

# **Agriculture Contingency Plan for District: Baksa**



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BAKSA  
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# State: ASSAM

## Agriculture Contingency Plan for District: Baska

<b>1.0 District Agriculture profile</b>					
<b>1.1</b>	<b>Agro-Climatic/Ecological Zone</b>				
	<b>Agro Ecological Sub Region (ICAR)</b>	15.2 (Q8B8) Brahmaputra plain, hot humid ecosystem with alluvium derived soil and growing period 240-270 days.			
	<b>Agro-Climatic Zone (Planning Commission)</b>	Eastern Himalayan Region			
	<b>Agro Climatic Zone (NARP)</b>	Lower Brahmaputra Valley Zone			
	<b>List all the districts or part thereof falling under the NARP Zone</b>	Kamrup, Nalbari, Barpeta, Bongaigaon, Dhubri, Goalpara, Baksa, Chirang, Kokrajhar			
	<b>Geographic coordinates of district headquarters</b>	Latitude	Longitude	Altitude	
		26°37'N - 26°83'N	90°80'E - 91°85 E	48.15 Mts. above mean sea level	
	<b>Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS</b>	RARS, Gossaigaon			
	<b>Mention the KVK located in the district</b>	Alloted site-Dhepargaon, Goreswar, Baksa, pin-			
<b>1.2</b>	<b>Rainfall</b>	Normal RF(mm)	Normal Rainy days (number)	Normal Onset ( specify week and month)	Normal Cessation (specify week and month)
	<b>SW monsoon (June-Sep):</b>	1203.7	125	1st Week of June	2nd week of August
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<b>1.2</b>	<b>Rainfall</b>	Normal RF(mm)	Normal Rainy days (number)	Normal Onset ( specify week and month)	Normal Cessation (specify week and month)
	<b>SW monsoon (June-Sep):</b>	1203.7	125	1st Week of June	2nd week of August

	<b>NE Monsoon(Oct-Dec):</b>	141.5		3rd week of October	2nd Week of November
	<b>Winter (Jan- March)</b>	93.2			
	<b>Summer (Apr-May)</b>	461.8			
	<b>Annual</b>	2300			

<b>1.3</b>	<b>Land use pattern of the district</b>	<b>Geographical area ('000 ha)</b>	<b>Cultivated area('000 ha)</b>	<b>Cultivable area ('000 ha)</b>	<b>Forest area ('000 ha)</b>	<b>Land under non-agriculture</b>	<b>Permanent Pastures ('000 ha)</b>	<b>Cultivable wasteland ('000 ha)</b>	<b>Land under Misc. tree</b>	<b>Barren and uncultivable</b>	<b>Current Fallow s ('000 ha)</b>	<b>Other fallows ('000 ha)</b>
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	(latest statistics)					ral use ('000 ha)		ha)	crops and groves ('000 ha)	land ('000 ha)	ha)	
	<b>Area ('000 ha)</b>	234.616	115.735	120.008	18.940	12.336	0.424	5.932	0.957	22.168	5.282	0.370

<b>1.4</b>	<b>Major Soils (common names like red sandy loam deep soils (etc.,))*</b>	<b>Area ('000 ha)</b>	<b>Percent (%) of total</b>
	1. Sandy Loam	43.149	28.69
	2. Alluvial Soil	36.567	26.17
	3. Clay Loam	34.051	24.36
	4. Sandy Soil	21.602	15.45

<b>1.6</b>	<b>Irrigation</b>	<b>Area ('000 ha)</b>		
	Net irrigated area	10.962		
	Gross irrigated area	19.78		
	Rainfed area	104.773		
	Sources of Irrigation	Number	Area ('000 ha)	% of total irrigated area
	Canals	5710	3.55	17.94
	Tanks	98	0.2	1.01
	Open wells			
	Bore wells	5990	11.728	76.90
	Lift irrigation schemes	50	0.1	0.5
	Micro-irrigation	-	-	-
	Other sources (please specify)	25 (Dong)	0.82	4.15
	Pump sets	7065	7.065	35.6
	No. of Tractors	309		
	<b>Groundwater availability and use*</b>	<b>No. of blocks/</b>	<b>(%) area</b>	<b>Quality of water (specify the</b>

	<b>(Data source: State/Central Ground water Department /Board)</b>	<b>Tehsils</b>		<b>problem such as high levels of arsenic, fluoride, saline etc)</b>
	Over exploited	-		
	Critical	-		
	Semi- critical	-		
	Safe	-		
	Wastewater availability and use			
	Ground water quality			
<b>*over-exploited: groundwater utilization &gt; 100%; critical: 90-100%; semi-critical: 70-90%; safe: &lt;70%</b>				

**1.7 Area under major field crops & horticulture (as per last five years data)**

1.7 a	Major field crops cultivate d	Area ('000 ha)									Grand total
		Kharif			Rabi			Summer			
		Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	Irrigat ed	Rai nfe d	Total	
1	Rice	6.5	81.00	87.5	1.5	41.00	42.5	7.500	0.5 00	8.000	138.00
2	Rapesee d & Mustard					10.4	10.4				10.4
3	Linsed					0.82	0.82				0.82
4	Niger					0.86	0.86				0.86
5	Sesamu m					0.98	0.98				0.98
6	Pea					0.85	0.85				0.85
7	Lentil					3.50	3.50				3.50
8	Black gram					2.20	2.20				2.20
9	Greengr am					0.43	0.43				0.43
10	Arhar					0.38	0.38				0.38
Ot her s (sp eci fy)											
1.7 b	Horticult ure crops - Fruits	Total						Irrigated			Rainfe d ('000 ha)
1	Banana	0.850						0.255			0.850
2	Jackfruit	0.750						-			0.750
3	Assam Lemon	0.520						0.120			0.520
4	Papaya	0.150						0.015			0.150
5	Litchi	0.156						-			0.156
6	Orange	0.390						0.078			0.390
7	Pineappl e	0.280						-			0.280
8	Colocasi a	0.250						-			0.250
Ot her s	-	-			-			-			

(specify)							
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<b>1.7c</b>	<b>Horticulture crops - Vegetables</b>	<b>Total area ('000 ha)</b>	<b>Irrigated area ('000 ha)</b>	<b>Rainfed area ('000 ha)</b>
<b>1</b>	<b>Kharif</b>	4.20	2.23	2.23
<b>2</b>	<b>Rabi</b>	5.463	5.463	-
<b>3</b>	<b>Potato</b>	4.20	-	4.20
<b>Others (specify)</b>	-	-	-	-
<b>1.7d</b>	<b>Medicinal and Aromatic crops</b>	<b>Total area ('000 ha)</b>	<b>Irrigated area ('000 ha)</b>	<b>Rainfed area ('000 ha)</b>
<b>1</b>	<b>Citronella</b>	0.02	-	0.02
<b>2</b>	<b>Lemongrass</b>	0.02	-	0.02
<b>3</b>	<b>Neem</b>	0.03	-	0.03
<b>4</b>	<b>Patchouli</b>	0.01	-	0.01
<b>5</b>	<b>Amla</b>	0.01	-	0.01
<b>(Others Specify)</b>	<b>Spices</b>			
<b>1</b>	<b>Coriander</b>	1.869	-	1.869
<b>2</b>	<b>Turmeric</b>	1.40	-	1.40
<b>3</b>	<b>Chilli</b>	0.300	0.105	0.195
<b>4</b>	<b>Ginger</b>	1.25	-	1.25
<b>1.7e</b>	<b>Plantation crops</b>	<b>Total area ('000 ha)</b>	<b>Irrigated area ('000 ha)</b>	<b>Total area ('000 ha)</b>
<b>1</b>	<b>Coconut</b>	1.650	-	1.650
<b>2</b>	<b>Arecanut</b>	4.150	-	4.150
<b>Others (Specify)</b>	<b>E.g., industrial pulpwood crops etc.</b>			
<b>1.7f</b>	<b>Fodder crops</b>	<b>Total area ('000 ha)</b>	<b>Irrigated area ('000 ha)</b>	<b>Rainfed area ('000 ha)</b>

