State: BIHAR

Agriculture Contingency Plan for District: AURANGABAD

1.0 District Agriculture profile					
1.1	**Agro-Climatic/Ecological Zone**				
	Agro Ecological Sub Region (ICAR)	Northern Plain, Hot Subhumib (Dry) Eco-Region (9.2)			
	Agro-Climatic Zone (Planning Commission)	MIDDLE GANGETIC PLAIN REGION (IV)			
	Agro Climatic Zone (NARP)	SOUTH BIHAR ALLUVIAL PLAIN ZONE (BI-3)			
	List all the districts falling under the NARP Zone* (*>50% area falling in the zone)	Aurangabad, Gaya, Jahanabad, Patna, Arwal, Rohtas, Nalanda, Bhojpur, Buxar, Bhabhua, Nawada			
	Geographic coordinates of district headquarters				
	Geographic coordinates of district headquarters	Latitude	Longitude	Altitude	
		24.75^0N	84.36^0E	108.0m	
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	ARI, Mithapur, Patna			
	Mention the KVK located in the district with address	Aurangabad			
	Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro-advisories in the Zone	BAC, Sabour , Bhagalpur			

1.2	**Rainfall (Zone-IIIB)**	**Normal RF(mm)**	**Normal Rainy days (number)**	**Normal Onset (specify week and month)**	**Normal Cessation (specify week and month)**
	SW monsoon (June-Sep):	911.6	41	(18-24 June)	(15-21 October)
	NE Monsoon(Oct-Dec)/Post monsoon	55.1	3.0		
	Winter (Jan- March)	31.8	3.0		
	Summer (Apr-May)	36.1	3.0		
	Annual	1034.5	51		

1.3	**Land use pattern of the district** (latest statistics)	Geographical area	Cultivable area	Forest area	Land under non-agricultural use	Permanent pastures	Cultivable wasteland	Land under Misc. tree crops and groves	Barren and uncultivable land	Current fallows	Other fallows
	Area (‘000 ha)	330.011	167.958	13.575	50.600	0.628	1.094	0.039	16.044	72.073	8.000

1. 4	**Major Soils (common names like red sandy loam deep soils (etc.,)***	**Area (‘000 ha)**	**Percent (%) of total**
	Very deep, fine soil, Clayey surface texture		

1.5	**Agricultural land use**	Area (‘000 ha)	Cropping intensity %

	Net sown area	167.958	152.39%
	Area sown more than once	88.000	
	Gross cropped area	255.958	

1.6	**Irrigation**	Area (‘000 ha)		
	Net irrigated area	100.33		
	Gross irrigated area	100.33		
	Rainfed area	61.145		
	Sources of Irrigation	Number	Area (‘000 ha)	Percentage of total irrigated area
	Canals	3	89.021	88.72
	Tanks			
	Open wells	7601	4.127	4.11
	Bore wells- Deep TW	84		
	Lift irrigation schemes (Surface lift)	57		
	Micro-irrigation			
	Other sources (please specify) Dug well & shallow well	9056	7.182	7.15
	Total Irrigated Area		100.030	99.98 or 100%
	Pump sets			
	No. of Tractors			
	Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	No. of blocks/ Tehsils	(%) area	Quality of water (specify the problem such as high levels of arsenic, fluoride, saline etc)
	Over exploited			
	Critical			
	Semi- critical			
	Safe	11	100%	
	Wastewater availability and use			
	Ground water quality			
*over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%				

1.7 Area under major field crops & horticulture

1.7	Major field crops cultivated	Area ('000 ha)							
		Kharif			*Rabi*				
		Irrigated	**Rainfed**	**Total**	**Irrigated**	**Rainfed**	**Total**	**Summer**	**Grand total**
	Rice			105.259					105.259
	Wheat						52.479		52.479
	Maize				100.000		01.000		01.000
	Chickpea						5.455		05.455
	Lentil						12.719		12.719
	Khesari						14.451		14.451

	Horticulture crops - Fruits	**Area ('000 ha)**		
		Total	**Irrigated**	**Rainfed**
	Mango	1.225	-	-
	Guava	0.667	-	-
	Banana	0.318	-	-
	Lemon	0.484	-	-
	Aonla	0.026		
	Horticulture crops - Vegetables	**Total**	**Irrigated**	**Rainfed**
	Potato	5.722	5.722	-
	Cauliflower	1. 311	1.311	-
	Tomato	1.536	1.536	-
	Brinjal	1.099	1.099	-
	Onion	1.069	1.069	-
	Medicinal and Aromatic crops	**Total**	**Irrigated**	**Rainfed**
	Tulsi	.010	-	-
	Fenugreek	-	-	-
	Other	-	-	-
		In Bihar – Approx. 5000 ha of land is under this crop		
	Plantation crops	**Total**	**Irrigated**	**Rainfed**

	Fodder crops	Total	Irrigated	Rainfed
	Berseem	7.500	2.500	5.000
	Sudan grass	3.500	1.000	2.500
	Total fodder crop area	11.000	3.500	7.500
	Grazing land			
	Sericulture etc			
	Others (specify)			

