list-style-type: none"> ➤ Feeding fodders from perennial trees. ➤ Feeding already prepared silage and hay. ➤ Providing feed blocks, unconventional feeds and various byproducts. ➤ Providing urea treated straw. 	<ul style="list-style-type: none"> ➤ Availing insurance ➤ Culling of affected and unproductive animals. ➤ Fodder rejuvenation
Drinking water	<ul style="list-style-type: none"> ➤ Storing water in tanks for the hard period ➤ Insurance 	<ul style="list-style-type: none"> ➤ Offering stored water to the livestock. ➤ Animals not to be exposed outside 	<ul style="list-style-type: none"> ➤ Culling of affected and unproductive animals.
Health and disease management	<ul style="list-style-type: none"> ➤ Timely vaccinations against various diseases. ➤ Veterinary preparedness like storing required medicines and other accessories ➤ Mass awareness programme on management of livestock during draught. ➤ Insurance of animals 	<ul style="list-style-type: none"> ➤ Immediate treatment of the sick animals. ➤ Conducting animal health camps during the period. 	<ul style="list-style-type: none"> ➤ Culling of unproductive animals ➤ Availing insurance
Floods			
Feed and fodder availability	<ul style="list-style-type: none"> ➤ Maintenance of fodder bank in community land ➤ Silage preparation ➤ Mass awareness on feeding the livestock unconventional feeds and various byproducts. 	<ul style="list-style-type: none"> ➤ Providing feed blocks, unconventional feeds and various byproducts ➤ Keep animals in safe place like raised 	<ul style="list-style-type: none"> ➤ Availing insurance ➤ Culling of affected and unproductive

	<ul style="list-style-type: none"> ➤ Stocking of concentrated feed in sufficient quantity. ➤ Insurance ➤ Raised platform 	platform/upland	<p>animals.</p> <ul style="list-style-type: none"> ➤ Fodder rejuvenation ➤ Health check-up and vaccination
Drinking water	<ul style="list-style-type: none"> ➤ Storing water in tanks ➤ Insurance 	➤ Offering stored water to the livestock.	➤ Treating of drinking water.
Health and disease management	<ul style="list-style-type: none"> ➤ Timely vaccinations against various diseases. ➤ Veterinary preparedness like storing required medicines and other accessories ➤ Mass awareness programme on management of livestock during draught. 	<ul style="list-style-type: none"> ➤ Immediate treatment of the sick animals. ➤ Conducting animal health camps during the period. 	<ul style="list-style-type: none"> ➤ Culling of unproductive animals ➤ Availing insurance ➤ Health check-up and vaccination
Cyclone			
Feed and fodder availability			
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

	Suggested contingency measures			Convergence/linkages with ongoing programs, if any
	Before the event ^a	During the event	After the event	
Drought				
Shortage of feed ingredients	<ul style="list-style-type: none"> ➤ Insurance ➤ Storage of feed 	<ul style="list-style-type: none"> ➤ Offering stored feed 	<ul style="list-style-type: none"> ➤ Availing Insurance ➤ Culling unproductive birds. 	
Drinking water	<ul style="list-style-type: none"> ➤ Preserving water in tank 	<ul style="list-style-type: none"> ➤ Offering stored water 	<ul style="list-style-type: none"> ➤ Culling unproductive birds. 	
Health and disease management	<ul style="list-style-type: none"> ➤ Timely vaccinations against various diseases. ➤ Veterinary preparedness ➤ Mass awareness programme on management of poultry during draught. 	<ul style="list-style-type: none"> ➤ Immediate treatment of the sick animals. ➤ Conducting animal health camps during the period. 	<ul style="list-style-type: none"> ➤ Culling of unproductive birds ➤ Availing insurance 	Linkages may be made with the State Animal Husbandry and Veterinary Department for vaccination and other health measures through their various schemes.
Floods			<ul style="list-style-type: none"> ➤ 	
Shortage of feed ingredients	<ul style="list-style-type: none"> ➤ Insurance ➤ Storage of feed 	<ul style="list-style-type: none"> ➤ Immediate treatment of the sick birds 	<ul style="list-style-type: none"> ➤ Culling of unproductive birds ➤ Availing insurance 	
Drinking water	<ul style="list-style-type: none"> ➤ Preserving water in 	<ul style="list-style-type: none"> ➤ Immediate 	<ul style="list-style-type: none"> ➤ Culling of 	

	tank	treatment of the sick birds	unproductive birds ➤ Availing insurance	
Health and disease management	<ul style="list-style-type: none"> ➤ Timely vaccinations against various diseases. ➤ Veterinary preparedness ➤ Mass awareness programme on management of poultry during flood 	➤ Immediate treatment of the sick birds	<ul style="list-style-type: none"> ➤ Culling of unproductive birds ➤ Availing insurance 	
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