<b>1</b>	-	-	-	-
<b>1.7g</b>	<b>Grazing land</b>	-	-	-
<b>1.7h</b>	<b>Sericulture etc</b>			
	<b>Eri seeds (DFLS)</b>	1750	-	1750
	<b>Muga silk</b>			
<b>1.7i</b>	<b>Others (specify)</b>			

<b>1.8</b>	<b>Livestock (in number)</b>	<b>Male ('000)</b>	<b>Female ('000)</b>	<b>Total ('000)</b>
	Cattle	-	-	33050
	Buffaloes total	-	-	1290
	Commercial dairy farms	-	-	-
	Goat	-	-	101900
	Sheep	-	-	7820
	Others (Camel, Pig, Yak etc.)	-	-	Pig-5246
<b>1.9</b>	<b>Poultry</b>	<b>No. of farms</b>	<b>Total No. of birds ('000)</b>	
	Commercial	998	142.48	
	Backyard	26,765	135.00	
	<b>Duck</b>	16,000(backyard)	68.22	
<b>1.10</b>	<b>Fisheries (Data source: Chief Planning Officer of district)</b>			
	<b>A. Capture</b>			
	<b>Inland (Data Source: Fisheries Department)</b>	<b>No. Farmer owned ponds</b>	<b>No. of Reservoirs</b>	<b>No. of village tanks</b>
		-	-	-
	<b>B. Culture</b>			
		<b>Water Spread Area (ha)</b>	<b>Yield (t/ha)</b>	<b>Production ('000 tons)</b>
	<b>i) Brackish water (Data Source: MPEDA/ Fisheries Department)</b>			
	<b>ii) Fresh Water</b>	49750.20	0.187	9752
	<b>iii) Others</b>	43212		



### 1.11 Production and Productivity of major crops(as per last five years data)

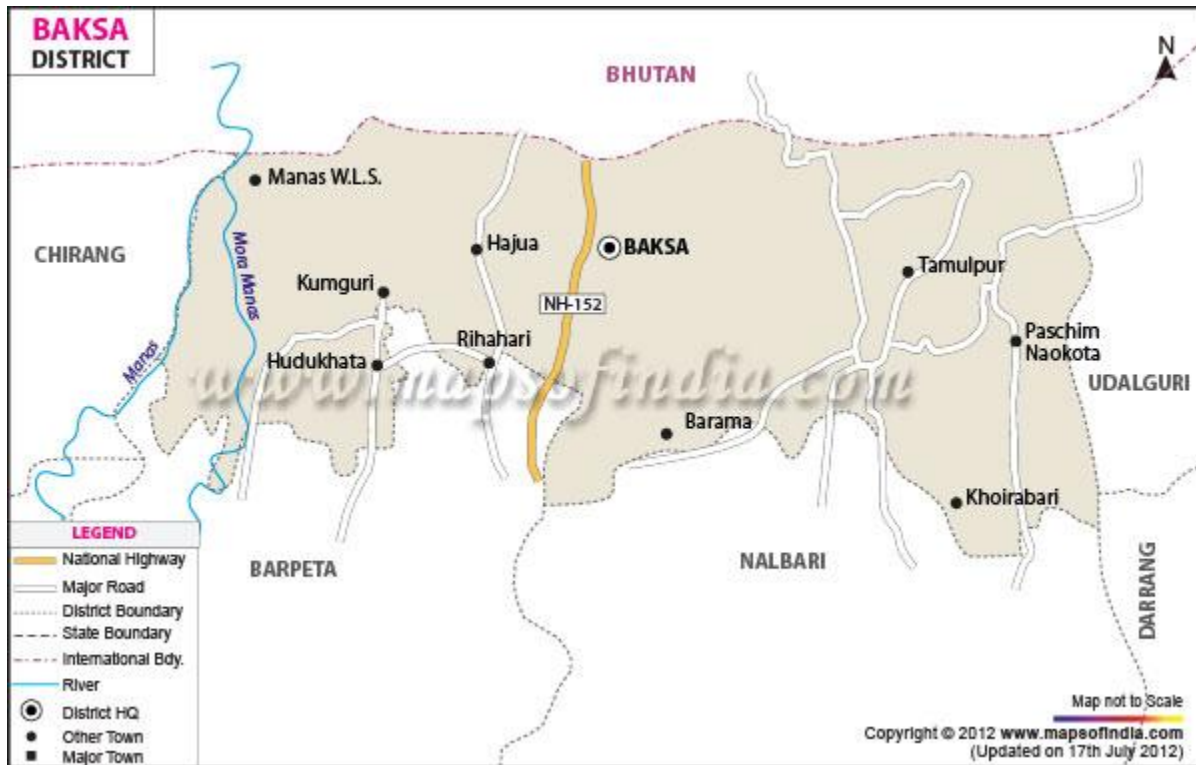
1.11	Name of crop	Kharif		Rabi		Summer		Total		Crop residue as fodder ('000 tons)
		Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	
<b>Major Field crops (Crops to be identified based on total acreage)</b>										
Crop 1	Rice	193.250	2400	16.100	2300	47.735	1250	248.524	2670	-
Crop 2	Rapeseed & Mustard			10.650	584			10.650	584	-
Crop 3	Linsed			0.485	585			0.485	585	-
Crop 4	Niger			0.510	590			0.510	590	-
Crop 5	Sesamum	0.645	685			0.645	685			-
Crop 6	Pea			0.725	855			0.725	855	
Crop 7	Lentil			2.890	615			2.890	615	
Crop 8	Black gram			2.150	560			2.150	560	
Crop 9	Greengram			0.245	560			0.245	560	
Crop 10	Arhar			0.350	895			0.350	895	
<b>Major Horticultural crops (Crops to be identified based on total acreage)</b>										
Crop 1	<b>Potato</b>			9.210	4000			9.210	4000	-
Crop 2	<b>Rabi vegetables</b>			79.161	14230			79.161	14230	-
Crop 3	<b>Kharif vegetables</b>	40.527	15398					40.527	15398	-
Crop 4	<b>Arecanut</b>							19.670	5200	-
Crop 5	<b>Coconut</b>							120	120	-
Others	<b>Banana</b>							13.915	15750	-

1.12	Sowing window for 5 major field crops (start and end of normal sowing period)	Crop 1 : Rice	Crop 2: Rapeseed	Crop 3: Lentil	Crop 4: Pea	Crop 5: Blackgram
	Kharif- Rainfed	June-November	-	-	-	-
	Kharif-Irrigated	June-November	-	-		-
	Rabi- Rainfed	November-May	November-February	November-February	November-February	Mid October-February March-April
	Rabi-Irrigated	November-May	November-February	-	-	-
1.13	What is the major contingency the district is prone to? (Tick mark)			Regular	Occasional	None
	Drought				√	
	Flood			√		
	Cyclone				√	
	Hail storm				√	
	Heat wave					√
	Cold wave					√
	Frost					√
	Sea water intrusion					√
	Pests and disease outbreak (specify)				√	
	Others (specify)					

**6 out of 10 years = Regular**

1.14	Include Digital maps of the district for	Location map of district within State as Annexure I(a & b)	Enclosed: Yes / No Y
		Soil Map Annexure II	Enclosed: Yes / No Y