1.8	**Livestock**		**Male ('000)**		**Female ('000)**		**Total ('000)**
	Non descriptive Cattle (local low yielding)		193.018		201.314		394.332
	Improved cattle						
	Crossbred cattle		2.019		9.418		11.437
	Non descriptive Buffaloes (local low yielding)						
	Descript Buffaloes		16.230		152.957		169.187
	Goat		59.332		168.171		227.503
	Sheep		14.326		33.249		47.575
	Others (Camel, Pig, Yak etc.)						
	Commercial dairy farms (Number)						
1.9	**Poultry**		**No. of farms**		**Total No. of birds ('000)**		
	Commercial				33.378		
	Backyard				157.889		
1.10	**Fisheries** (Data source: Chief Planning Officer)						
	A. Capture						
	i) Marine (Data Source: Fisheries Department)	**No. of fishermen**	**Boats**		**Nets**		**Storage facilities (Ice plants etc.)**
			Mechanized	Non-mechanized	Mechanized (Trawl nets, Gill nets)	Non-mechanized (Shore Seines, Stake & trap nets)	
	ii) Inland (Data Source: Fisheries Department)	**No. Farmer owned ponds**		**No. of Reservoirs**		**No. of village tanks**	
		NA		444		444	

	B. Culture			
		Water Spread Area (ha)	**Yield (t/ha)**	**Production ('000 tons)**
	i) **Brackish water** (Data Source: MPEDA/ Fisheries Department)			
	ii) **Fresh water** (Data Source: Fisheries Department)	1407	3.2/ha	2831.040
	Others			

1.11 Production and Productivity of major crops (Average of last 5 years: 2004, 05, 06, 07, 08; specify years)

1.11	Name of crop	**Kharif**		**Rabi**		**Summer**		**Total**		**Crop residue as fodder** ('000 tons)
		Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	
Major Field crops (Crops to be identified based on total acreage)										
	Rice	12.100 M.T.	1797	-	-	-	-	12.1 M.T.	1797	In the ratio of 1:3 1:2
	Wheat	-	-	175M.T.	2431	-	-	175M.T.	2431	
	Maize	-	-	1.7 M. T.	3400	-	-	1.7 M. T.	3400	
	Chickpea	-	-	2.054 M.T.	800	-	-	2.054 M.T.	800	
	Lentil			15.5M. T.	1000	-	-	15.5 M. T.	1000	
	Khesari			9.090 M.T.	752	-	-	9.09 M.T.	752	
Major Horticultural crops (Crops to be identified based on total acreage)										

	Mango	-	-	-	-	-	-	11.792M.T.	-	
	Banana	-	-	-	-	-	-	4.832 M.T.	-	
	Guava	-	-	-	-	-	-	7.356 M.T.	-	
	Lemon	-	-	-	-	-	-	3.728 M.T.	-	
	Coconut	-	-	-	-	-	-	1.030M.T.	-	

