

CONTINGENCY CROP PLANNING

STATE : ASSAM
 AGRICULTURE CONTINGENCY PLAN : BONGAIGAON DISTRICT

1.0 District Agriculture profile				
1.1	Agro- Climatic/ Ecological Zone	Lower Brahmaputra Valley Zone, Assam		
	Agro Ecological Sub Region (ICAR)	Hot moist humid to per-humid		
	Agro –Climatic Region (Planning Commission)	Eastern Himalayan Region		
	Agro Climatic Zone (NARP)*	Lower Brahmaputra Valley Zone, Assam		
	List all the districts falling under the NARP Zone	Kamrup, Nalbari, Barpeta, Bongaigaon, Baksa, Chirang, Kokrajhar, Dhubri, Goalpara		
	Geographic Coordinates of district	Latitude	Longitude	Altitude
		26°28' to 26° 54' North	89° to 90°96' East	31 m MSL
	Name and address of the concerned ZRS/ZARS/RARS/RRS/RRTTS	Regional Agricultural Research Station, AAU, Gossaigaon		
	Mention the KVK located in the district	Krishi Vigyan Kendra, Bongaigaon		
1.2	Rainfall	Average (mm)	Normal Onset (specify week and month)	Normal Cessation (specify week and month)
	SW monsoon (June-Sep):	2051.0	1 st week of June	Last week of September
	NE Monsoon (Oct-Dec):	193.9		
	Winter (Jan- Feb)	31.4		
	Summer (March-May)	826.1		
	Annual	3102.4		

*If a district falls in two NARP zones, mention the zone in which more than 50% area falls

1.3	Land use pattern of the district (latest statistics)	Geographical 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 (Lakh ha)	1.99	0.042	0.10	0.15	0.334	0.042	0.086	0.026	

1.4	Major Soils	Area ('000 ha)					Percent (%) of total				
	Blocks	Manikpur	Dangtol	Boitamari	Srijangram	Tapattari	Manikpur	Dangtol	Boitamari	Srijangram	Tapattari
	1. Light grey	19627	15679	14689	14831	10317	-	-	-	-	-
	2. Red soil (Mixed)	8411	8442	9391	5486	4012	-	-	-	-	-
	3. Sandy soil	4766	2895	3853	3048	3099	-	-	-	-	-
	4. Sandy loam	17384	15920	15411	13409	9600	-	-	-	-	-
	5. Clay loam	5888	5307	4816	3860	1719	-	-	-	-	-
	Others (specify):	-	-	-	-	-	-	-	-	-	-
1.5	Agricultural land use	Area ('000 ha)					Cropping intensity %				
	Net sown area	68.92					167%				
	Area sown more than once	-									
	Net irrigated area	17.164									
	Gross cropped area	115.10									

1.6	Irrigation	Area ('000 ha)	Percent (%)
	Net cultivated area	68.92	-
	Net irrigated area	17.164	-
	Gross cultivated area	115.10	-
	Gross irrigated area	28.66	-
	Rainfed area	51.76	-
	Sources of irrigation	Number	Area ('000 ha) % area
	Canals/channels	-	-

	Tanks	-	-	-
	Open wells / Bore wells	-	0.94	5.48
	STW	-	14.91	86.87
	Lift irrigation	-	1.066	6.21
	Other sources	-	0.248	1.44
	Total	-	17.164	-
	Pumpsets	-	-	-
	Micro-irrigation	-	-	-
	Groundwater availability and use	No. of blocks	% area	Quality of water
	Over exploited	-	-	-
	Critical	-	-	-
	Semi critical	-	-	-
	Safe	-	-	-
	Wastewater availability and use	-	-	-

*over-exploited: groundwater utilization > 100%; critical:90-100%; semi critical: 70-90%; safe: <70%

Area under major field crops & horticulture etc.

		Major field crops	Total area(ha)					
1		Rice (Sali)	60754					
2		Rice (Ahu)	34112					
3		Rice (Boro)	9983					
4		Rapeseed & mustard	13182					
5		Sesame	572					
6		Blackgram	2667					
7		Lentil	2417					
8		Wheat	5942					
9		Jute	2994					

	Horticulture crops- Fruits	Total area	Irrigated	Rainfed
1	Pineapple	257.0	-	-
2	Jackfruit	147.0	-	-
3	Litchi	254.0	-	-
4	Mango	95.0	-	-
5	Orange	98.0	-	-
6	Coconut	549.0	-	-
7	Banana	682.0	-	-
8	Assam lemon	252.0	-	-
9	Guava	52.0	-	-
	Horticultural crops- Vegetables	Total area	Irrigated	Rainfed
1	Kharif vegetables	1650.00	-	-
2	Rabi vegetables	2407.00	-	-
	Medicinal and Aromatic crops	Total area	Irrigated	Rainfed
1	Total Medicinal and Aromatic crops	124.0	-	-
	Plantation crops	Total area	Irrigated	Rainfed
	Miscellaneous crop	4.18	-	-
	Fodder crops	Total area	Irrigated	Rainfed
	Total fodder crop area	-	-	-
	Grazing land	15.01	-	-

*If break up data (irrigated, rainfed) is not available, give total area

1.8	Livestock	Number ('000)	
	Cows	Cross breed: 3.743	Indigenous: 216.236
	Buffaloes total	Cross breed: 1.238	Indigenous: 1.901
	Commercial dairy farms	18	
	Goat	84.023	
	Sheep	30.337	
	Others (Camel, Pig, Yak etc.)	Pig: Cross breed: 4.09	Indigenous: 8.177
1.9	Poultry	Chicken: 496.649	Duck: 137.916
	Commercial	-	

	Backyard	-		
1.10	Inland Fisheries	Area (ha)	Yield (t/ha)	Production (tones)
	Brackish water	-	-	-
	Fresh water	-	-	-
	Others (Ponds and Tanks)	494.00	-	-
	Water logged / beels	1794.40	-	-
	Swamps	96.44	-	-
	Low lying areas	43.85	-	-
	Derelict area	14.70	-	-

1.11	Production and productivity of major crops	Kharif		Rabi		Summer		Total	
		Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)
Crop1	Rice	71.0 (Sali rice)	1160.0 (Sali rice)	19.1 (Boro rice)	1913.0 (Boro rice)	32.3 (Ahu rice)	946.0 (Ahu rice)	122.40	1340.0
Crop 2	Toria	-	-	6.6	501.0	-	-	6.6	501.0
Crop 3	Jute	-	-	-	-	27.36	1645.0	27.36	1645.0
Crop 4	wheat	-	-	8.73	1435.0	-	-	8.73	1435.0
Crop 5	Vegetables	19.19	11630.0	39.48	16400.00	-	-	58.67	14015.0
Others	-	-	-	-	-	-	-	-	-

1.12	Sowing window for 5 major crops (Start and end of sowing period)	Crop1: Rice	2: Toria	3: Jute	4:Vegetables	5: Wheat
	Kharif- Rainfed	25 th may to 30 th sept	-	15 th March – 15 th May	15 th Feb to 15 th April	-
	Kharif- irrigated	-	-	-	-	-
	Rabi-Rainfed	-	15 th Oct-15 th Nov	-	-	-
	Rabi- irrigated	15 th Nov to 15 th Jan	-	-	15 th Oct to 30 th Nov	-
	Rabi-Rainfed		-	-	-	5 th Nov to 15 th Dec

Rabi- irrigated	15 th feb to 15 th March	-	-	-	-
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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			√
	Snowfall			√
	Landslide			√
	Earthquake			√
	Pests and disease outbreak (specify)		√ (rice stem borer, leaf folder, sheath blight, late blight, aphid)	
	Others (like fog, cloud bursting etc.)			√

*when contingency occurs in six out of 10years.