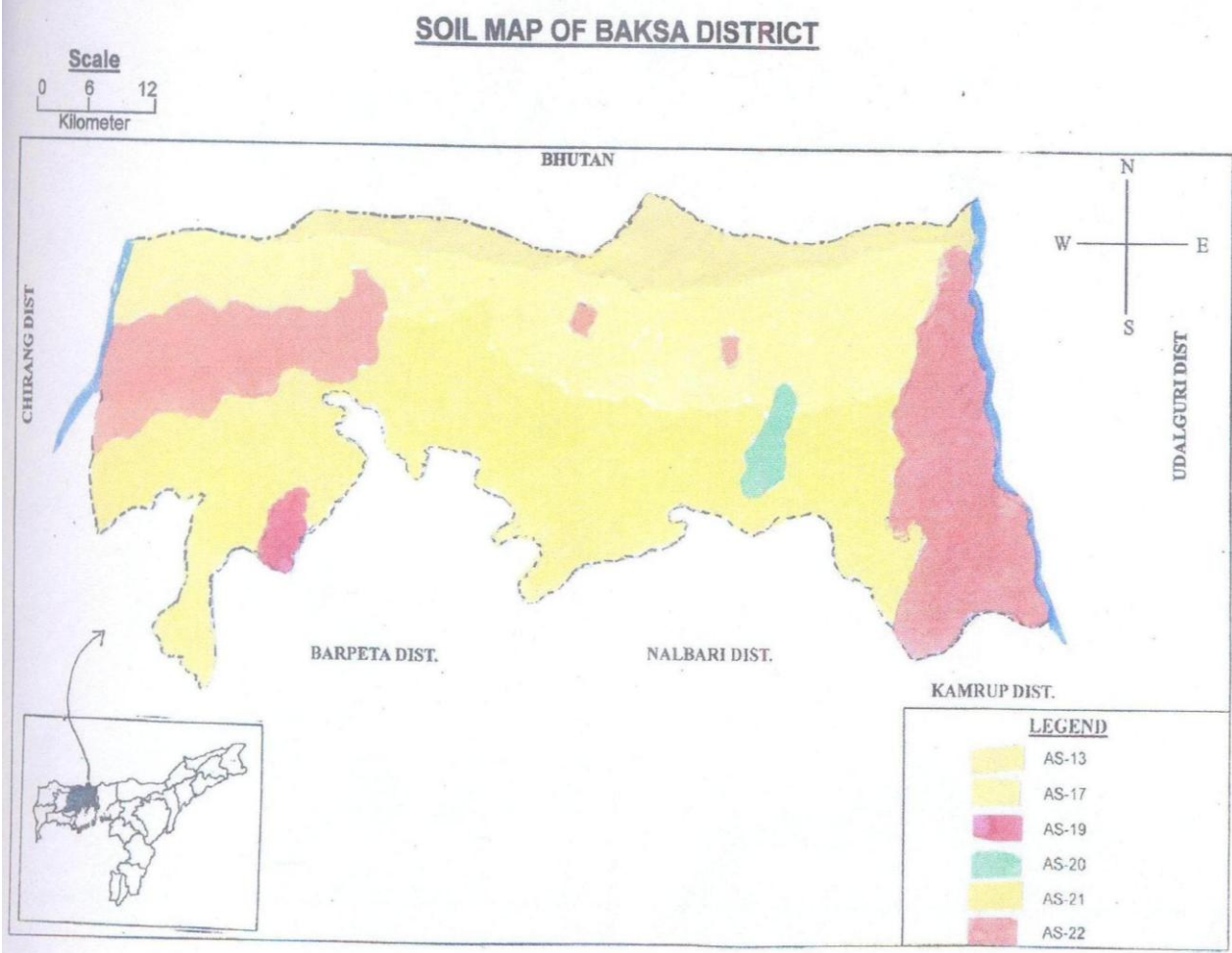
Annexure – 1(a): LOCATION MAP OF BAKSA IN ASSAM



Annexure – 1(b): LOCATION MAP OF BAKSA IN ASSAM



Annexure II. Soil Map of Baksa district



## 2.0 Strategies for weather related contingencies

### 2.1 Drought

#### 2.1.1 Rainfed situation

Condition	Major Farming situation <sup>a</sup>	Suggested Contingency measures			Remarks on Implementation <sup>e</sup>
		Crop/ cropping system <sup>b</sup>	Change in crop/ cropping system <sup>c</sup>	Agronomic measures <sup>d</sup>	
<b>Early season drought (delayed onset)</b>  <b>Delay by 2 weeks (Specify month)*</b> <b>Month: 3rd week of June</b>  <b>(REFER TO THE MATRIX TABLE)</b>	Rainfed upland, (Sandy loam to clay loam)	Rice - Toria/ Potato / Rabi vegetables	No Change	-Recommended package of practices for normal sowing.	1. Supply of seeds may be done through NFSM , BGREI and other such scheme. 2. Supply of weeder and other farm machineries under RKVY
		Summer vegetables - Toria / Lentil / Potato / Rabi vegetables/	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.	
		Rice(Kharif)- Toria / Lentil/ Potato / Rabi vegetables	No Change	-Recommended package of practices for normal sowing.	
		Rice (kharif) – Rice (summer)	No Change	-Recommended package of practices for normal sowing.	
Flood prone/low land (sandy loam to clay loam)	Late Sali (Kharif) – Toria/Rabi vegetables	Varieties adopted for flood prone situation/ pre or post flood prone situation should be selected	- Growing of submergence tolerant varieties such as Chehrang Sub 1, IR 64Sub1,Swarna Sub1,Jalashree, Jalkuwari,Plaban which can tolerate 12-15 days submergence (transplanting within July -If flood water recedes early and transplanting can be done by mid August, select varieties like TTB 404,Satyaranjan, Basundhara, Jaymati etc. - If transplanting is possible during last part of August, short duration	- Technology showcasing programme of AAU and other seed production programmes of state dept of agriculture, Assam	

				<p>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 (15 cm x 10 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>- Select delayed planting 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>	
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Condition	Major Farming situation <sup>a</sup>	Suggested Contingency measures				Remarks on Implementation <sup>e</sup>
		Crop/ cropping system <sup>b</sup>	Change in crop/ cropping system <sup>c</sup>	Agronomic measures <sup>d</sup>		
Early season drought (delayed onset)						
Delay by 4	Rainfed upland,	Rice - Toria/	No Change	-Recommended		-

<b>weeks (Specify month)* Month: 1st week of July</b>  <b>(REFER TO THE MATRIX TABLE)</b>	(Sandy loam to clay loam)	Potato / Rabi vegetables		package of practices for normal sowing.	
		summer vegetables - Black gram/Sesamum	No Change	-Recommended package of practices for normal sowing.	-
		Summer vegetables - Toria / Potato / Rabi vegetables	No Change	-Recommended package of practices for normal sowing.	-
	Rainfed medium/medium lowland (Sandy loam to clay loam)	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>-Growing of medium duration rice varieties such as TTB 404,Satyaranjan, Basundhara, Jaymati etc (transplanting up to mid August).</p> <p>- Very 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> <p>-Varieties that can be grown as late Sali up to last part of August are Manohar Sali,</p>	- Technology showcasing programme of AAU and other seed production programmes of state dept of agriculture, Assam



				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 (15 cm x 10 cm) and 6-8 seedlings/hill.	
		Rice(Kharif)- Torla / Potato / Rabi vegetables	No change	<p>-Growing of medium duration rice varieties such as TTB 404, Satyaranjan, Basundhara, Jaymati etc (transplanting up to mid August).</p> <p>- Short duration varieties like Lachit, Chilaray can be transplanted upto end of August</p> <p>- Very 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> <p>-Varieties that can be grown as late Sali up to last part of August are Manohar Sali,</p>	- Technology showcasing programme of AAU and other seed production programmes of state dept of agriculture, Assam

				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 (15 cm x 10 cm) and 6-8 seedlings/hill.	
		Rice (kharif) – Rice (summer)	No change	<p>-Growing of medium duration rice varieties such as Satyaranjan, Basundhara, Jaymati etc (transplanting up to mid August).</p> <p>- Short duration varieties like Lachit, Chilaray can be transplanted upto end of August</p> <p>- Very 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> <p>-Varieties that can be grown as late Sali up to last part of August are Manohar Sali,</p>	- Technology showcasing programme of AAU and other seed production programmes of state dept of agriculture, Assam