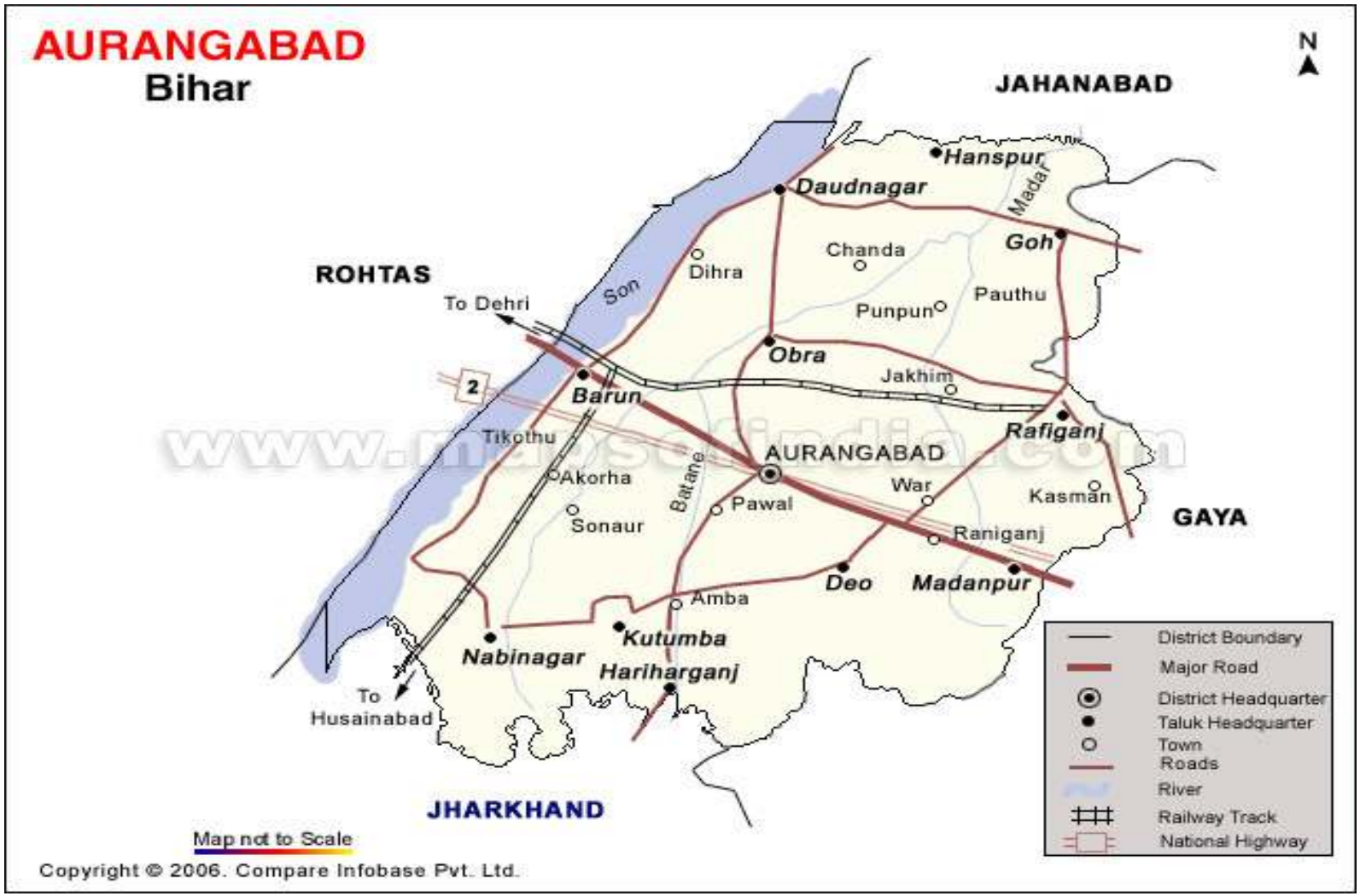
1.12	Sowing window for 5 major crops (start and end of sowing period)	**Rice**	**Wheat**	**Lentil**	**Chickpea**	**Mustard**
	Kharif rainfed	4th week of May to 2nd week of July (Depends on Rain)	-	-	-	-
	Kharif irrigated	4th week of May to 2nd week of July	-	-	-	-
	Rabi rainfed	-	-	-	-	-
	Rabi irrigated		3rd week of November to 1st week of January	3rd week of October to 3rd week of November	3rd week of October to 4th week of November	4th week of October to 3rd week of November

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)			