1.14	Include Digital maps of the district for	Location map of district with in State as Annexure I	Enclosed: Yes/ No √
		Mean annual rainfall as Annexure 2	Enclosed: Yes/ No √
		Soil map as Annexure 3	Enclosed: Yes/ No √

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)	Major Farming situation^a				
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/ Sesamum/ Wheat /Potato/ Rabi vegetables	No change	Recommended package of practices	-
		Summer vegetables/ Blackgram/Sesame (kharif) - Toria/Lentil/ Wheat/Potato/Rabi vegetables	No change	Recommended package of practices	-
	Rainfed medium land/medium low land (Sandy loam to clay loam)	Rice(Kharif)- Toria/ Rabi pulse/ Wheat/Potato/Rabi vegetables	No change	Recommended package of practices	-
		Rice (kharif) as monocropping	No change	Recommended package of practices	-
		Rice (kharif) – rice (rabi/summer)	No change	Recommended package of practices	-
	Flood prone (Loamy to clay	Summer vegetables – Toria/Lentil/	No change	Recommended package of practices	-

	loam)	Wheat/Potato/Rabi vegetables			
		Rice(Kharif) as mono cropping	No change	<p>-If transplanting is possible within July, select suitable varieties like Ranjit, Bahadur, Piolee, Mahsuri, etc.</p> <p>-If flood water recedes early and transplanting can be done by mid August, select varieties like Kushal, Prasadbhog, etc.</p> <p>-Select suitable rice varieties such as Satyaranjan, Basundhara, Luit and Kapilee (transplanting up to last part of August) where flood water is expected recede by the last part of August.</p> <p>-For chronically flood affected areas, select submergence tolerant rice varieties such as Jalashree, Jalkuwari and Plaban (12-15 days submergence tolerance) which can be transplanted in June-July.</p> <p>-Spraying of Chloropyriphos or Monochrotophos or Quinolphos @ 2ml/l against case worm and leaf folder infestation in rice.</p> <p>-Where bacterial leaf blight appears in rice, avoid top dressing of N- fertilizer and apply K-fertilizer @ 10 kg /ha as top dressing or 5kg/ha as 3% foliar spray.</p> <p>- Spraying of Chloropyriphos or</p>	- KVKs, RARSs under AAU, Jorhat are the source of Foundation & Certified seeds

				Quinolphos @ 2ml/l and apply 5 % Malathion dust in field bunds against rice swarming caterpillar.	
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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/Blackgram/ Lentil/ Wheat/Potato/ Rabi vegetables	No change	Recommended package of practices	-
		Summer vegetables/ Blackgram/Sesame (kharif) - Toria/Lentil/ Wheat/Potato/Rabi vegetables	No change	Recommended package of practices	-
	Rainfed medium land/medium low land (Sandy loam to clay loam)	Rice (Kharif)- Toria/Lentil/ Wheat/Potato/Rabi vegetables	No change	<ul style="list-style-type: none"> - Growing of medium duration rice varieties such as Satyaranjan, Basundhara, IR-36, etc. (transplanting up to mid 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. - Varieties such as Pankaj, Kushal, Lakhimi can be grown up to August 15 with 45 -50 days old seedlings. - Traditional photosensitive coarse grain varieties like 	KVKs, RARSs under AAU, Jorhat will be the source of Foundation & Certified seeds

				Manohar Sali, Andrew Sali, Solpona etc. can be grown 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.	
	Rice (Kharif) monocropping	No change	<p>-If transplanting is possible within July, HYVs like Ranjit, Bahadur, Mahsuri, Piolee, Kushal, Moniram etc can be selected.</p> <p>- Traditional photosensitive coarse grain varieties like Manohar Sali, Andrew Sali, Salpona etc. can be grown 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>-Growing of medium duration rice varieties such as Satyaranjan, Basundhara, IR-36, etc. (transplanting up to mid August).</p> <p>- 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>- Varieties such as Pankaj, Kushal, Lakhimi can be grown up to August 15 with 45 -50 days old seedlings.</p>	KVKs, RARs under AAU, Jorhat will be the source of Foundation & Certified seeds	
	Rice (Kharif) – Rice (Rabi/Summer)	No change	<p>- Growing of medium duration rice varieties such as Satyaranjan, Basundhara, IR-36, etc. (transplanting up to mid August).</p> <p>- 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>	KVKs, RARs under AAU, Jorhat will be the source of Foundation & Certified seeds	

				<ul style="list-style-type: none"> - Varieties such as Pankaj, Kushal, Lakhimi can be grown up to August 15 with 45 -50 days old seedlings. - Traditional photosensitive coarse grain varieties like Manohar Sali, Andrew Sali, Salpona etc. can be grown 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. 	
	Flood prone (Loamy to clay loam)	Summer vegetables – Toria/Lentil/ Wheat/Potato/Rabi vegetables	No change	Recommended package of practices	-
		Rice (Kharif) as mono cropping	No change	<ul style="list-style-type: none"> -If transplanting is possible within July, select suitable varieties like Ranjit, Bahadur, Piolee, Mahsuri, etc. -If flood water recedes early and transplanting can be done by mid August, select varieties like Kushal, Prasadbhog, etc. -Select suitable rice varieties such as Satyaranjan, Basundhara, Luit and Kapilee (transplanting up to last part of August) where flood water is expected recede by the last part of August. -For chronically flood affected areas, select submergence tolerant rice varieties such as Jalashree, Jalkuwari and Plaban (12-15 days submergence tolerance) which can be transplanted in June-July. -Spraying of Chloropyriphos or Monochrotophos or Quinolphos @ 2ml/l against case worm and leaf folder infestation in rice. 	KVKs, RARSs under AAU, Jorhat will be the source of Foundation & Certified seeds

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 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	No change	Recommended package of practices	-
		Summer vegetables/ Blackgram/Sesame (Kharif) - Toria/Lentil/ Wheat/Potato/Rabi vegetables	No change	Recommended package of practices	-
	Rainfed medium land/ medium low land (Sandy loam to clay loam)	Rice (Kharif)- Toria/Lentil/ Sesamum/ Wheat/Potato/Rabi vegetables	No change	<ul style="list-style-type: none"> - Select suitable short duration rice varieties such as Luit, Kapilee, Kolong etc. (transplanting up to last part of August). 20-25 days old seedling should be transplanted at 20x15 cm spacing with 4-5 seedlings/hill -Traditional coarse grain photosensitive varieties (upto 60 days old seedlings) like Manohar Sali, Andrew Sali, etc. can be grown. About 10 kg seed/ha is required with closer spacing (20 cm x 20 cm) and 6-8 seedlings/hill 	<ul style="list-style-type: none"> - KVKs, RARSs under AAU, Jorhat will be the source of Foundation & Certified seeds - Seedlings can be grown in Community Nursery
		Rice (Kharif) monocropping	No change	<ul style="list-style-type: none"> - Select suitable short duration rice varieties such as Luit, Kapilee, Kolong etc. (transplanting up to last part of August). 20-25 days old seedling should be transplanted at 20x15 cm spacing with 4-5 seedlings/hill -Traditional coarse grain photosensitive varieties (upto 60 days old seedlings) like Manohar Sali, Andrew Sali, etc. can be grown. About 10 kg seed/ha is required with closer spacing (20 cm x 20 cm) and 6-8 seedlings/hill 	<ul style="list-style-type: none"> - KVKs, RARSs under AAU, Jorhat will be the source of Foundation & Certified seeds - Seedlings can be grown in Community Nursery

		Rice (Kharif) – Rice (Rabi/Summer)	No change	<ul style="list-style-type: none"> - Select suitable short duration rice varieties such as Luit, Kapilee, Kolong etc. (transplanting up to last part of August). 20-25 days old seedling should be transplanted at 20x15 cm spacing with 4-5 seedlings/hill -Traditional coarse grain photosensitive varieties (upto 60 days old seedlings) like Manohar Sali, Andrew Sali, etc. can be grown. About 10 kg seed/ha is required with closer spacing (20 cm x 20 cm) and 6-8 seedlings/hill 	<ul style="list-style-type: none"> - KVKs, RARs under AAU, Jorhat will be the source of Foundation & Certified seeds - Seedlings can be grown in Community Nursery
	Flood prone (loamy to clay loam)	Summer vegetables – Toria/Lentil/ Wheat/Potato/Rabi vegetables	No change	Recommended package of practices	-
		Rice (winter) as mono cropping	No change	<ul style="list-style-type: none"> -If transplanting is possible within July, select suitable varieties like Ranjit, Bahadur, Piolee, Mahsuri, etc. -If flood water recedes early and transplanting can be done by mid August, select varieties like Satyaranjan, Basundhara etc. which can be transplanted up to last part of August. - Short duration rice varieties like Luit , Kapilee, Kalong etc can be transplanted up to last part of August - Manohar Sali, Biraj, Prasadbhog, Govindbhog etc. and traditional coarse grain photosensitive varieties with 45-60 days old seedlings can be transplanted with 6-8 seedlings per hill up to last part of August. - Select delayed planting varieties like Prafulla and Gitesh (60 days old seedlings) -For chronically flood affected areas, select submergence tolerant rice varieties such as Jalashree, Jalkuwari and Plaban (12-15 days submergence tolerance) which can be transplanted in June-July. 	<ul style="list-style-type: none"> - KVKs, RARs under AAU, Jorhat will be the source of Foundation & Certified seeds