				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 (15 cm x 10 cm) and 6-8 seedlings/hill.	
	Flood prone/ low land (Sandy loam to clay loam)	Late Sali (Kharif) – Toria/Potato/Rabi vegetables	No Change	<p>-For flood prone low land areas late sali varieties like Satyaranjan, Basundhara, Jaymati etc. can be planted by mid August.</p> <p>-Cultivation of varieties like Jalashree, Jalkuwari, Plaban which can tolerate submergence for a period of 10-15 days</p> <p>- Selection of varieties having staggering ability like Prafulla, Gitesh. The seedling of these varieties can be planted upto the age of 60 days or more.</p> <p>- Cultivation of late HYV varieties like Manohar Sali, Andrew Sali and traditional Sali varieties like Bordhan, Tangaguri, Local Joha and Bora etc., if seeds of HYV are not available</p> <p>- If flood damages crop during last part</p>	- Technology showcasing programme of AAU and other seed production programmes of state dept of agriculture, Assam

				of August and there is no time to raise seedlings, direct seeding (wet seeding) of very short duration high yielding varieties such as Luit, Kolong, Dishang etc .	
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Condition	Major Farming situation <sup>a</sup>	Suggested Contingency measures			
		Crop/ cropping system <sup>b</sup>	Change in crop/ cropping system <sup>c</sup>	Agronomic measures <sup>d</sup>	Remarks on Implementation <sup>e</sup>
<b>Early season drought (delayed onset)</b>  <b>Delay by 6 weeks (Specify month)*</b> <b>Month: 3rd week of July</b>  <b>(REFER TO THE MATRIX TABLE)</b>	Rainfed upland, (Sandy loam to clay loam)	Rice - Toria/ Potato / Rabi vegetables	No Change	-Cultivation of short duration varieties like Chilaray, Lachit and very short duration varieties like Luit, Kolong Kapilee etc. seedling of 20-25 days old should be transplanted at 20x15 cm spacing with 4-5 seedlings/hill.	-
		Rice / summer vegetables - Black gram/Sesamum	No Change	-Cultivation of short duration varieties like Chilaray, Lachit and very short duration varieties like Luit, Kolong, Kapilee etc. Seedling of 20-25 days old should be transplanted at 20x15 cm spacing with 4-5 seedlings/hill.	-
		Summer vegetables - Toria / Potato / Rabi vegetables	No Change	-Recommended package of practices for normal sowing.	-

	<p>Rainfed medium/medium lowland (Sandy loam to clay loam)</p>	<p>Rice(Kharif) monocropping</p>	<p>No change</p>	<p>- Very 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 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 (15 cm x 10 cm) and 6-8 seedlings/hill.</p>	<p>- Technology showcasing programme of AAU and other seed production programmes of state dept of agriculture, Assam</p>
		<p>Rice(Kharif)- Toria / Potato / Rabi vegetables</p>	<p>No change</p>	<p>- Very 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>- Technology showcasing programme of AAU and other seed production programmes of state dept of agriculture, Assam</p>

				<p>-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 (15 cm x 10 cm) and 6-8 seedlings/hill.</p>	
		Rice (kharif) – Rice (summer)	No change	<p>- Very 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 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</p>	<p>- Technology showcasing programme of AAU and other seed production programmes of state dept of Agriculture, Assam</p>

				required with closer spacing (15 cm x 10 cm) and 6-8 seedlings/hill.	
	Flood prone / low land (Sandy loam to clay loam)	Late Sali (Kharif) – Toria/ Rabi vegetables	No Change	<p>- If transplanting is possible during last part of August, very 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 (15 cm x 10 cm) and 6-8 seedlings/hill. Community nursery may be raised in</p>	- Technology showcasing programme of AAU and other seed production programmes of state dept of agriculture, Assam

				<p>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 short duration high yielding varieties such as Luit, Kolong, Dishang etc or any traditional photo period sensitive coarse grain varieties can also be done up to 1st week of September. For this purpose sprouted seeds @ 75 kg/ha is to be broadcasted directly in puddled field.</p>	
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Condition	Major Farming situation <sup>a</sup>	Suggested Contingency measures			Remarks on Implementation <sup>e</sup>
		Crop/ cropping system <sup>b</sup>	Change in crop/ cropping system <sup>c</sup>	Agronomic measures <sup>d</sup>	
<p><b>Early season drought (delayed onset)</b></p> <p><b>Delay by 8 weeks (Specify month)*</b></p> <p><b>Month: 1st week of August</b></p> <p><b>(REFER TO THE MATRIX TABLE)</b></p>	<p>Rainfed upland, (Sandy loam to clay loam)</p>	<p>Rice - Toria/ Potato / Rabi vegetables</p>	<p>No Change</p>	<p>-Cultivation of very short duration varieties like Luit, Kolong Kapilee etc. seedling of 20-25 days old should be transplanted at 20x15 cm spacing with 4-5 seedlings/hill</p>	<p>-</p>
		<p>Summer vegetables - Toria / Potato /</p>	<p>No Change</p>	<p>-Recommended package of practices will be followed for</p>	<p>-</p>



		Rabi vegetables		raising the crop. Arrangement for organic manure and mulch material will enhance the productivity of crops.	
	Rainfed medium /medium lowland (Sandy loam to clay loam)	Rice(Kharif) monocropping	No change	<p>- Very 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 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 (15 cm x 10 cm) and 6-8 seedlings/hill</p> <p>-Direct seeding (wet seeding) of very short duration high yielding varieties such as Luit, Kolong, Dishang etc or any</p>	- Technology showcasing programme of AAU and other seed production programmes of state dept of agriculture, Assam

				<p>traditional photo period sensitive varieties can also be grown up to 1st week of September. Sprouted seed of 75 kg/ha is to be broadcast in puddle field.</p>	
		Rice(Kharif)- Torina / Potato / Rabi vegetables	No change	<p>- Very 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 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 (15 cm x 10 cm) and 6-8 seedlings/hill -Direct seeding (wet seeding) of very short duration high yielding varieties such as Luit,</p>	<p>- Technology showcasing programme of AAU and other seed production programmes of state dept of agriculture, Assam</p>

				<p>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>	
		Rice (kharif) – Rice (summer)	No change	<p>-Very 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 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 (15 cm x 10 cm) and 6-8 seedlings/hill -Direct seeding (wet seeding) of very short duration high</p>	<p>- Technology showcasing programme of AAU and other seed production programmes of state dept of agriculture, Assam</p>

				<p>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>	
	<p>Flood prone / low land (Sandy loam to clay loam)</p>	<p>Late Sali (Kharif) – Toria/Potato/Rabi vegetables</p>	<p>No Change</p>	<p>- If transplanting is possible during last part of August, very 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 varieties with up to 60 days old seedlings can be grown up to last part of August. About 10 kg seed/bigha is required with closer</p>	<p>- Technology showcasing programme of AAU and other seed production programmes of state dept of agriculture, Assam</p>

				spacing (15 cm x 10 cm) and 6-8 seedlings/hill. -If flood damages crop during last part of August and there is no time to raise seedlings, direct seeding (wet seeding) of very short duration high yielding varieties such as Luit, Kolong, Dishang etc. can be grown upto 1st week of September. Sprouted seed of 75 kg/ha is to be broadcast in puddle field.	
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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 1st wk	June 3rd wk	July 1st wk	July 3rd wk	Aug 1st wk
June 2nd wk	June 4th wk	July 2nd wk	July 4th wk	Aug 2nd wk
June 3rd wk	July 1st wk	July 3rd wk	Aug 1st wk	Aug 3rd wk
June 4th wk	July 2nd wk	July 4th wk	Aug 2nd wk	Aug 4th wk
July 1st wk	July 3rd wk	Aug 1st wk	Aug 3rd wk	Sep 1st wk
July 2nd wk	July 4th wk	Aug 2nd wk	Aug 4th wk	Sep 2nd wk

\*

Condition	Major Farming situation <sup>a</sup>	Suggested Contingency measures			
		Crop/ cropping system <sup>b</sup>	Change in crop/ cropping system <sup>c</sup>	Soil nutrient & moisture conservation measures <sup>d</sup>	Remarks on Implementation <sup>e</sup>
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 - Toria/ Potato / Rabi vegetables	No Change	-Life saving supplemental irrigation -Weeding at critical stages of growth. -Raising seedlings of very short duration varieties depending on seedling requirements -Application of organic manure in the field - Optimum spacing	- Development of water harvesting structure under MGNERGS - Arrangements of pump sets under NFSM and RKVY
		Rice / summer vegetables - Black gram/Sesamum	No Change	-Life saving supplemental irrigation -Weeding at critical stages of growth. - Raising seedlings of very short duration varieties depending on seedling requirements -Application of organic manure in the field - Optimum spacing	- Development of water harvesting structure under MGNERGS - Arrangements of pump sets under NFSM and RKVY
		Summer	No Change	-Life saving	-

		vegetables - Toria / Potato / Rabi vegetables		supplemental irrigation -Weeding at critical stages of growth. - Application of sufficient quantity of FYM or compost and mulch materials	Development of water harvesting structure under MGNERGS - 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.	- Development of water harvesting structure under MGNERGS - Arrangements of pump sets under NFSM and RKVY
		Rice(Kharif)- Toria / Potato / Rabi vegetables	No change	-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.	
		Rice (kharif) – Rice (summer)	No change	-Where germination is severely affected, re-sowing of rice seed may also be recommended.	