	Suggested contingency measures
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	Before the event^a	During the event	After the event
1) Drought			
A. Capture			
Marine	-	-	-
Inland			
(i) Shallow water depth due to insufficient rains/inflow	<ul style="list-style-type: none"> • Stop over exploitation • Restrict release of water from reservoir. • Water harvesting structure to supply water during the event 	<ul style="list-style-type: none"> • Stop over exploitation • Fingerlings and brood fishes, if caught, to be released back to safe waters • Shift fish stock to deeper water, especially in case of pens • Drying of fish or production of value added fish products from the over harvested stock 	<ul style="list-style-type: none"> • Re stocking, wherever possible. • Digging of pond to increase the depth.
(ii) Changes in water quality	<ul style="list-style-type: none"> • Thinning out of stock against reduced dissolved oxygen and space • Removal of aquatic weeds 	<ul style="list-style-type: none"> • Proper aeration 	<ul style="list-style-type: none"> • Remove aquatic vegetation
(iii) Any other			
B. Aquaculture			
(i) Shallow water in ponds due to insufficient rains/inflow	<ul style="list-style-type: none"> • For pond construction select soils with sufficient clay for retention of water. • Apply sufficient organic manure during preparation to minimize water loss through 	<ul style="list-style-type: none"> • Pump in water from other water source (nearby spring, stream, rivers etc) or ground water, if any. • Reduce food for minimum metabolism. 	<ul style="list-style-type: none"> • Extended seed production • Restock the pond. • Integrated fish farming • Short duration culture of species that are fast growing in initial stage and can be

	seepage. <ul style="list-style-type: none"> • Insurance • Excavation of bore wells • Reduce biomass and stocking density through partial harvesting. • Sell out the fishes attaining marketable size to minimize loss. • Stock fishes that can thrive low water depth, like air breathing fishes. • Maintenance of proper record for claiming compensation, especially in schemes assisted by Govt. or financial institutes. • Planning for rain water harvest. 	<ul style="list-style-type: none"> • Restrict fertilizer for preventing algal bloom and minimum stress. • Dig deep trench in convenient part of the pond to save brood fishes. • Careful observation on daily basis. • Scare away birds and other animals (attracted by shallow water to catch fish) – may be vector for diseases. 	marketed at small size (minor and medium carps). <ul style="list-style-type: none"> • Air breathing fish culture • Claim compensation with support of record and documents. • Paddy cum fish culture
(ii) Impact of salt load build up in ponds / change in water quality	<ul style="list-style-type: none"> • Thinning out of stock against reduced dissolved oxygen and space 	<ul style="list-style-type: none"> • Recirculation of water and/or aeration. • Careful observation on daily basis. 	-
(iii) Any other	-	-	-
2) Floods			
A. Capture			
Marine	-	-	-
Inland	<ul style="list-style-type: none"> • Preparation for pen and cage culture 	<ul style="list-style-type: none"> • Pen & cage culture • Can get engaged in other related activities like net 	<ul style="list-style-type: none"> • Desilting & weed removal if possible

		and gear making.	
(i) No. of boats / nets/damaged			
(ii) No.of houses damaged			
(iii) Loss of stock			<ul style="list-style-type: none"> • Pen & cage culture
(iv) Changes in water quality			
(v) Health and diseases			
B. Aquaculture			
(i) Inundation with flood water	<ul style="list-style-type: none"> • Insurance • Repairing, turfing and compaction of peripheral embankments. • Horticulture on the embankment to prevent erosion. • Sufficient bamboo poles and nylon nets to be kept ready. • ‘High stocking multiple harvesting’ can be taken up. • Sell out the fishes attaining marketable size to minimize loss. • Maintenance of proper record for claiming compensation, especially in schemes assisted by Govt. or financial institutes. 	<ul style="list-style-type: none"> • Surround the pond with nets supported by bamboo poles to prevent escape of fish. • Supply sufficient food to fishes to reduce tendency of escaping from the pond. • • 	<ul style="list-style-type: none"> • Desilting. • Restock the pond if original stock escapes. • Integrated fish farming • Short duration culture of species that are fast growing and can be marketed at small size. • Claim compensation with support of record and documents. • Removal of unwanted/ predatory fish from pond before stocking. • Paddy cum fish culture • • •
(ii) Water contamination and changes in water quality	<ul style="list-style-type: none"> • Prevent entry of water from outside. 	<ul style="list-style-type: none"> • Apply lime regularly as per recommendation. 	<ul style="list-style-type: none"> • Apply lime regularly as per recommendation.
(iii) Health and diseases	<ul style="list-style-type: none"> • Precaution to prevent entry of pesticide/insecticide laden 		<ul style="list-style-type: none"> • Remove muck and debris, if entered with flood.

	<p>water from nearby agricultural land.</p> <ul style="list-style-type: none"> Apply lime regularly as per recommendation. 		<ul style="list-style-type: none"> Apply preventive agents (eg. CIFAX) before on set of winter.
(iv) Loss of stock and inputs (feed, chemicals etc)			<ul style="list-style-type: none"> After possible repairing of the physical damage, take up late seed rearing to be stocked in the next year.
(v) Infrastructure damage (pumps, aerators, huts etc)			
(vi) Any other			<ul style="list-style-type: none"> Small scale homestead ornamental fish production, depending on the market.
3. Cyclone / Tsunami			
A. Capture	-	-	-
Marine	-	-	-
(i) Average compensation paid due to loss of fishermen lives	-	-	-
(ii) Avg. no. of boats / nets/damaged	-	-	-
(iii) Avg. no. of houses damaged	-	-	-
Inland	-	-	-
B. Aquaculture	-	-	-
(i) Overflow / flooding of ponds	-	-	-
(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	-	-	-
Inland	-	-	-
B. Aquaculture	-	-	-
(i) Changes in pond environment (water quality)	<ul style="list-style-type: none"> • Apply lime regularly as per recommendation. • Apply preventive agents (eg. CIFAX) before on set of winter. 	<ul style="list-style-type: none"> • Apply lime regularly as per recommendation. • Restrict application of fertilizer as per requirement. 	<ul style="list-style-type: none"> • Apply lime regularly as per recommendation.
(ii) Health and Disease management			
(iii) Any other	-	-	-

^a based on forewarning wherever available