				<p>-Spraying of Chloropyriphos or Monochrotophos or Quinolphos @ 2ml/l against case worm and leaf folder infestation in rice.</p> <p>-Where bacterial leaf blight appears in rice, avoid top dressing of N- fertilizer and apply K-fertilizer @ 10 kg /ha as top dressing or 5kg/ha as 3% foliar spray.</p> <p>- Spraying of Chloropyriphos or Quinolphos @ 2ml/l and apply 5 % Malathion dust in field bunds against rice swarming caterpillar.</p>	
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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)	Major Farming situation ^a				
Delay by 8 weeks (Specify month)* MONTH: 1 ST WEEK OF AUGUST	Rainfed upland (Sandy loam to clay loam)	Rice (DS)- Toria/Lentil/ Wheat/Potato/Rabi vegetables	No change	Recommended package of practices	-
		Summer vegetables/ Blackgram/ Sesame (Kharif) - Toria/Lentil/ Wheat/Potato/Rabi vegetables	No change	Recommended package of practices	-
(REFER TO THE MATRIX TABLE)	Rainfed medium land/medium low land (Sandy loam to clay loam)	Rice (Kharif)- Toria/Lentil/ Wheat/Potato/Rabi vegetables	No change	<p>- Select suitable short duration rice varieties such as Luit, Kapilee, Kolong etc. (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>-Traditional coarse grain photosensitive varieties (upto 60 days old seedlings) like</p>	<p>- KVKs, RARSs under AAU, Jorhat will be the source of Foundation & Certified seeds</p> <p>- Seedlings can be grown in</p>

				Manohar Sali, Andrew Sali, etc. can be grown. About 10 kg seed/ha is required with closer spacing (20 cm x 20 cm) and 6-8 seedlings/hill - Direct seeding (wet seeding) of extra short duration high yielding varieties such as Luit, Kolong, Dichang etc	Community Nursery
		Rice (Kharif) monocropping	No change	- Select suitable short duration rice varieties such as Luit, Kapilee, Kolong etc. (transplanting up to last part of August). 20-25 days old seedling should be transplanted at 20x15 cm spacing with 4-5 seedlings/hill -Traditional coarse grain photosensitive varieties (upto 60 days old seedlings) like Manohar Sali, Andrew Sali, etc. can be grown. About 10 kg seed/ha is required with closer spacing (20 cm x 20 cm) and 6-8 seedlings/hill - Direct seeding (wet seeding) of extra short duration high yielding varieties such as Luit, Kolong, Dichang etc	- KVKs, RARs under AAU, Jorhat will be the source of Foundation & Certified seeds - Seedlings can be grown in Community Nursery
		Rice (Kharif) – Rice (Rabi/Summer)	No change	- Select suitable short duration rice varieties such as Luit, Kapilee, Kolong etc. (transplanting up to last part of August). 20-25 days old seedling should be transplanted at 20x15 cm spacing with 4-5 seedlings/hill -Traditional coarse grain photosensitive varieties (upto 60 days old seedlings) like Manohar Sali, Andrew Sali, etc. can be grown. About 10 kg seed/ha is required with closer spacing (20 cm x 20 cm) and 6-8 seedlings/hill - Direct seeding (wet seeding) of extra short	- KVKs, RARs under AAU, Jorhat will be the source of Foundation & Certified seeds - Seedlings can be grown in Community Nursery

				duration high yielding varieties such as Luit, Kolong, Dichang etc	
Flood prone (Loamy to clay loam)	Summer vegetables – Toria/Lentil/ Wheat/Potato/Rabi vegetables	No change		Recommended package of practices	-
	Sali (Kharif) as mono cropping	No change		<p>-If flood water recedes early and transplanting can be done by mid August, select varieties like Satyaranjan, Basundhara etc. which can be transplanted up to last part of August.</p> <p>- Short duration rice varieties like Luit , Kapilee, Kalong etc can also be transplanted up to last part of August. Crop should be transplanted at closer spacing with recommended dose of fertilizer as basal.</p> <p>- Manohar Sali, Biraj, Prasadbhog, Govinda bhog etc. and traditional coarse grain photosensitive varieties with 45-60 days old seedlings can be transplanted with 6-8 seedlings per hill up to last part of August.</p> <p>- Select delayed planting varieties like Prafulla and Gitesh (60 days old seedlings)</p> <p>-For chronically flood affected areas, select submergence tolerant rice varieties such as Jalashree, Jalkuwari and Plaban (12-15 days submergence tolerance) which can be transplanted in June-July.</p> <p>-Spraying of Chloropyriphos or Monochrotophos or Quinolphos @ 2ml/l against case worm and leaf folder infestation in rice.</p> <p>-Where bacterial leaf blight appears in rice,</p>	KVKs, RARSs under AAU, Jorhat will be the source of Foundation & Certified seeds

				avoid top dressing of N- fertilizer and apply K-fertilizer @ 10 kg /ha as top dressing or 5kg/ha as 3% foliar spray. - Spraying of Chloropyriphos or Quinolphos @ 2ml/l and apply 5 % Malathion dust in field bunds against rice swarming caterpillar.	
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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	Sept 1 st wk
July 2 nd wk	July 4 th wk	Aug 2 nd wk	Aug 4 th wk	Sept 2 nd wk

Condition	Suggested Contingency measures				
Early season drought (Normal onset)	Major Farming situation ^a	Crop/ cropping system ^b	Change in crop/ cropping system ^c	Soil nutrient & moisture conservation measures ^d	Remarks on Implementation ^e
Normal onset	Rainfed upland	Rice (DS)- Toria/Rabi	No change	-Life saving supplemental irrigation	- Water harvesting

followed by 15-20 days dry spell after sowing leading to poor germination/ crop stand etc.	(Sandy loam to clay loam)	pulse / Wheat/Potato/Rabi vegetables		-Weeding and thinning at critical stages of growth. -Application of sufficient quantity of FYM or compost in the main field.	structures under MNREGA for life saving irrigation - Arrangement of pumpsets from RKVY and NFSM
		Summer vegetables/ Blackgram/Sesame (Kharif) - Toria/Lentil/ Wheat/Potato/Rabi vegetables	No change	-Life saving supplemental irrigation -Weeding at critical stages of growth. - Application of sufficient quantity of FYM or compost in the main field -Two to three spraying of Dimethoate or Endosulfan @ 2ml/l starting from 10 days after germination at 15 days interval against YMV	- Water harvesting structures under MNREGA for life saving irrigation - Arrangement of pumpsets from RKVY and NFSM
	Rainfed medium land/ medium low land (Sandy loam to clay loam)	Rice (winter)- Toria/Lentil/ Wheat/Potato/Rabi vegetables	No change	-Supplemental irrigation in the nursery bed of rice. -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 -Spraying of Mancozeb @ 2.5g/l or Edinophos 2 1ml/l or Carbendazim @ 1g/l against brown spot disease in rice -Spraying of phosphamidon @ 1-1.5 ml/l against rice mealy bug	- Water harvesting structures under MNREGA for life saving irrigation - Arrangement of pumpsets from RKVY and NFSM
		Rice (winter) monocropping	No change		
		Rice (winter) – rice (Autumn/summer)	No change		
	Flood prone (Loamy to clay loam)	Summer vegetables – Toria/Lentil/ Wheat/Potato/Rabi vegetables	No change	-Supplementary life saving irrigation at critical crop stages	- Water harvesting structures under MNREGA for life saving irrigation