				Varieties suitable for medium and short duration should be selected for sowing.	
	Flood prone / low land	Late Sali (Kharif) – Toria/Potato/Rabi vegetables	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 should be done</p> <p>-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</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 MGNER EGS</p>



				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.	
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Condition	Major Farming situation <sup>a</sup>	Suggested Contingency measures			
		Crop/ cropping system <sup>b</sup>	Change in crop/ cropping system <sup>c</sup>	Soil nutrient & moisture conservation measures <sup>d</sup>	Remarks on Implementation <sup>e</sup>
At vegetative stage	Rainfed upland, (Sandy loam to clay loam)	Rice - Toria/ Potato / Rabi vegetables	No Change	-Life saving supplemental irrigation -Weeding at critical stages of growth. - Application of organic manure in the field -Top dressing of additional quantities of MOP @ 37.5 kg/ha	- Development of water harvesting structure under MGNREGS for life saving irrigation
		Rice / summer vegetables - Black gram/Sesamum	No Change		
		Summer vegetables - Toria / Potato / Rabi vegetables	No Change		
	Rainfed medium /medium lowland	Rice(Kharif) monocropping	No change	-Top dressing of additional quantities of MOP @ 37.5 kg/ha	-- Development of

	(Sandy loam to clay loam)	Rice(Kharif)- Toria /Potato / Rabi vegetables	No change	-Spraying of 2% KCL solution on leaves of rice when drought appears.	water harvesting structure under MGNREGS for life saving irrigation - Arrangements of pump sets under NFSM and RKVY
		Rice (kharif) – Rice (summer)	No change	-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 -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.	
	Flood prone / low land	Late Sali (Kharif) – Toria/Potato/Rabi vegetables	No Change	-Supplementary life saving irrigation at critical stages of crop growth --Top dressing of additional quantities of MOP @ 37.5 kg/ha -Spraying of 2% KCL solution on leaves of rice when drought appears. -Top dressing of urea may be delayed upto heading stage of	-- Development of water harvesting structure under MGNREGS for life saving irrigation

				rice if drought prevails at the stages of top dressing	- Arrangements of pump sets under NFSM and RKVY
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Condition	Major Farming situation <sup>a</sup>	Suggested Contingency measures			
		Crop/ cropping system <sup>b</sup>	cropping system <sup>c</sup>	Soil nutrient & moisture conservation measures <sup>d</sup>	Remarks on Implementation <sup>e</sup>
Mid season drought (long dry spell)					
At reproductive stage	Rainfed upland, (Sandy loam to clay loam)	Rice - Toria/ Potato / Rabi vegetables	No Change	-Life saving supplemental irrigation -Weeding at critical stages of growth. -Mulching with crop residue in horticultural crops -Application of sufficient quantities of FYM	--Development of water harvesting structure under MGNREGS for life saving irrigation - Arrangements of pump sets under NFSM and RKVY
		Rice / summer vegetables - Black gram/Sesamum/ Maize	No Change		
		Summer vegetables - Toria / Potato / Rabi vegetables	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/ -Spraying of 2% KCL solution on leaves of rice if and when drought appear before flowering. -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 - If crop fails, plan for rabi vegetables, oilseeds, pulses	--Development of water harvesting structure under MGNREGS for life saving irrigation - Arrangements of pump sets under NFSM and RKVY
		Rice(Kharif)- Toria / Potato / Wheat/Rabi vegetables	No change		
		Rice (kharif) – Rice (summer)	No change		

				etc. -Application of sufficient quantities of FYM	
Flood prone / low land	Late Sali (Kharif) – Toria/Potato/Rabi vegetables	No Change	-Supplementary life saving irrigation at critical crop stages --Top dressing of additional quantities of MOP @ 37.5 kg/ha -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 - If crop fails, plan for rabi vegetables, oilseeds, pulses etc. -Application of sufficient quantities of FYM	-Development of water harvesting structure under MGNREGS	

Condition	Suggested Contingency measures				
Terminal drought	Major Farming situation <sup>a</sup>	Crop/ cropping system <sup>b</sup>	Crop management <sup>c</sup>	Rabi crop planning <sup>d</sup>	Remarks on Implementation <sup>e</sup>
	Rainfed upland, (Sandy loam to clay loam)	Rice - Toria/ Potato / Rabi vegetables /Small millets	-Light life saving supplemental irrigation -Harvesting of kharif crops at physiological maturity stage.	- Rabi cropping with cole crops such as Cauliflower (mid season varieties – Improved Japanese, Pusa Synthetic, Pusa Snowball etc. ) and Cabbage ( Varieties – Golden Acre, Pride of India, Pusa Mukta etc.), Knolkhol (White Viena) etc. - Growing of Tomato, Brinjal,	-- Development of water harvesting structure under MGNREGS for life saving irrigation - Arrange
Rice / summer vegetables - Black gram/Sesamum/ Maize					
Summer vegetables - Toria / Potato / Rabi vegetables					

				<p>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, etc. in time with pre-sowing irrigation if required with recommended varieties and package of practices.</p>	<p>ments of pump sets under NFSM and RKVY</p> <p>- Arrange ment of seed under National Horticultural Mission</p>
	<p>Rainfed medium /medium lowland (Sandy loam to clay loam)</p>	<p>Rice(Kharif) monocropping</p>	<p>-Light life saving supplemental -irrigation - Harvesting of kharif crops at physiological maturity stage.</p>	<p>- Rabi cropping with cole crops such as Cauliflower (mid season varieties – Improved Japanese, 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.</p> <p>--Growing of rabi field crops like toria, lentil, etc. in time with pre-sowing</p>	<p>-- Develop ment of water harvestin g structure under MGNRE GS for life saving irrigation</p> <p>- Arrange ment of seed under National Horticult ural Mission</p>
		<p>Rice(Kharif)- Toria / Potato / Maize/Rabi vegetables</p>			
		<p>Rice (kharif) – Rice (summer)</p>			

				irrigation if required with recommended varieties and package of practices.	
	Flood prone / low land	Late Sali (Kharif) – Toria/Potato/ Rabi vegetables	-Life saving supplemental irrigation -- Harvesting of kharif crops at physiological maturity stage.	- Rabi cropping with cole crops such as Cauliflower (mid season varieties – Improved Japanese, 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, etc. in time with pre-sowing irrigation if required with recommended varieties and package of practices.	-- Develop ment of water harvestin g structure under MGNRE GS for life saving irrigation - Arrange ment of seed under National Horticult ural Mission

Notes:

Describe the major farming situation to provide information on growing environment (rainfall and soil information - colour, depth & texture) such as low rainfall shallow red sandy loam soils, high rainfall deep black soils, uplands, medium lands, eroded hill slopes etc. tank fed black soils, shallow acid soils, sodic vertisols etc

Describe the normal crop or cropping system grown in that farming situation including catch crop, sequence, rotation & variety if known

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.

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.