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

Annexure-I


AURANGABAD
Bihar
N
JAHANABAD
Hanspur
Daudnagar
Madar
Goh
Chanda
Dihra
ROHTAS
To Dehri
Son
Punpun
Pauthu
Obra
Jakhim
2
Barun
Rafiganj
Tikothu
AURANGABAD
Akorha
Batane
War
Kasman
Pawal
Sonaur
GAYA
Raniganj
Deo
Madanpur
Amba
Kutumba
Nabinagar
Harihargani
To
Husainabad
JHARKHAND
District Boundary
Major Road
District Headquarter
Taluk Headquarter
Town
Roads
River
Railway Track
National Highway
Map not to Scale
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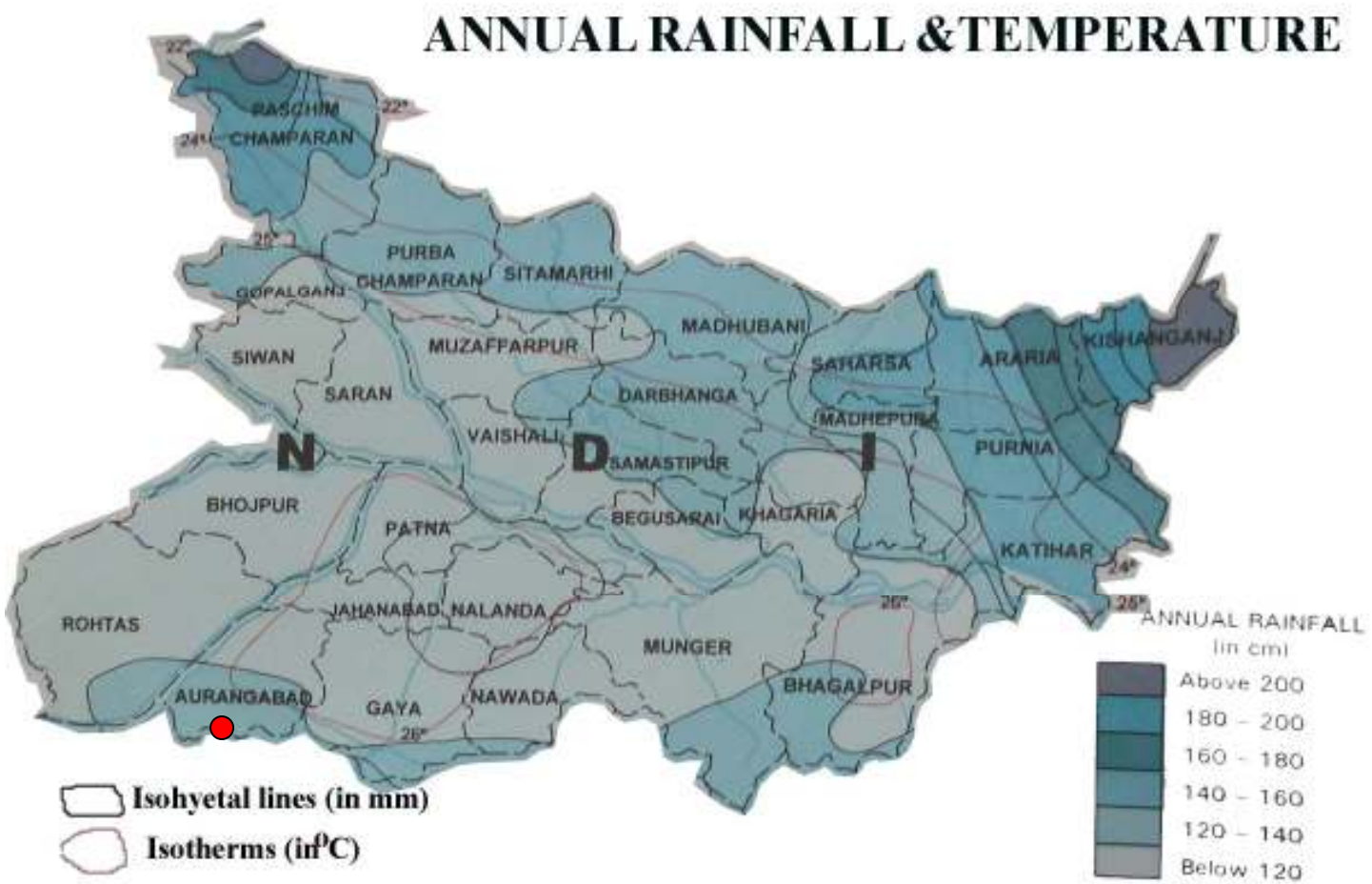
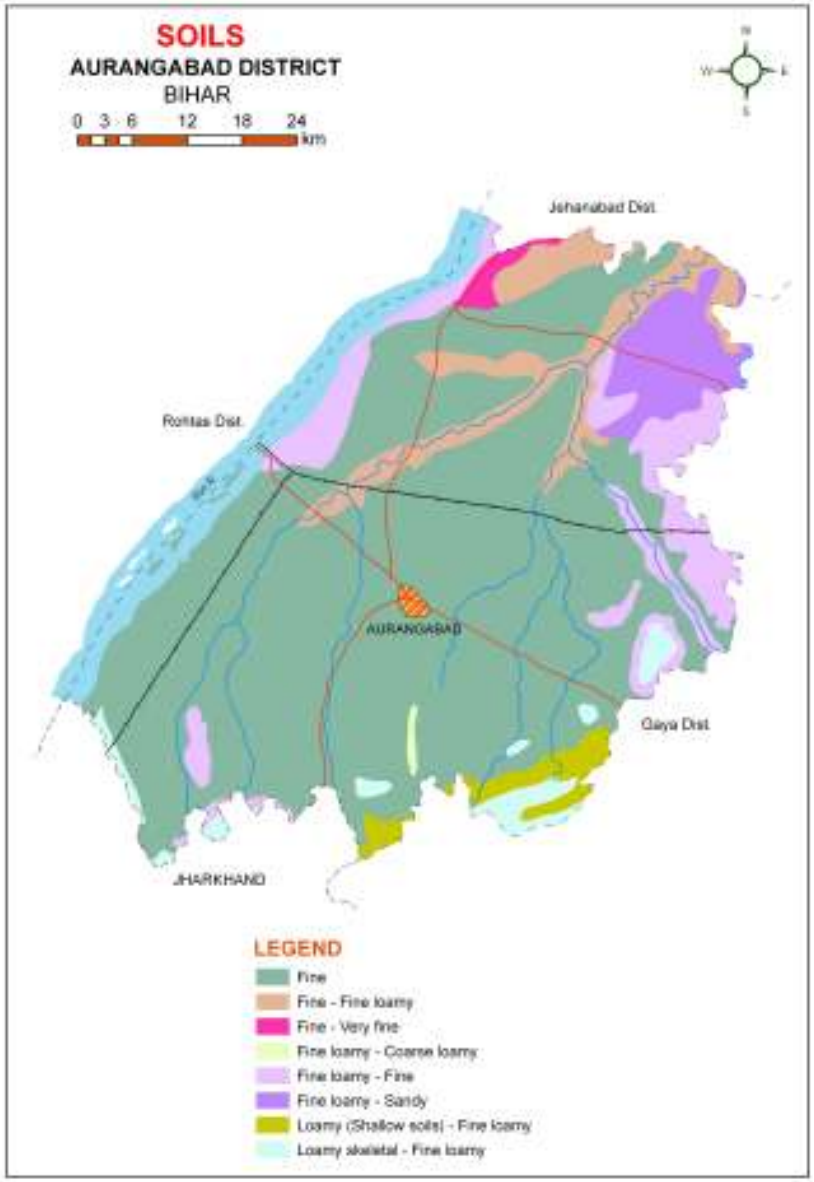
Annexure-2