		Sali rice as mono cropping	No change	<p>-Prepare dry, well bunded, flat seedbed with adequate FYM(30 kg), 80g urea, 80g SSP and 80g MOP per bed of 10mx1.25m</p> <p>-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.</p> <p>-Seed treatment with 4% MOP (600ml/kg of seed) for 24 hrs, dry it in shade for 24 hrs and sowing</p> <p>-Supplemental irrigation in the nursery bed of rice.</p> <p>-Application of sufficient quantity of FYM or compost in the nursery bed and main field.</p> <p>-Where germination is severely affected, re-sowing of rice seed may also be recommended.</p> <p>-Supplementary life saving irrigation at critical crop stages</p> <p>-In chronically flood affected areas where high silt deposition occurs, there may not be any need of fertilizer application. However, in occasionally flood affected areas, a basal application of fertilizer @ 40:20:20 kg/ha for semi-dwarf varieties and 20:10:10 kg/ha for tall varieties of N: P: K is recommended.</p>	<p>- Water harvesting structures under MNREGA for life saving irrigation</p> <p>- KVKs, RARSs under AAU, Jorhat will be the source of Foundation & Certified seeds</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	No change	-Life saving supplemental irrigation -Weeding at critical stages of growth. -Application of sufficient quantity of FYM or compost in the main field.	- Water harvesting structures under MNREGA for life saving irrigation
		Summer vegetables/ Blackgram (Kharif)/Sesame - Toria/Lentil/ Wheat/Potato/Rabi vegetables	No change	-Life saving supplemental irrigation -Weeding at critical stages of growth. - Application of sufficient quantity of FYM or compost in the main field - Thinning to maintain optimum plant population. -Two to three spraying of Dimethoate or Endosulfan @ 2ml/l starting from 10 days after germination at 15 days interval against YMV in blackgram/ greengram	- Water harvesting structures under MNREGA for life saving irrigation
	Rainfed medium land/medium low land (Sandy loam to clay loam)	Rice (Kharif)- Toria/Lentil/ Wheat/Potato/Rabi vegetables	No change	-Top dressing of additional quantities of MOP @ 37.5 kg/ha and incorporation is recommended in rice - Gap filling if required -Spraying of 2% KCl solution on leaves of rice if and when drought appears. -Top dressing of urea may be delayed up to heading stage of rice if drought prevails at the stages of top dressing -Life saving supplemental irrigation at critical stages of crop growth	- Water harvesting structures under MNREGA for life saving irrigation - Arrangement of pumpsets from RKVY and NFSM
		Rice (Kharif) monocropping	No change		
		Rice (Kharif) – Rice (Autumn/Summer)	No change		

				-Spraying of Mancozeb @ 2.5g/l or Edinophos 2 1ml/l or Carbendazim @ 1g/l against brown spot disease in rice. -Spraying of phosphamidon @ 1-1.5 ml/l against rice mealy bug.	
	Flood prone (Loamy to clay loam)	Summer vegetables – Toria/Lentil/ Wheat/Potato/Rabi vegetables	No change	-Supplementary life saving irrigation at critical crop stages	- Water harvesting structures under MNREGA for life saving irrigation - Arrangement of pumpsets from RKVY and NFSM
		Rice (Kharif) as mono cropping	No change	-Application of sufficient quantity of FYM or compost in the nursery bed and main field. -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	- Water harvesting structures under MNREGA for life saving irrigation - Arrangement of pumpsets from RKVY and NFSM

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)	Rice (DS)- Toria/Lentil/	No change	-Life saving supplemental irrigation	- Water harvesting structures under

	loam to clay loam)	Wheat/Potato/Rabi vegetables		-Weeding at critical stages of growth.	MNREGA for life saving irrigation - Arrangement of pumpsets from RKVY and NFSM
		Summer vegetables/ Blackgram (Kharif)/Sesame - Toria/Lentil/ Wheat/Potato/Rabi vegetables	No change	-Life saving supplemental irrigation -Weeding at critical stages of growth. - Thinning to maintain optimum population. -Two to three spraying of Dimethoate or Endosulfan @ 2ml/l starting from 10 days after germination at 15 days interval against YMV in blackgram/ greengram - Mulching with crop residues in horticultural crops	- Water harvesting structures under MNREGA for life saving irrigation - Arrangement of pumpsets from RKVY and NFSM
	Rainfed medium land/ Medium low land (Sandy loam to clay loam)	Rice (Kharif)- Toria/Lentil/ Wheat/Potato/Rabi vegetables	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 up to heading stage of rice if drought prevails at the stages of top dressing -Life saving supplemental irrigation at critical stages of crop growth -Control measure should be taken against brown spot of rice	- Water harvesting structures under MNREGA for life saving irrigation - Arrangement of pumpsets from RKVY and NFSM
		Rice (Kharif) monocropping	No change		
		Rice (Kharif) – Rice (Autumn/Summer)	No change		
	Flood prone (Loamy to clay loam soil)	Summer vegetables – Toria/Lentil/ Wheat/Potato/Rabi	No change	-Supplementary life saving irrigation at critical crop stages	- Water harvesting structures under MNREGA for life

		vegetables			saving irrigation
		Rice (Kharif) as mono cropping	No change	<ul style="list-style-type: none"> -Application of sufficient quantity of FYM or compost in the nursery bed and main field. -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 	<ul style="list-style-type: none"> - Water harvesting structures under MNREGA for life saving irrigation

Condition		Suggested Contingency measures			
Terminal drought	Major Farming situation ^a	Crop/ cropping system ^b	Crop management ^c	Rabi crop planning ^d	Remarks on Implementation ^e
	Rainfed upland (Sandy loam to clay loam)	Rice (DS)- Toria/Lentil/ Wheat/Potato/Rabi vegetables	<ul style="list-style-type: none"> -Life saving supplemental irrigation - Pre-sowing irrigation for nursery raising and life saving irrigation after transplanting 	<ul style="list-style-type: none"> - Growing of Tomato, Brinjal, and Leafy vegetables like Spinach, Radish etc. with improved package of practices - Growing of mid season cole crops such as Cauliflower (varieties – Improved Japanese, Pusa Synthetic, Pusa Snowball etc.) and Cabbage (Varieties – Golden Acre, Pride of India, Pusa Mukta etc.), Knolkhol (White Vienna) etc. -Growing of rabi field crops like toria, lentil, buckwheat, niger, wheat in time with presowing irrigation if required. 	<ul style="list-style-type: none"> - Water harvesting structures under MNREGA for life saving irrigation - Arrangement of pumpsets from RKVY and NFSM - Arrangement of seeds under HMNEH

		Summer vegetables/ Blackgram/ Sesame (Kharif) - Toria/Lentil/ Wheat/Potato/Rabi vegetables	-Life saving supplemental irrigation -Harvesting of kharif crops at physiological maturity stage. - Pre-sowing irrigation for nursery raising and life saving irrigation after transplanting	- Growing of Tomato, Brinjal, and Leafy vegetables like Spinach, Radish etc. with improved package of practices - Growing of mid season cole crops such as Cauliflower (varieties – Improved Japanese, Pusa Synthetic, Pusa Snowball etc.) and Cabbage (Varieties – Golden Acre, Pride of India, Pusa Mukta etc.), Knolkhol (White Vienna) etc. -Growing of rabi field crops like toria, lentil, buckwheat, niger, wheat in time with presowing irrigation if required.	- Water harvesting structures under MNREGA for life saving irrigation - Arrangement of pumpsets from RKVY and NFSM - Arrangement of seeds under HMNEH
	Rainfed medium land/ Medium low land (Sandy loam to clay loam)	Rice (Kharif)- Toria/Rabi pulses/ Wheat/Potato/ Rabi vegetables Rice (Kharif) monocropping Rice (Kharif) – Rice (Autumn/ Summer)	-Life saving supplemental irrigation - Pre-sowing irrigation for nursery raising and life saving irrigation after transplanting - Harvesting of kharif crops at physiological maturity stage - Conservation tillage	- Growing of mid season cole crops such as Cauliflower (varieties – Improved Japanese, Pusa Synthetic, Pusa Snowball etc.) and Cabbage (Varieties – Golden Acre, Pride of India, Pusa Mukta etc.), Knolkhol (White Vienna) etc. - Growing of rabi field crops like toria, lentil, buckwheat, niger, wheat in time with presowing irrigation if required - Sufficient organic matter should be incorporated - Mulching in Rabi crops	- Water harvesting structures under MNREGA for life saving irrigation - Arrangement of pumpsets from RKVY and NFSM - Arrangement of seeds under HMNEH
	Flood prone (Loamy to clay loam)	Summer vegetables – Toria/Lentil/ Wheat/Potato/Rabi vegetables Sali (Kharif) as mono cropping	-Life saving supplemental irrigation - Pre-sowing irrigation for nursery raising and life saving irrigation after transplanting - Harvesting of kharif crop at physiological maturity	- Growing of Tomato, Brinjal, and Leafy vegetables like Spinach, Radish etc. with improved package of practices - Growing of mid season cole crops such as Cauliflower (varieties – Improved Japanese, Pusa Synthetic, Pusa Snowball etc.) and Cabbage (Varieties – Golden Acre, Pride of India, Pusa Mukta etc.), Knolkhol (White Vienna) etc. -Growing of rabi field crops like toria, lentil, buckwheat, niger, wheat in time with presowing irrigation if required.	- Water harvesting structures under MNREGA for life saving irrigation - Arrangement of pumpsets from RKVY and NFSM - Arrangement of seeds under HMNEH