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 Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), 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 drought- 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 2.1.3

Condition	Major Farming situation <sup>f</sup>	Normal Crop/cropping system <sup>g</sup>	Suggested Contingency measures		
			Change in crop/cropping system <sup>h</sup>	Agronomic measures <sup>i</sup>	Remarks on Implementation <sup>j</sup>
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	Cropping system 1:			
		Cropping system 2:			
		Cropping system 3:	NA		

	soils				
	2) Farming situation:	Cropping system 1:			
		Cropping system 2:			
		Cropping system 3:			
<b>Condition</b>			<b>Suggested Contingency measures</b>		
	<b>Major Farming situation<sup>f</sup></b>	<b>Normal Crop/cropping system<sup>g</sup></b>	<b>Change in crop/cropping system<sup>h</sup></b>	<b>Agronomic measures<sup>i</sup></b>	<b>Remarks on Implementation<sup>j</sup></b>
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:			

<b>Condition</b>	<b>Major Farming situation<sup>f</sup></b>	<b>Normal Crop/cropping system<sup>g</sup></b>	<b>Suggested Contingency measures</b>		
			<b>Change in crop/cropping system<sup>h</sup></b>	<b>Agronomic measures<sup>i</sup></b>	<b>Remarks on Implementation<sup>j</sup></b>
<b>Non release of water in canals under delayed onset of monsoon in catchment</b>	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 <sup>f</sup>	Normal Crop/cropping system <sup>g</sup>	Change in crop/cropping system <sup>h</sup>	Agronomic measures <sup>i</sup>	Remarks on Implementation <sup>j</sup>
	2) Farming situation:	Cropping system 1:			
		Cropping system 2:			
		Cropping system 3:			

Condition			Suggested Contingency measures		
	Major Farming situation <sup>f</sup>	Normal Crop/cropping system <sup>g</sup>	Change in crop/cropping system <sup>h</sup>	Agronomic measures <sup>i</sup>	Remarks on Implementation <sup>j</sup>
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 <sup>f</sup>	Normal Crop/cropping system <sup>g</sup>	Change in crop/cropping system <sup>h</sup>	Agronomic measures <sup>i</sup>	Remarks on Implementation <sup>j</sup>

Condition	Major Farming situation <sup>f</sup>	Normal Crop/cropping system <sup>g</sup>	Suggested Contingency measures		
			Change in crop/cropping system <sup>h</sup>	Agronomic measures <sup>i</sup>	Remarks on Implementation <sup>j</sup>
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 1:	NA		
		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 <sup>f</sup>	Normal Crop/cropping system <sup>g</sup>	Suggested Contingency measures		
			Change in crop/cropping system <sup>h</sup>	Agronomic measures <sup>i</sup>	Remarks on Implementation <sup>j</sup>
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 Medium duration HYV like Satyaranjan, Basundhara, etc.,short duration HYV like Lachit, Chilaray etc., very short duration HY rice varieties like Luit, Kolong, Dishang etc in case of summer rice/	-Provision for drainage channel to remove excess water. - If crop attains maturity stage, harvest the crop at	Preparation of drainage channel under MGNREGA

Condition	Suggested Contingency measures				
	Major Farming situation <sup>f</sup>	Normal Crop/cropping system <sup>g</sup>	Change in crop/cropping system <sup>h</sup>	Agronomic measures <sup>i</sup>	Remarks on Implementation <sup>j</sup>
			early ah rice, submergence tolerant varieties like Jalashree, Jalkuwari etc., and staggering ability rice varieties like Prafulla, Gitesh etc.	physiological maturity stage.	
		Summer vegetables	-Raising Summer vegetables in late -Plan for rabi crops	Provision for drainage channel to remove excess water.	Preparation of drainage channel under MGNREGA
	Upland (sandy loam to clay loam)	Fruits (banana, citrus, pineapple, colocasia etc)	-Fruits (banana, citrus pineapple, colocasia etc) - if crop fails, replanting of crops	Provision for drainage channel to remove excess water.	Preparation of drainage channel under MGNREGA

Condition	Suggested Contingency measures				
	Major Farming situation <sup>f</sup>	Normal Crop/cropping system <sup>g</sup>	Change in crop/cropping system <sup>h</sup>	Agronomic measures <sup>i</sup>	Remarks on Implementation <sup>j</sup>
Hail storm under irrigated condition	Medium / medium low /lowland land (sandy loam to clay loam)	Summer rice/ Early ah rice with long duration local cultivars and hybrid rice variety	Adoption of Medium duration HYV like Satyaranjan, Basundhara, etc., short duration HYV like Lachit, Chilaray etc., very short duration HY rice varieties like Luit, Kolong, Dishang etc in case of summer rice/	-	-

Condition	Suggested Contingency measures				
	Major Farming situation <sup>f</sup>	Normal Crop/cropping system <sup>g</sup>	Change in crop/cropping system <sup>h</sup>	Agronomic measures <sup>i</sup>	Remarks on Implementation <sup>j</sup>
			early ahu rice, submergence tolerant varieties like Jalashree, Jalkuwari etc., and staggering ability rice varieties like Prafulla, Gitesh etc.		
		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 NFSM, Technology Mission, RKVY for protected cultivation.
	Upland (sandy loam to clay loam)	Fruits (banana, citrus etc)	Mulbhoog banana cultivation	Installation of hail net Plantation of wind break	

Notes:

<sup>f</sup> 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.,

<sup>g</sup> The normal crop or cropping systems grown in a given irrigated situation

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

<sup>i</sup> 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.

<sup>j</sup> 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 Mahatama Gandhi National Rural Employment Guarantee Scheme (MGNREGS), 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 <sup>k</sup>	Flowering stage <sup>l</sup>	Crop maturity stage <sup>m</sup>	Post harvest <sup>n</sup>
Continuous high rainfall in a short span leading to water logging				
Crop1 Summer rice	<ul style="list-style-type: none"> <li>-Sow rice seed in raised nursery bed with 30cm gap between two beds which can be utilized to drain out excess water.</li> <li>- Excess rain water to be drained out through surface drainage channel to avoid submergence in the main field.</li> <li>-Light hoeing and weeding</li> </ul>	Excess rain water to be drained out through surface drainage channel to avoid submergence	<ul style="list-style-type: none"> <li>-Excess rain water to be drained out through surface drainage channel to avoid submergence</li> <li>-Crop to be harvested at physiological maturity stage.</li> </ul>	<ul style="list-style-type: none"> <li>-Proper drying of grains to maintain optimum moisture percentage (12-14%) for storage</li> </ul>
Crop2 Winter rice	<ul style="list-style-type: none"> <li>-Sow rice seed in raised nursery bed with 30cm gap between two beds which can be utilized to drain out excess water.</li> <li>- Excess rain water to be drained out through surface drainage channel to avoid submergence in the main field.</li> <li>-Light hoeing and weeding</li> </ul>	Excess rain water to be drained out through surface drainage channel to avoid submergence	<ul style="list-style-type: none"> <li>-Excess rain water to be drained out through surface drainage channel to avoid submergence.</li> <li>-Crop to be harvested at physiological maturity stage</li> </ul>	<ul style="list-style-type: none"> <li>-Proper drying of grains to maintain optimum moisture percentage (12-14%) for storage</li> </ul>

Crop3 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. -Crop to be harvested at physiological maturity stage.	-Proper drying of grains to maintain optimum moisture percentage for storage
<b>Horticulture</b>				
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 in drier place before storage
Crop3 Vegetables	-Drainage - Application of hormones, nutrient sprays to prevent flower drop.	-Drainage - Application of hormones, nutrient sprays to prevent flower drop.	Drainage	Shifting of the produce to drier place, cold storage.
Heavy rainfall with high speed winds in a short span <sup>2</sup>	Vegetative stage <sup>k</sup>	Flowering stage <sup>l</sup>	Crop maturity stage <sup>m</sup>	Post harvest <sup>n</sup>
Crop1 Summer rice	-Sow rice seed in raised nursery bed with 30cm gap between two beds which can be utilized to drain out	- Excess rain water to be drained out through surface drainage channel to avoid submergence in	-Crop to be harvested at physiological maturity	-Proper drying of grains to maintain