ANNUAL RAINFALL &TEMPERATURE
PASCHIM CHAMPARAN
PURBA CHAMPARAN
SITAMARHI
GOPALGANJ
MADHUBANI
SIWAN
MUZAFFARPUR
SAHARSA
ARARIA
KISHANGANJ
SARAN
DARBHANGA
MADHEPURA
VAISHALI
SAMASTIPUR
PURNIA
N
D
I
BHOJPUR
PATNA
BEGUSARAI
KHAGARIA
KATIHAR
ROHTAS
JAHANABAD
NALANDA
MUNGER
BHAGALPUR
AURANGABAD
GAYA
NAWADA
Isohyetal lines (in mm)
Isotherms (in °C)
ANNUAL RAINFALL
(in cm)
Above 200
180 - 200
160 - 180
140 - 160
120 - 140
Below 120

Annexure-3


SOILS
AURANGABAD DISTRICT
BIHAR
0 3 6 12 18 24
km
Jehanabad Dist.
Rohtas Dist.
AURANGABAD
Gaya Dist.
JHARKHAND
LEGEND
Fine
Fine - Fine loamy
Fine - Very fine
Fine loamy - Coarse loamy
Fine loamy - Fine
Fine loamy - Sandy
Loamy (Shallow soils) - Fine loamy
Loamy skeletal - Fine loamy

2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop / Cropping system[b]**	**Change in crop / cropping system[c] including variety**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 2 weeks 1st week of July	Upland	1.Pigeonpea 2. Vegetables- Wheat 3. Rice-Wheat 4. Rice- Lentil 5. Rice- Chickpea	1.Pigeonpea 2. Medium Rice-Wheat 3. Rice- Chickpea 4.Rice - Lentil Pigeonpea: Bahar, Pusa-9 Narendra Arhar-I Rice: Prabhat, Dhanlaxmi, Richharia, Turanta, Saroj Chickpea: Pusa-236, KPG-39 (Uday), Pusa-372, SG-2 Lentil- PL-406, Malika, Arun Wheat- HD-2733, PBW-343, HP-1731, HD-2824	• Normal package of practices • Direct seeding of rice can also be done • Life saving irrigation • Balance dose of nutrient in adequate particularly K	Seeds from BRBN, RAU, Pusa, NSC, TDC
	Medium land	Rice-Wheat Rice-Lentil Rice-Chickpea	Rice-Wheat Rice-Lentil Rice-Chickpea Rice :Rajendra Bhagawati, Rajendra Suwasni, Santosh, R. Kasturi, Sita, Jaya Chickpea: Pusa-236, KPG-39 (Uday) , Pusa-372, SG-2 Lentil: PL-406, Malika, Arun	• Normal package of practices • Direct seeding of rice can also be done • Life saving irrigation	Seeds from BRBN, RAU, Pusa, NSC, TDC

			Wheat: HD-2733, PBW-343, HP-1731		
	Low land	Rice-Wheat Rice-Lentil Rice-Chickpea	No change Rice- Rajshree, Santosh , Sita, Rajendra Suwasni, Chickpea: Pusa-236, KPG-39 (Uday) , Pusa-372, SG-2 Lentil: PL-406, Malika, Arun Wheat: HD-2733, PBW-343, HP-1731, HD-282	• Normal package of practices • Direct seeding of rice can also be done • Life saving irrigation	Seeds from BRBM, RAU, Pusa, NSC, TDC

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Change in crop/cropping system[c]**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 4 weeks (Specify month) 3rd week of July	Upland	1. Pigeonpea 2. Vegetables- Wheat 3. Rice-wheat 4. Rice- lentil 5. Rice -Chickpea	1.Early rice- Wheat 2.Early rice- Lentil 3.Early Chickpea Rice: Prabhat, Dhanlaxmi, Richharia,Turanta Saroj Lentil: PL-406, Malika, Arun Wheat: HD-2733, PBW-343, HP-1731 Chickpea: Pusa-236, KPG-39 (Uday) , Pusa-372, SG-2	• Direct seeding of early Rice • Dapog Nursery seedling may be used • Life saving irrigation • Use of insecticides to control fungicides	Seeds from BRBN, RAU, Pusa, NSC, TDC
	2) Medium land	1. Rice-wheat 2. Rice- lentil 3. Rice - Chickpea	1.Medium duration Rice 2.Wheat 3.Lentil	• Direct seeded rice • Dapog Nursery seeding • Spray of potassic fertilizer	Seeds from BRBN, RAU, Pusa,