Note:

- a. Describe the major farming situation such as shallow red soils, 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 or variety 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 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 cropping 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	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
	& depth Eg; canal irrigated shallow red soils; tankfed medium deep black soils				
	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:			

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
	situation:	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
	situation:	Cropping system 1:			
Insufficient groundwater recharge 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 2:			
		Cropping system 3:			
			NA		
	2) Farming situation:	Cropping system 1:			
		Cropping system 2:			
		Cropping system 3:			
Any other condition (specify)					

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

2.1.3 Pre monsoon flood and hailstorm under irrigated situation

Condition	Suggested Contingency measures				
	Major Farming situation ^f	Normal Crop/cropping system ^g	Change in crop/cropping system ^h	Agronomic measures ⁱ	Remarks on Implementation ^j
Pre monsoon flood	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	Preparation of drainage channel under MNREGA
	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 (banana, citrus etc)	-Fruits (banana, citrus etc - If crop fails, replanting of crops	Provision for drainage channel to remove excess water.	Preparation of drainage channel under MNREGA

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
Hail storm	Medium / medium	Summer rice/ Early ahu	Adoption of Short	-	-

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
under irrigated condition	low /lowland land (sandy loam to clay loam)	with long duration local cultivars and hybrid rice variety	duration rice varieties like Luit Kolong, Dichang etc.		
	Upland (sandy loam to clay loam)	Summer vegetables	Summer vegetables/ high valued vegetable crops	- Installation of hail net - Plantation of wind break - Protected cultivation of high valued vegetable crops	-Departmental schemes like HMNEH, NFSM, RKVY for protected cultivation.
		Fruits (banana, citrus etc)	Malbhog banana cultivation	- Installation of hail net - Plantation of wind break	

Notes:

^f Describe such as uplands, medium and low lands and source of irrigation such as tank fed medium or deep black/ alluvial/ red soils, tube well irrigated alluvial soils, canal irrigation 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 Vikash 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	Flowering stage	Crop maturity stage	Post harvest
Continuous high rainfall in a short span leading to water logging				
Maize	-Excess rain water to be drained out through surface drainage channel of 25cm wide, 15cm deep spaced at 6 m -Light hoeing and weeding	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
Black gram/ Sesame	-Excess rain water to be drained out through surface drainage channel of 25cm wide, 15cm deep spaced at 6 m -Light hoeing and weeding	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
Rice (Summer)	-Sow rice seed in raised nursery bed with 30cm gap between two beds. -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 - Harvesting at physiological maturity	Proper drying of grains to maintain optimum moisture percentage (12-14%) for storage
Rice (Winter)	-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

Vegetables	-Adoption of proper measures to drain out excess water -Light hoeing and weeding - Adoption of plant protection measures against Anthracnose disease	- Adoption of proper measures to drain out excess water - Adoption of plant protection measures against Anthracnose disease	- Adoption of proper measures to drain out excess water - Harvesting at physiological maturity - Adoption of plant protection measures against Anthracnose disease	-Drying of the produce - Immediate sale of the produce - Shifting of the produce to drier place/cold storage
Heavy rainfall with high speed winds in a short span²				
Maize	- Proper drainage - Provision for wind breaks	- Proper drainage - Provision for wind breaks	-Crop to be harvested at physiological maturity stage.	Proper drying
Rice (Summer)	-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
Rice (Winter)	-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
Banana	- Make trenches/furrows in between ridges to facilitate drainage of excess water - Propping	- Make trenches/furrows in between ridges to facilitate drainage of excess water - Propping	- Make trenches/furrows in between ridges to facilitate drainage of excess water - Propping	Shifting of the produce to drier place

Vegetables	<ul style="list-style-type: none"> - Make trenches/furrows to facilitate drainage of excess water - Proper support for climbers 	<ul style="list-style-type: none"> - Make trenches/furrows to facilitate drainage of excess water - Application of hormones, nutrients to prevent flower drop 	<ul style="list-style-type: none"> - Make trenches/furrows to facilitate drainage of excess water 	<ul style="list-style-type: none"> - Shifting of the produce to drier place/Cold storage
Outbreak of pests and diseases due to unseasonal rains				
Rice (Summer)	<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. 	-	<ul style="list-style-type: none"> -Insect pest and disease infested seed/grains should be discarded
Rice (Winter)	<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 	<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. 	-	<ul style="list-style-type: none"> Insect pest and disease infested seed/grains should be discarded

	blight. Water from the sheath blight infested field should not be allowed to enter disease free field.	-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.		
Black gram	- 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.	- 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 pod borer & pod bug, spray Malathion 50 EC @ 2 ml/l of water.	Insect pest and disease infested seed/grains should be discarded
Vegetables	-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.

^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			
	Seedling/ Nursery stage	Vegetative stage	Reproductive stage	At harvest
Transient water logging/ partial inundation ¹				
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
Maize	Ensure drainage facility, sowing should be done in ridges. If crop is damaged then re-sow.	Drain out the excess water, Make ridge & furrows.	Ensure drainage, Make ridge & furrows.	Harvest the cobs at physiological maturity
Pulses and Oilseeds	Make provision for drainage, re-sow the seeds if time permits	Ensure drainage facility.	Drain out the excess water.	-Harvest the crop at physiological maturity - If the crop is fully damaged go for upland crops during rabi season
Banana	-Make trenches/furrows in between rows to facilitate drainage of excess water - Propping	-Make trenches/furrows in between rows to facilitate drainage of excess water - Propping	-Make trenches/furrows in between rows to facilitate drainage of excess water - Propping	-Make trenches/furrows in between rows to facilitate drainage of excess water - Propping
Vegetables	-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

Continuous submergence for more than 2 days²				
Rice (Summer)	-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
Rice (Winter)	-Raised nursery bed with 30 cm gap in between two beds so that excess water can be removed. -If seedlings are damaged by flood water, resowing may be done with the flowing varieties- -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. - 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.	-Drainage of excess water -If crop is damaged by flood, the nursery may be raised with the following varieties- - 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. -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	-Drainage of excess water	Harvesting at physiological maturity stage, tying the harvested head and transferred to dry place for drying

		kg/ha is to be broadcast in puddle field.		
Sesame	<ul style="list-style-type: none"> -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 	<ul style="list-style-type: none"> - Drainage of flood water -Hoeing in between lines for aeration in root zone after flood. 	<ul style="list-style-type: none"> - Drainage of flood water -Hoeing in between lines for aeration in root zone after flood. 	<ul style="list-style-type: none"> -Harvesting at physiological maturity stage. -Proper drying of produce
Black gram	<ul style="list-style-type: none"> -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 	<ul style="list-style-type: none"> - Drainage of flood water -Hoeing in between lines for aeration in root zone after flood. 	<ul style="list-style-type: none"> - Drainage of flood water -Hoeing in between lines for aeration in root zone after flood. 	<ul style="list-style-type: none"> -Harvesting at physiological maturity stage. -Proper drying of produce
Banana	<ul style="list-style-type: none"> -Make trenches/furrows in between rows to facilitate drainage of excess water - Propping -Replanting if crop is damaged by flood 	<ul style="list-style-type: none"> -Make trenches/furrows in between rows to facilitate drainage of excess water - Propping 	<ul style="list-style-type: none"> -Make trenches/furrows in between rows to facilitate drainage of excess water - Propping 	<ul style="list-style-type: none"> -Make trenches/furrows in between rows to facilitate drainage of excess water - Propping
Vegetable	<ul style="list-style-type: none"> -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 	<ul style="list-style-type: none"> -Drainage of flood water -Hoeing in between lines for aeration in root zone after flood 	<ul style="list-style-type: none"> -Drainage of flood water -Hoeing in between lines for aeration in root zone after flood 	<ul style="list-style-type: none"> -Harvesting of produce as early as possible

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.