	<p>excess water.</p> <ul style="list-style-type: none"> <li>- Excess rain water to be drained out through surface drainage channel to avoid submergence in the main field.</li> </ul>	the main field	stage.	optimum moisture percentage (12-14%) for storage
Crop2 Winter rice	<ul style="list-style-type: none"> <li>-Sow rice seed in raised nursery bed with 30cm gap between two beds which can be utilized to drain out excess water.</li> <li>- Excess rain water to be drained out through surface drainage channel to avoid submergence in the main field.</li> </ul>	- 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
<b>Horticulture</b>				
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.	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

<b>Outbreak of pests and diseases due to unseasonal rains</b>	<b>Vegetative stage<sup>k</sup></b>	<b>Flowering stage<sup>l</sup></b>	<b>Crop maturity stage<sup>m</sup></b>	<b>Post harvest<sup>n</sup></b>
Crop1 summer rice	<ul style="list-style-type: none"> <li>-Application of pesticides like chloropyriphos or Monocrotophos @ 2 ml/lit against stem borer, leaf folder, case worm.</li> <li>-Adoption IPM module.</li> <li>-Alternate flooding and drying against case worm.</li> <li>-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.</li> </ul>	<ul style="list-style-type: none"> <li>-Rouging of infected plant ,</li> <li>- Application of pesticides like chloropyriphos or Monocrotophos @ 2 ml/lit against stem borer</li> <li>-Adoption IPM module against stem borer</li> <li>-Spraying of pesticide should not coincide pollination time.</li> <li>-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.</li> </ul>	-	-Insect pests and disease infested seed/grains should be discarded
Crop2 Winter rice	<ul style="list-style-type: none"> <li>-Application of pesticides like chloropyriphos or Monocrotophos @ 2 ml/lit against stem borer, leaf folder, case worm.</li> <li>-Adoption IPM module.</li> <li>-Alternate flooding and drying against case worm.</li> <li>-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.</li> </ul>	<ul style="list-style-type: none"> <li>-Rouging of infected plant ,</li> <li>- Application of pesticides like chloropyriphos or Monocrotophos @ 2 ml/lit against stem borer</li> <li>-Adoption IPM module against stem borer</li> <li>-Spraying of pesticide should not coincide pollination time.</li> <li>-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.</li> </ul>	-	Insect pests and disease infested seed/grains should be discarded
Crop3 Black gram	Against YMV, spray	Against YMV, spray	-Against pod	Insect pests



	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.	Dimethoate @ 2ml/l (2 -3 spraying) Against jassids, aphids, flee beetle, leaf folder, spray Malathion 50 EC @ 2 ml/l of water.	borer & pod bug, spray Malathion 50 EC @ 2 ml/l of water.	and disease infested seed/grains should be discarded
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<b>Horticulture</b>				
Crop1 Potato	-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	-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.

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

<sup>l</sup> 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.

<sup>m</sup> 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.

<sup>n</sup> 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 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
Crop4 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	-Drainage, -Make trenches/furrows in between rows to facilitate drainage of excess water,

			excess water, propping.	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	-
<b>Continuous submergence for more than 2 days<sup>2</sup></b>				
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	<ul style="list-style-type: none"> <li>-Raised nursery bed with 30 cm gap in between two beds so that excess water can be removed.</li> <li>-If seedlings are damaged by flood water, re-sowing may be done with the following varieties-</li> <li>-If transplanting can be done by mid August, select varieties like Satyaranjan, Basundhara, Jaymati etc. Seedlings should be raised in non flood prone or high land area.</li> <li>- If transplanting is possible during last part of August, short duration varieties like Lachit, Chilaray and very short duration varieties such as Luit, Kolong, Dishang etc. can also be selected (transplanting up to last part of August). 18-21 days old seedling should be transplanted at 15x15 cm spacing with 4-5 seedlings/hill.</li> </ul>	<ul style="list-style-type: none"> <li>-Drainage of excess water</li> <li>-If crop is damaged by flood, the nursery may be raised with the following varieties-</li> <li>- If transplanting is possible during last part of August, very short duration varieties such as Luit, Kolong, Dishang etc. can also be selected (transplanting up to last part of August). 18-21 days old seedling should be transplanted at 15x15 cm spacing with 4-5 seedlings/hill.</li> <li>-If flood damages crop during last part of August and there is no time to raise seedlings, direct seeding (wet seeding) of very short duration high yielding varieties such as Luit, Kolong, Dishang 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.</li> </ul>	-Drainage of excess water	Harvesting at physiological maturity stage, tying the harvested head and transferred to dry place for drying
Crop3 Sesame	<ul style="list-style-type: none"> <li>-Drainage of flood water</li> <li>- Re sowing may required if crop is damaged by flood.</li> <li>-Hoeing in between lines for aeration in root zone after flood</li> </ul>	<ul style="list-style-type: none"> <li>- Drainage of flood water</li> <li>-Hoeing in between lines for aeration in root zone after flood.</li> </ul>	<ul style="list-style-type: none"> <li>- Drainage of flood water</li> <li>-Hoeing in between lines for aeration in root zone after flood.</li> </ul>	<ul style="list-style-type: none"> <li>-Harvesting at physiological maturity stage.</li> <li>-Proper drying of produce</li> </ul>
Crop4 Black gram	<ul style="list-style-type: none"> <li>-Drainage of flood water</li> <li>- Re sowing may</li> </ul>	<ul style="list-style-type: none"> <li>- Drainage of flood water</li> </ul>	<ul style="list-style-type: none"> <li>- Drainage of flood water</li> </ul>	<ul style="list-style-type: none"> <li>-Harvesting at physiological</li> </ul>

	required if crop is damaged by flood. -Hoeing in between lines for aeration in root zone after flood	-Hoeing in between lines for aeration in root zone after flood.	-Hoeing in between lines for aeration in root zone after flood.	maturity stage. -Proper drying of produce
<b>Horticulture / Plantation crops</b>				
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	-

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 Baksa district*

Extreme event type	Suggested contingency measurer			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
<b>Heat Wave<sup>p</sup></b>				
Crop1				
Crop2				
Crop3				
Crop4				
Crop 5				
<b>Horticulture</b>				
Crop1 (specify)				
Crop2				
Crop3				
<b>Cold wave<sup>q</sup></b>				
Crop1				
Crop2				
Crop3				
Crop4				
Crop 5				
<b>Horticulture</b>				
Crop1 (specify)				
Crop2				
Crop3				
<b>Frost</b>				
Crop1				
Crop2				
Crop3				
Crop4				
Crop 5				
<b>Horticulture</b>				
Crop1 (specify)				
Crop2				

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

Notes:

<sup>p</sup>In regions where the normal maximum temperature is more than 40°C, if the day temperature exceeds 30°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 50°C above normal for 5 days, it is defined as heat wave.

<sup>q</sup>In regions where normal minimum temperature remains 10°C or above, if the minimum temperature remains 50°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 30°C lower than normal it is considered as cold wave

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

<sup>s</sup> based on forewarning wherever available

## Contingent strategies for Livestock, Poultry & Fisheries

### 2.5.1 Livestock

	Suggested contingency measures		
	Before the events	During the event	After the event
<b>Drought</b>			
Feed and fodder availability	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 by giving unconventional feeds and various by products. Insurance	Feeding fodders from perennial trees. Feeding already prepared silage and hay. Providing feed blocks, unconventional feeds and various by products. Providing urea treated straw.	Availing insurance Culling of affected and unproductive animals. Fodder rejuvenation
Drinking water	Storing water in tanks for the hard period Insurance	Stored quality drinking water to the livestock. Animals not to be exposed outside	Culling of affected and unproductive animals.
Health and disease management	Timely vaccinations against various diseases. Veterinary preparedness like storing required medicines and other accessories Mass awareness programme on management of livestock during drought. Insurance of animals	Immediate treatment of the sick animals. Conducting animal health camps during the period.	Culling of unproductive animals Availing insurance
<b>Floods</b>			