			4.Chickpea Rice: Rajendra Bhagawati, Saroj, Rajendra Suwasni, Santosh, R. Kasturi, Sita, Jaya Chickpea: Pusa-236, KPG-39 (Uday) , Pusa-372, SG-2 Lentil: PL-406, Malika, Arun Wheat: HD-2733, PBW-343, HP-1731, HD-282	with adjuvant • Application of adequate dose of K fertilizers • Life saving irrigation	NSC, TDC
	3 Lowland	1. Rice-wheat 2. Rice- lentil 3. Rice -Chickpea	Medium duration Rice-Wheat Lentil Chickpea Rice- Rajshree, Santosh , Sita, Rajendra Suwasni, Chickpea: Pusa-236, KPG-39 (Uday) , Pusa-372, SG-2 Lentil: PL-406, Malika, Arun Wheat: HD-2733, PBW-343, HP-1731, HD-282	• Enhanced dose of nitrogen and full basal dose of NPK at transplanting • Interculturing • Moisture conservation measures • Old age seedling of 40-45 days may be used in varieties like Sweta, R-Mahsuri, Rajshree with three seedling per hill having closer spacing.	Seeds from BRBN, RAU, Pusa, NSC, TDC

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Change in crop/cropping system[c]**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 6 weeks (Specify month)	Upland	Rice –Wheat Rice-Lentil Rice- Chickpea	(i) Early rice - Wheat (ii) Pigeonpea (iii) Vegetable – Wheat Lentil Chickpea (short duration)	• Dapog seedling for rice transplanting • Enhanced basal dose of NPK to boost the early vegetative growth. • Moisture conservation measures through mulching etc.	Seeds from BRBN, RAU, Pusa, NSC, TDC

1st week of August			Rice: Prabhat, Dhanlaxmi, Richharia, Turanta Saroj Lentil: PL-406, Malika, Arun Wheat: HD-2733, PBW-343, HP-1731, HD-282 Chickpea: Pusa-236, KPG-39, (Uday) , Pusa-372, SG-2	• Interculturing • Protective spray of pesticides with adjuvant against BLB, BLAST Helminthosporium leaf spot • Zero tillage • Spray of potassic fertilizer with adjuvant	
	Medium land	Rice –Wheat Rice-Lentil Rice- Chickpea	Medium rice–Wheat Lentil Chickpea Rice: Rajendra Bhagawati, Saroj, Rajendra Suwasni, Santosh, R. Kasturi, Sita, Jaya Chickpea: Pusa-236, KPG-39 (Uday) , Pusa-372, SG-2 Lentil: PL-406, Malika, Arun Wheat: HD-2733, PBW-343, HP-1731, HD-282	• Enhanced basal dose of NPK to boost the early vegetative growth. • Moisture conservation • Inter culturing • For mid duration rice 40-45 days old seedling should be used for transplanting.	Seeds from BRBN, RAU, Pusa, NSC, TDC
	Lowland	Rice –Wheat Rice-Lentil Rice- Chickpea	Medium rice–Wheat Lentil Chickpea Rice- Rajshree, Santosh , Sita, Rajendra Suwasni Chickpea: Pusa-236, KPG-39 (Uday) , Pusa-372, SG-2 Lentil- PL-406, Malika,	• Dapog seedling for rice • Enhanced basal dose of NPK to boost the early vegetative growth. • Moisture conservation measures through mulching etc. • Interculturing • Protective spray of pesticides with adjuvant against BLB BLAST etc. • Zero tillage for wheat	Seeds from BRBN, RAU, Pusa, NSC, TDC

			Arun Wheat- HD-2733, PBW-343, HP-1731, HD-282	• Spray of potassic fertilizer with adjuvant	

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Change in crop/cropping system[c]**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 8 weeks (Specify month) 3rd week of August	Upland	Rice-Wheat Rice-Lentil Rice- Chickpea	Pigeonpea- Chickpea Vegetable short duration-Wheat Vegetable short duration-Lentil Vegetable short duration-Chickpea Pigeonpea – Bahar, Pusa-9 Narendra Arhar-I Chickpea- Pusa-236, KPG-39 ,(Uday) , Pusa-372, SG-2 Lentil- PL-406, Malika, Arun Wheat- HD-2733, PBW-343, HP-1731, HD-282	• Enhanced basal dose of NPK to boost the early vegetative growth. • Moisture conservation • Interculturing • Protective spray of pesticides	Seeds from BRBN, RAU, Pusa, NSC, TDC
	Medium Land	Rice-Wheat Rice-Lentil Rice- Chickpea	September Pigeonpea Vegetable short duration-Wheat Lentil Chickpea Pigeonpea –Pusa-9, Narendra, Arhar-I	• Enhanced basal dose of NPK to boost the early vegetative growth. • Moisture conservation • Interculturing • Protective spray of pesticides	Seeds from BRBN, RAU, Pusa, NSC, TDC