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

Extreme event type	Suggested contingency measures			
	Seedling/Nursery stage	Vegetative stage	Reproductive stage	At harvest
Heat Wave	NA			
Cold wave	NA			
Frost	NA			
Hailstorm	NA			
Cyclone	NA			

Notes:

^p In regions where the normal maximum temperature is more than 40°C, if the day temperature exceeds 3°C above normal for 5 days it is defined as heat wave. Similarly, in regions where the normal temperature is less than 40°C, if the day temperature remains 5°C above normal for 5 days, it is defined as heat wave.

^q In regions where normal minimum temperature remains 10°C or above, if the minimum temperature remains 5°C 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 10°C, if the minimum temperature remains 3°C 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	During the event	After the event
Drought			
Feed and fodder availability	<p>–Encourage fodder cultivation during rainy season. On boundaries of agricultural field, fodder trees or shrubs like Sesbania, Subabul, etc. should be planted. Encourage cultivation of fodder grass like napier, Oat, Gunie & Dinanath and excess fodder may be stored as hay/silage.</p> <p>-Establishment of fodder bank by excess production of improved variety of fodder grass in nearby forest areas.</p> <p>-Improvement of mineral content of paddy straw by treatment with Urea & Molasses.</p> <p>-Encourage cultivation of Azolla in artificial pond as well as in paddy field.</p> <p>- Silage and hay making</p> <p>-Training & awareness camp among extension personnel for needful at time of exigencies.</p> <p>–Insurance of Livestock.</p>	<p>–Utilizing fodder from perennial trees and fodder bank reserves.</p> <p>–Transporting excess fodder from adjoining districts.</p> <p>–Use of unconventional livestock feed such as paddy straw, rice bran, banana plant, crop residues, edible weeds and other tree leaves etc.</p> <p>- Feeding of silage and hey</p> <p>–Using Urea -Molasses treated straw, urea-molasses mineral block etc to feed the livestock.</p> <p>–Provision for health care.</p>	<p>–Avail insurance facility</p> <p>Supplementary feeding of remaining livestock and the replacement stock</p> <p>–Provision for health care</p> <p>- Fodder rejuvenation programme</p> <p>- Culling of affected and unproductive animals</p>
Drinking water	<p>Preserve water in community tanks, ponds etc. with sanitization, Wells or dug wells may be constructed in advance, Training &</p>	<p>–Animals not to be exposed to outside rather they should be commonly fed.</p> <p>–Provide drinking water from the sources created before the</p>	<p>Culling of affected and unproductive animals</p>

	awareness camp among extension personnel	occurrence of the event. –Provision for health care.	
Health and diseases management	<ul style="list-style-type: none"> - Veterinary preparedness with vaccines & medicines. -Training & awareness camp among extension personnel including NGOs, SHGs and Gopal Mitras. - Timely vaccination - Insurance of livestock 	<ul style="list-style-type: none"> –Organise animal health camps and treating the affected animals. –Supplementation of mineral and vitamin mixtures. 	<ul style="list-style-type: none"> –Culling of unproductive livestock, –Proper disposal of dead animals - Availing insurance
Floods			
Feed and fodder availability	<ul style="list-style-type: none"> –Encourage fodder cultivation during rainy season. On boundaries of agricultural field, fodder trees or shrubs like Sesbania, Subabul, etc. should be planted - Excess fodder may be stored as hay/silage -Establish fodder bank near forest areas, - Raised platform for safety of the animals - Stocking of concentrate feed in sufficient quantity - Training & awareness camp among extension personnel for needful at time of exigencies. –Insurance of Livestock. 	<ul style="list-style-type: none"> –Utilizing fodder from perennial trees and fodder bank reserves. –Transporting excess fodder from adjoining flood free areas. –Use of unconventional livestock feed such as paddy straw, rice bran, banana plant, crop residues, and other tree leaves etc. –Improve quality of poor roughages by ammonia treatment, urea treatment, urea molasses mineral block etc and feeding them - Keep animals in safe place –Provision for health care. 	<ul style="list-style-type: none"> - Provision of supplementary feeding (concentrate / Roughage) with vitamin & minerals - Health check-up - Culling of diseased and unproductive animals - Availing insurance
Drinking water	<ul style="list-style-type: none"> –Preserve safe drinking water in community tanks. –Provision for chlorine tablets for sanitization of water and bleaching powder for disinfection of habitats & shelter places 	Provide clean and safe drinking water to the animals.	<ul style="list-style-type: none"> - Provision of clean drinking water - Avail insurance

	<p>–Training & awareness camp among extension personnel</p> <p>- Insurance of the livestock</p>		
Health and diseases management	<p>–Construction of shelter places in elevated points</p> <p>–Vaccination of livestock</p> <p>–Keep the emergency service kit (first Aid Requisites) ready always containing Cotton wool, Bandages, Surgical gauze, old cotton sheets, Rubber tubing (for tourniquet), Surgical scissors – Curved and made of stainless steel, Forceps, Splints or Split bamboos (for fractures), Clinical thermometers, Potassium permanganate, Acriflvin, Dettol, Savlon, Tannic acid powder (for poisons) and Jelly (for burns) Antibiotic eye drops, Epsom salts, copper sulphate, Treacle, oil of turpentine (for bloat), Obstetric ropes, chains and hooks, Tincture of iodine, tincture of Benzoin Co.(for wounds), Cotton rope, halters (for restraint) & the like.</p>	<p>–Engage one veterinarian for 3 to 4 villages to work with the help of local volunteers.</p> <p>–The team should be well equipped with contingent items like bandages, tourniquet ropes, drugs including painkillers, antiseptics, antibiotics, anti-venom and anti-shock drugs etc.</p> <p>–Keep the animals loose in paddock (sheltered or unsheltered)</p> <p>–Release animals from the unnatural and harmful position or situation, binding broken limbs, administering painkillers, anti-poison and anti-shock drugs.</p>	<p>–Prompt and appropriate attention to injuries by providing necessary medicines to the livestock owners.</p> <p>–Vaccination campaign against common endemic diseases of the areas (like H.S. B.Q, Anthrax etc.) must be taken up urgently.</p> <p>–Necessary steps should be taken for the control of non-specific digestive and respiratory infections in consultation of local veterinary personals.</p> <p>–Improving shed hygiene especially in the farmers household through cleaning and disinfection</p> <p>- Culling of unproductive animals</p> <p>- Avail insurance</p>
Cyclone		NA	
Heat wave and cold wave		NA	

^s based on forewarning wherever available

2.5.2 Poultry

	Suggested contingency measures		
	Before the event	During the event	After the event
Drought			
Shortage of feed ingredients	<ul style="list-style-type: none"> -Procurement of feed ingredients well ahead of time -Establish feed serve bank -Insurance of Poultry farms -Production of feed ingredients locally 	<ul style="list-style-type: none"> -Feed utilization from feed bank -Provision for supplementation of feed -Mixing feed as per norms with locally available ingredients. 	<ul style="list-style-type: none"> -Avail insurance as per the norms -Make feed ingredient or compound feed available to the farmers
Drinking water	<ul style="list-style-type: none"> -Identify water source for ensuring sufficient potable water during draught -Preserve safe drinking water in community tank. 	Provide sanitized drinking water	Plan accordingly for the next year
Health and diseases management	<ul style="list-style-type: none"> -Procurement of vaccines and medicines and antistress agent. -Feeding antibiotics -Procurement of low cost litter materials 	<ul style="list-style-type: none"> -Administration of vaccines timely -Continue feeding of antistress agent 	Culling of affected birds
Floods			
Shortage of feed ingredients	Ensure procurement of feed ingredients / compound feed well ahead	Supply the compound feed to the poultry farm under submerged area	Supply will continue till the situation is under control
Drinking water	<ul style="list-style-type: none"> -Preserve safe drinking water in community tanks. -Provision for chlorine tablets for sanitization of water and bleaching powder for disinfection of habitats & shelter places 	Provide sanitized drinking water along with preventive dose of water soluble antibacterial agent	Sanitization of water sources with bleaching powder or any water sanitizer
Health and diseases management	<ul style="list-style-type: none"> -Procurement of vaccines and medicines. -Feeding antibiotics -Procurement of litter material 	<ul style="list-style-type: none"> -Continue feeding antibiotics -Replace wet litter -Proper disposal of dead birds if any 	<ul style="list-style-type: none"> -Disinfection of the farm premises. -Feeding antibiotics and deworming agent