Feed and fodder availability	Maintenance of fodder bank in community land Silage preparation Mass awareness on feeding the livestock by giving unconventional feeds and various by products. Stocking of concentrated feed in sufficient quantity. Insurance Raised platform	Providing feed blocks, unconventional feeds and various by products Keep animals in safe place like raised platform/upland	Availing insurance Culling of affected and unproductive animals. Fodder rejuvenation Health check-up and vaccination
Drinking water	Storing water in tanks Insurance	stored quality drinking water to the livestock.	Treating of drinking water.
Health and disease management	Timely vaccinations against various diseases. Veterinary preparedness like storing required medicines and other accessories Mass awareness programme on management of livestock during flood.	Immediate treatment of the sick animals. Conducting animal health camps during the period.	Culling of unproductive animals Availing insurance Health check-up and vaccination
<b>Cyclone</b>			
Feed and fodder availability			
Drinking water			
Health and disease management			
<b>Heat wave and cold wave</b>			
Shelter/environment management			
Health and disease management			

### 2.5.2 Poultry

	<b>Suggested contingency measures</b>	<b>Convergence/linkages with ongoing programs, if any</b>
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	<b>Before the eventa</b>	<b>During the event</b>	<b>After the event</b>	
<b>Drought</b>				
Shortage of feed ingredients	Insurance Storage of feed	Offering stored feed	Availing Insurance Culling unproductive birds.	
Drinking water	Preserving water in tank	Offering stored water	Culling unproductive birds.	
Health and disease management	Timely vaccinations against various diseases. Veterinary preparedness Mass awareness programme on management of poultry during drought.	Immediate treatment of the sick animals. Conducting animal health camps during the period.	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.
<b>Floods</b>				
Shortage of feed ingredients	Insurance Storage of feed	Offering stored feed	Culling of unproductive birds Availing insurance	
Drinking water	Preserving water in tank	Offering stored water	Culling of unproductive birds Availing insurance	
Health and disease management	Timely vaccinations against various diseases. Veterinary preparedness Mass awareness programme on management of poultry during flood	Immediate treatment of the sick birds	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.
<b>Cyclone</b>				
Shortage of feed ingredients				
Drinking water				
Health and disease management				
<b>Heat wave and cold wave</b>				
Shelter/environment management				
Health and disease management				

### 2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event	During the event	After the event
<b>1) Drought</b>			
A. Capture			
Marine	-	-	-
Inland			
(i) Shallow water depth due to insufficient rains/inflow	Maintain adequate fish population Restrict release of water from reservoir. Water harvesting structure to supply water during the event	Maintain adequate fish population 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	Re stocking, wherever possible. Digging of pond to increase the depth.
(ii) Changes in water quality	Thinning out of stock Removal of aquatic weeds	Proper aeration Supply of adequate quantity of water to the pond	Remove aquatic vegetation
(iii) Any other			
<b>B. Aquaculture</b>			

(i) Shallow water in ponds due to insufficient rains/inflow	<p>For pond construction select soils with sufficient clay for retention of water.</p> <p>Apply sufficient organic manure during preparation to minimize water loss through seepage.</p> <p>Insurance</p> <p>Excavation of bore wells</p> <p>Reduce biomass and stocking density through partial harvesting.</p> <p>Sell out the fishes attaining marketable size to minimize loss.</p> <p>Stock fishes that can thrive low water depth, like air breathing fishes.</p> <p>Maintenance of proper record for claiming compensation, especially in schemes assisted by Govt. or financial institutes.</p> <p>Planning for rain water harvest.</p>	<p>Pump in water from other water source (nearby spring, stream, rivers etc) or ground water, if any.</p> <p>Reduce food for minimum metabolism.</p> <p>Restrict fertilizer for preventing algal bloom and minimum stress.</p> <p>Dig deep trench in convenient part of the pond to save brood fishes.</p> <p>Careful observation on daily basis.</p> <p>Scare away birds and other animals (attracted by shallow water to catch fish) – may be vector for diseases.</p>	<p>Extended seed production</p> <p>Restock the pond.</p> <p>Integrated fish farming</p> <p>Short duration culture of species that are fast growing in initial stage and can be marketed at small size (minor and medium carps).</p> <p>Air breathing fish culture</p> <p>Claim compensation with support of record and documents.</p> <p>Paddy cum fish culture</p>
(ii) Impact of salt load build up in ponds / change in water quality	<p>Thinning out of stock</p> <p>Water quality management</p> <p>Liming adequately</p>	<p>Recirculation of water and/or aeration.</p> <p>Careful observation on daily basis.</p>	-
(iii) Any other	-	-	-
2) Floods			
A. Capture			
Marine	-	-	-
Inland	Preparation for pen and cage culture	Pen & cage culture Can get engaged in other related activities like net and gear making.	Desilting & weed removal if possible
(i) No. of boats / nets/damaged			
(ii) No.of houses damaged			
(iii) Loss of stock		Placement of nets around the pond	Pen & cage culture Re stocking, wherever possible
(iv) Changes in water quality		Application of lime in adequate quantity	Application of lime in adequate

			quantity
(v) Health and diseases		Supply adequate quantities of food, lime	Supply adequate quantities of food, lime
<b>B. Aquaculture</b>			
(i) Inundation with flood water	<p>Insurance</p> <p>Raising height, turfing and compaction of peripheral embankments.</p> <p>Horticulture on the embankment to prevent erosion.</p> <p>Sufficient bamboo poles and nylon nets to be kept ready.</p> <p>‘High stocking multiple harvesting’ can be taken up.</p> <p>Sell out the fishes attaining marketable size to minimize loss.</p> <p>Maintenance of proper record for claiming compensation, especially in schemes assisted by Govt. or financial institutes.</p>	<p>Surround the pond with nets supported by bamboo poles to prevent escape of fish.</p> <p>Supply sufficient food to fishes to reduce tendency of escaping from the pond.</p>	<p>Desilting.</p> <p>Restock the pond if original stock escapes.</p> <p>Integrated fish farming</p> <p>Short duration culture of species that are fast growing and can be marketed at small size.</p> <p>Claim compensation with support of record and documents.</p> <p>Removal of unwanted/ predatory fish from pond before stocking.</p> <p>Paddy cum fish culture</p>
(ii) Water contamination and changes in water quality	Prevent entry of water from outside.	Apply lime regularly as per recommendation.	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	<p>Precaution to prevent entry of pesticide/insecticide laden water from nearby agricultural land.</p> <p>Apply lime regularly as per recommendation.</p>		
(iv) Loss of stock and inputs (feed, chemicals etc)	<p>Stocking feeds, chemicals etc. at high lands</p> <p>Arranging transportation</p>	Transportation of feed chemicals from godown to high land	After possible repairing of the physical damage,

	facilities		take up late seed rearing to be stocked in the next year.
(v) Infrastructure damage (pumps, aerators, huts etc)	- Protection of pump, aerators etc.	Dismantling of pump for safety	Renovation of pumps
(vi) Any other			Small scale homestead ornamental fish production, depending on the market.
<b>3. Cyclone / Tsunami</b>			
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	-	-	-
<b>Inland</b>	-	-	-
B. Aquaculture	-	-	-
(i) Overflow / flooding of ponds	Collection of net , banas etc. for protection over embankments	Placement of nets in the embankment	-
(ii) Changes in water quality (fresh water / brackish water ratio)	Application of KMnO <sub>4</sub> , Lime	Application of KMnO <sub>4</sub> , Lime	Application of KMnO <sub>4</sub> , Lime
(iii) Health and diseases	Supply of adequate quantities of foods and limes	Supply of adequate quantities of foods and limes	Supply of adequate quantities of foods and limes
(iv) Loss of stock and inputs (feed, chemicals etc)	-	-	-
(v) Infrastructure damage (pumps, aerators, shelters/huts etc)	Protection of pump, aerator etc	Dismantling of pump for safety	Renovation of pumps
(vi) Any other	-	-	-
<b>4. Heat wave and cold wave</b>			
A. Capture	-	-	-
Marine	-	-	-
Inland	-	-	-
<b>B. Aquaculture</b>	-	-	-

(i) Changes in pond environment (water quality)	Apply lime regularly as per recommendation.	Apply lime regularly as per recommendation.	Apply lime regularly as per recommendation.
(ii) Health and Disease management	Apply preventive agents (eg. CIFAX) before on set of winter.	Restrict application of fertilizer as per requirement.	
(iii) Any other	-	-	-