			Chickpea- Pusa-236, KPG-39, (Uday) , Pusa-372, SG-2 Lentil- PL-406, Malika, Arun Wheat- HD-2733, PBW-343,HP-1731, HD-282		
	Lowland	Rice-Wheat Rice-Lentil Rice- Chickpea	Vegetable - Wheat Rice short duration (Direct seeded)-Wheat Paddy- Prabhat, Dhanlaxmi, Richharia, Turanta Wheat- HD-2733, PBW-343,HP-1731, HD-282	• Enhanced basal dose of NPK to boost the early vegetative growth. • Moisture conservation • Interculturing • Protective spray of pesticides	Seeds from BRBN, RAU, Pusa, NSC, TDC

Condition			**Suggested Contingency measures**		
Early season drought **(Normal onset)**	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measues[d]**	**Remarks on Implementation[e]**
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc. 1st week of July	Upland	Pigeonpea Vegetable-Wheat Rice – Wheat Lentil Chickpea	• Spray of pesticides with adjuvant against BLB & blast and Helminthosporium leaf spot • Life saving irrigation • Gap filling if needed • Termite control measures with Chlorpyriphos	• Mulching • Tillage conservation • Spray of potassic fertilizer • Interculturing • Mechanical weeding	Seeds from BRBN, RAU, Pusa, NSC, TDC
	2) Medium land	Rice – Wheat Lentil Chickpea	• Life saving irrigation • Gap filling, if needed • Spray of pesticides with adjuvant against BLB & blast and Helminthosporium leaf spot	• Mulching • Conservation tillage • Spray of potassic fertilizer	Seeds from BRBN, RAU, Pusa, NSC, TDC

	3 Lowland	Rice – Wheat Lentil Chickpea	• Life saving irrigation • Gap filling, if needed • Spray of pesticides with adjuvant against BLB & blast and Helminthosporium leaf spot	• Mulching • Tillage conservation • Spray of potassic fertilizer	Seeds from BRBN, RAU, Pusa, NSC, TDC

Condition			**Suggested Contingency measures**		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measues[d]**	**Remarks on Implementation[e]**
At vegetative stage	Upland	Rice – Wheat Lentil Chickpea Rice- Prabhat, Richharia , Dhanlaxmi, Turanta Saroj, Chickpea- Pusa-236, KPG-39 (Uday) , Pusa-372, SG-2 Lentil- PL-406, Malika, Arun Wheat- HD-2733, PBW-343, HP-1731, HD-2824	• Protective Spray of Pesticide with adjuvant against BLB & blast Helminthosporium leaf spot. • Postponement of top dressing of nutrients	• Life saving Irrigation with the use of spreader • Spray of Potasic fertilizer with adjuvant • Termite control measures with Chloropyriphos • Mechanical weeding	Seeds from BRBN, RAU, Pusa, NSC, TDC
	Medium land	Rice-Wheat Lentil Chickpea	• Protective Spray of Pesticide with adjuvant against BLB & blast	• Life saving Irrigation with the use of spreader • Spray of Potassic fertilizer.	Seeds from BRBN, RAU, Pusa, NSC, TDC

		Rice- Rajendra Bhagawati, Saroj, Rajendra Suwasni, Santosh, R. Kasturi, Sita, Jaya Chickpea- Pusa-236, KPG-39 (Uday) , Pusa-372, SG-2 Lentil- PL-406, Malika, Arun Wheat- HD-2733, PBW-343, HP-1731, HD- 2824	Helminthosporium leaf spot. • Postponement of top dressing of nutrients		
	Lowland	Rice-Wheat Lentil Chickpea Rice- Rajshree, Santosh , Sita, Rajendra Suwasni Chickpea- Pusa-236, KPG-39 (Uday) , Pusa-372, SG-2 Lentil- PL-406, Malika, Arun Wheat- HD-2733, PBW-343, HP-1731, HD- 282	• Protective Spray of Pesticide with adjuvant against BLB & blast Helminthosporium leaf spot. • Postponement of top dressing of nutrients	• Life saving irrigation with the use of spreader • Spray of Potassic fertilizer with adjuvant	Seeds from BRBN, RAU, Pusa, NSC, TDC

Condition			**Suggested Contingency measures**		
Mid season drought (long dry spell)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measues[d]**	**Remarks on Implementation[e]**
At flowering/ fruiting stage	Upland	Rice-Wheat Lentil Chickpea Rice- Prabhat, Richharia , Dhanlaxmi, Turanta Saroj,	• Life saving irrigation • Spray of pesticides with spreader. • Postponement of top dressing of nutrients	• Life saving irrigation • Spray of Nitrogenous & potassic fertilizer with adjuvant. • Spray of pesticides with	Seeds from BRBN, RAU, Pusa, NSC, TDC