			Replace wet litter –Disinfection of sheds. Proper disposal of dead birds if any
Cyclone	NA		
Heat wave and cold wave	NA		

^a based on forewarning wherever available

2.5.3 Fisheries

	Suggested contingency measures		
	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 seepage. – 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"> – Pump in water from other water source (nearby spring, stream, rivers etc) or ground water, if any. – Reduce food for minimum metabolism. – 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. 	<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 marketed at small size (minor and medium carps). – 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"> - Removal of aquatic weeds - 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 and gear making. 	<ul style="list-style-type: none"> - Desilting & weed removal if possible
(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. 	<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

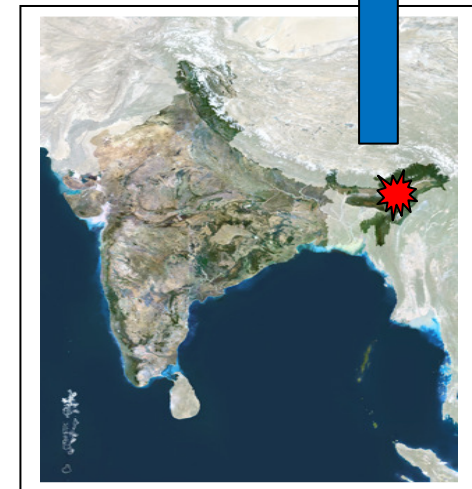
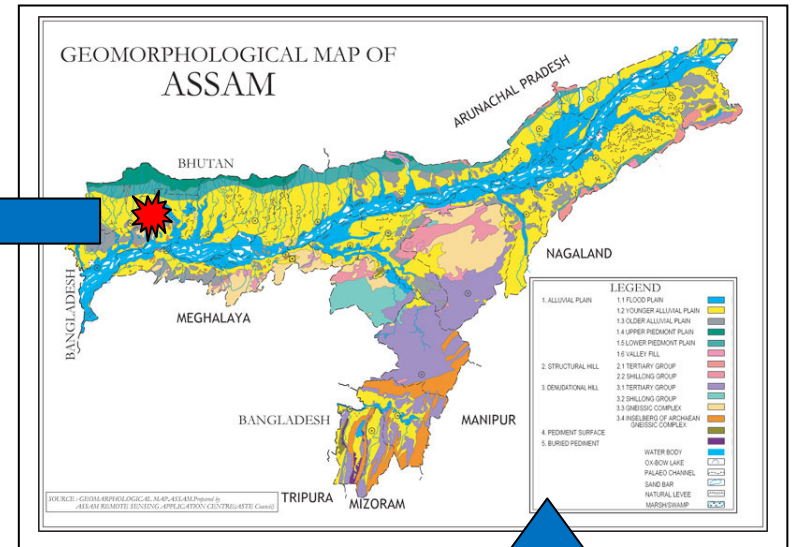
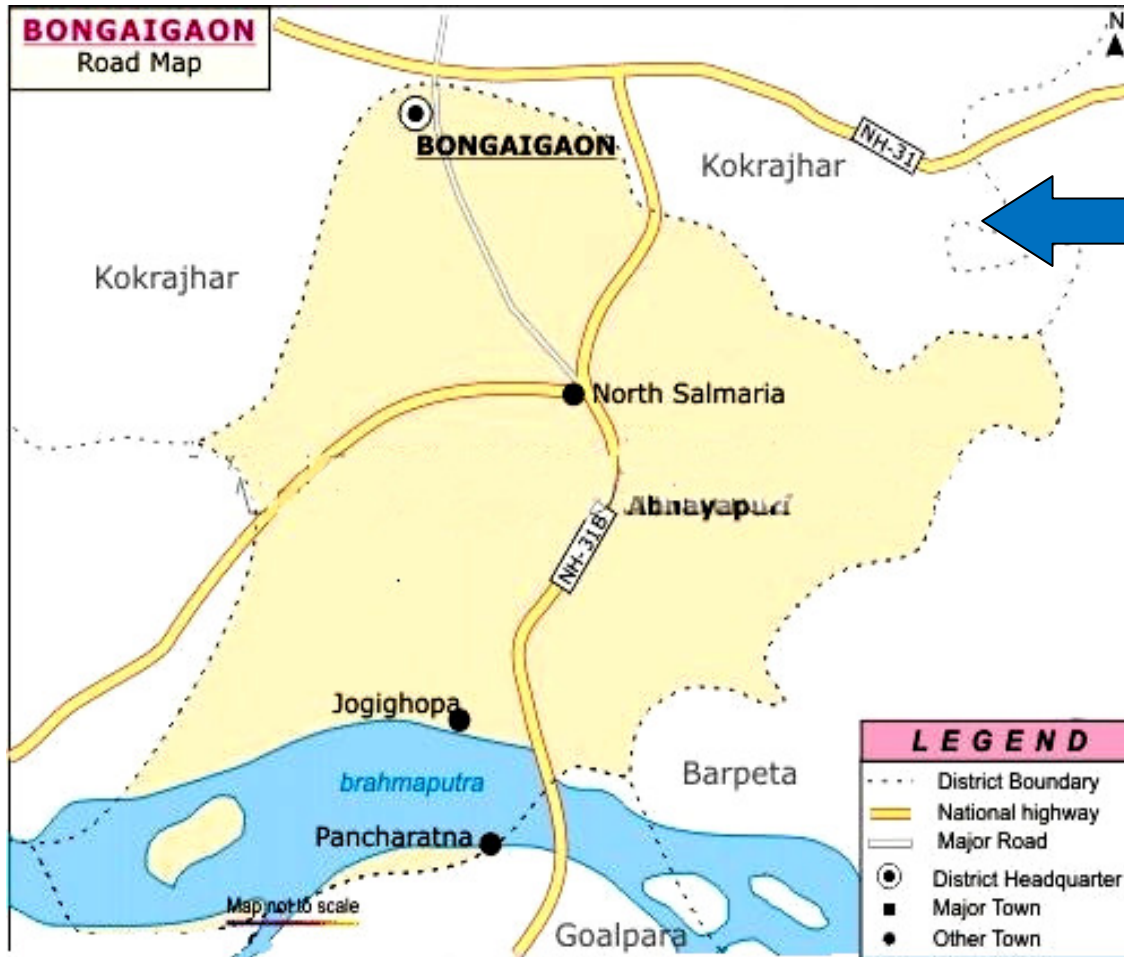
	<ul style="list-style-type: none"> - Sufficient bamboo poles and nylon nets to be kept ready. - 'High stocking multiple harvesting' can be taken up. - Sell out the fishes attaining marketable size to minimize loss. - Maintenance of proper record for claiming compensation, especially in schemes assisted by Govt. or financial institutes. 		<p>of species that are fast growing and can be marketed at small size.</p> <ul style="list-style-type: none"> - 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. – Precaution to prevent entry of pesticide/insecticide laden water from nearby agricultural land. – Apply lime regularly as per recommendation. 	<ul style="list-style-type: none"> – Apply lime regularly as per recommendation. 	<ul style="list-style-type: none"> – Apply lime regularly as per recommendation. – Remove muck and debris, if entered with flood. – Apply preventive agents (eg. CIFAX) before on set of winter.
(iii) Health and diseases			
(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			– 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)	-	-	-

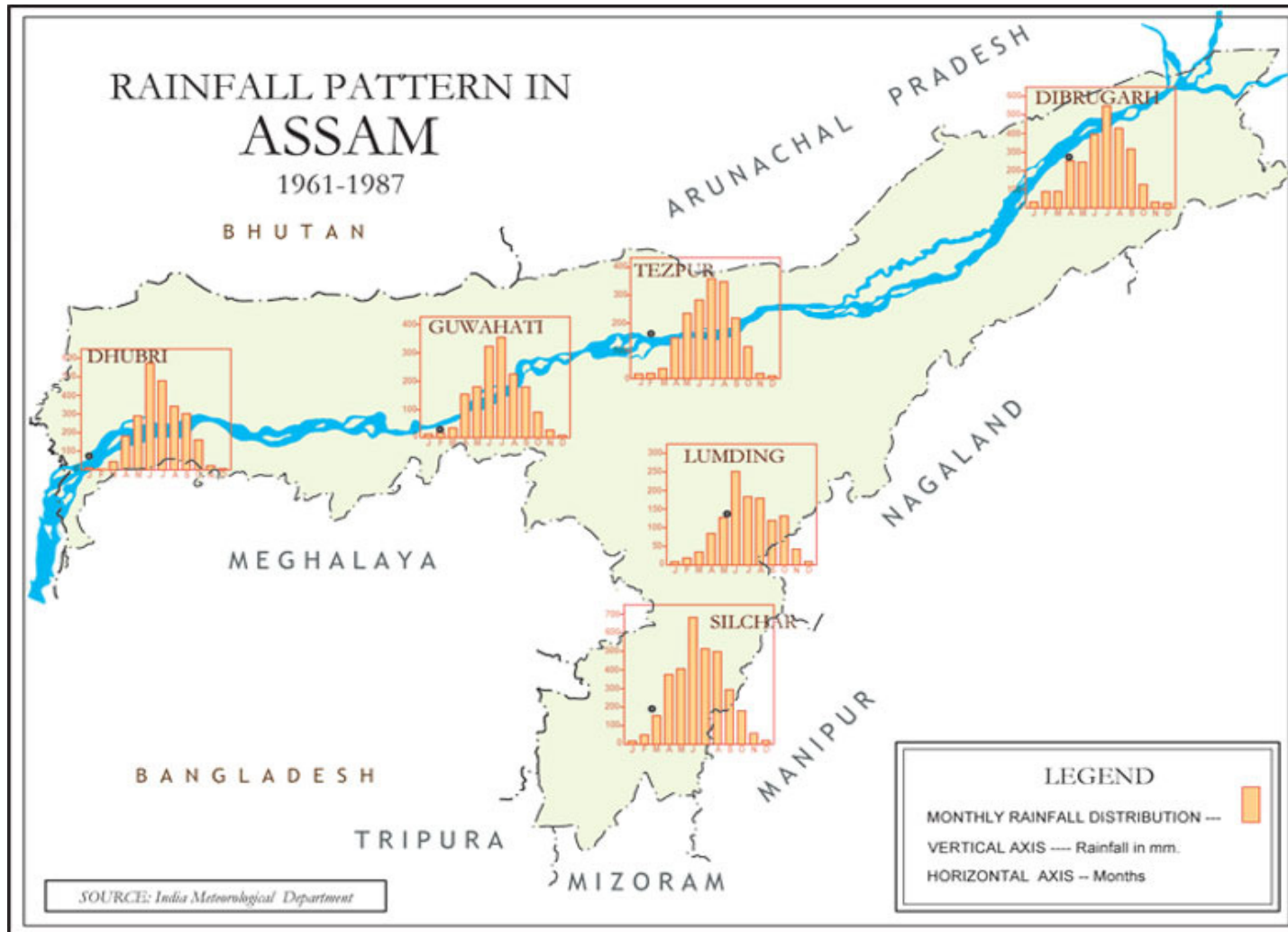
(v) Infrastructure damage (pumps, aerators, shelters/huts etc)	-	-	-
(vi) Any other	-	-	-
4. Heat wave and cold wave	-	-	-
A. Capture	-	-	-
Marine	-	-	-
Inland	-	-	-
B. Aquaculture	-	-	-
(i) Changes in pond environment (water quality)	<ul style="list-style-type: none"> – Apply lime regularly as per recommendation. – 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

Annexure I

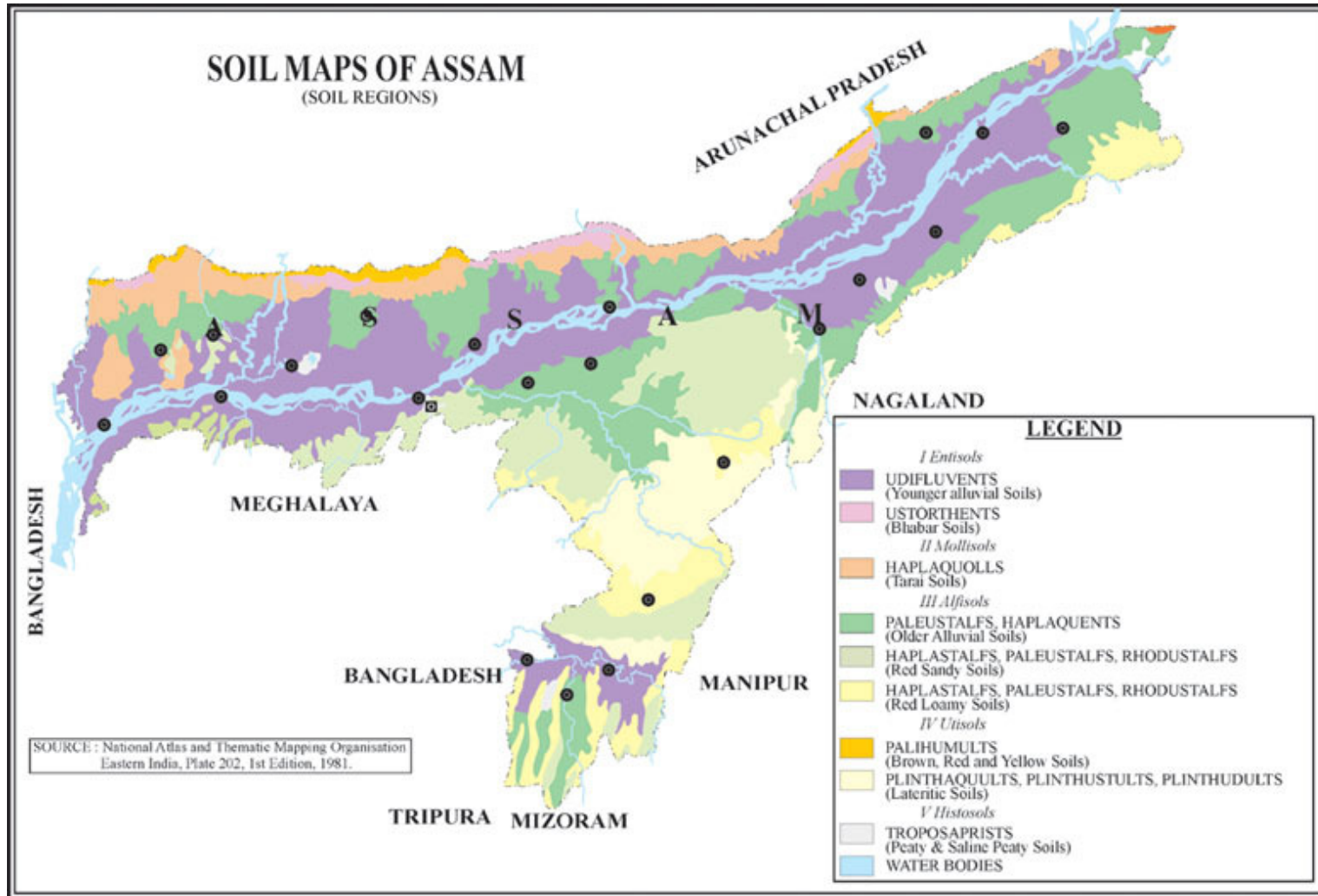


DIGITAL MAP OF BONGAIGAON DISTRICT OF ASSAM



ANNUAL RAINFALL MAP OF ASSAM, INDIA

ANNEXURE III



SOIL MAP OF ASSAM