		Chickpea- Pusa-236, KPG-39 (Uday) , Pusa-372, SG-2 Lentil- PL-406, Malika, Arun Wheat- HD-2733, PBW-343, HP-1731, HD- 282		spreader.	
	Medium land	Rice-Wheat/Lentil/Chickpea Rice- Rajendra Bhagawati, Saroj, Rajendra Suwasni, Santosh, R. Kasturi, Sita, Jaya Chickpea- Pusa-236, KPG-39,(Uday), Pusa-372, SG-2 Lentil- PL-406, Malika, Arun Wheat- HD-2733, PBW-343, HP-1731, HD- 282	• Life saving irrigation • Spray of pesticides with spreader. • Postponement of top dressing of nutrients	• Life saving irrigation • Spray of Nitrogenous & potassic fertilizer with adjuvant. • Spray of pesticides with spreader.	Seeds from BRBN, RAU, Pusa, NSC, TDC
	3 Low land	Rice-Wheat Lentil Chickpea Rice- Rajshree, Santosh , Sita, Rajendra Suwasni Chickpea- Pusa-236, KPG-39 (Uday), Pusa-372, SG-2 Lentil- PL-406, Malika, Arun Wheat- HD-2733, PBW- 343, HP-1731, HD- 282	• Life saving irrigation • Spray of pesticides with spreader. • Postponement of top dressing of nutrients	• Life saving irrigation • Spray of Nitrogenous & potassic fertilizer with adjuvant. • Spray of pesticides with spreader.	Seeds from BRBN, RAU, Pusa, NSC, TDC

Condition			**Suggested Contingency measures**		
Terminal drought (Early withdrawal of monsoon)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Rabi Crop planning[d]**	**Remarks on Implementation[e]**

	Upland	Paddy-Wheat Paddy-Prabhat, Dhanlaxmi, Richharia, Turanta, Saroj Wheat- HD-2733, PBW-343, HP-1731, HD-2824	• Spray of potassic fertilizer with adjuvant • IPM practices • Life saving irrigation • Mulching	• For rabi land preparation open the furrow during evening, leave it open overnight and plank next morning before sunrise for growing early rabi crops like Wheat, Rabi Maize/Pulses /Oilseeds/ Vegetables etc. • Stored water to be used at critical stage of growth of LSI • Clean irrigation channel for preventing loss of moisture through seepage • Zero tillage sowing of wheat	Seeds from RAU, Pusa, NSC, TDC , BRBN etc
	Medium land	Maize-wheat Maize - Shaktiman-1,2,3,4, Suwan, Ganga-11, Deoki, Pusa early hybrid Maka-3 Wheat- HD-2733, PBW-343, HP-1731, HD-282		• For rabi land preparation open the furrow during evening leave it open overnight and plank the next morning before sunrise for growing early rabi crops like wheat, Rabi Maize/Pulses /Oilseeds/ Vegetables etc. • Stored water to be used at critical stage of growth of life saving irrigation • Clean irrigation channel for preventing loss of moisture through seepage • Zero tillage sowing of wheat	Seeds from RAU, Pusa, NSC, TDC , BRBN etc
		Pigeonpea:		• For rabi land preparation	Seeds from

		Bahar, Narendra Arhar-1		open the furrow during evening leave it open overnight and plank the next morning before sunrise for growing early rabi crops like wheat, Rabi Maize/Pulses /Oilseeds/ Vegetables etc. • Stored water to be used at critical stage of growth of LSI • Clean irrigation channel for preventing loss of moisture through seepage • Zero tillage sowing	RAU, Pusa, NSC, TDC , BRBN etc
	3 Low land	Paddy-Wheat-Greengram Rice- Rajshree, Santosh ,Sita, Rajendra Suwasni Wheat- HD-2733, PBW-343, HP-1731, HD-2824 Greengram- SML-6-68, Pusa Vishal, Samarat		• Open the furrow during evening and left furrow open overnight and plank in the next morning before sunrise for growing of early rabi crops like wheat, Rabi Maize/Pulses /Oilseeds/ Vegetables • Stored water to be used at critical stage of growth • To clean irrigation channel for preventing loss of moisture through seepage	Seeds from RAU, Pusa, NSC, TDC , BRBN etc
		Sugarcane (Feb & Oct. planting) : BO- 141, BO- 147, BO-136, BO-91	• Life saving irrigation • IPM practices • Weed management • Fertilizer & Pesticides application	-	

			• Propping etc.		

2.1.2 Drought - Irrigated situation

Condition			Suggested Contingency measures		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
Delayed release of water in canals due to low rainfall	1)Upland 2) Medium land 3) Low land	Rice-Wheat Lentil Chickpea Oilseed Pigeonpea Early vegetable-Wheat Paddy-Prabhat, Dhanlaxmi, Richharia, Turanta, Saroj Rajendra Bhagawati, Rajendra Suwasni Rajshree,, Santosh Pigeonpea – Bahar, Pusa-9 Narendra Arhar-I Chickpea- Pusa-236, KPG-39 (Uday) , Pusa-372, SG-2 Lentil- PL-406, Malika, Arun Wheat- HD-2733, PBW-343, HP-1731, HD-282 Oilseed- 66-197-3, Rajendra Sarson-I	Short duration Rice –Late Wheat Paddy-Prabhat, Dhanlaxmi, Richharia, Turanta, Saroj Late Wheat – HUW-234, DBW-14, HP-1744, HD-2643	• Direct seeding Rice • Dapog Nursery • Life saving irrigation	Seeds from BRBN, RAU, Pusa, NSC, TDC

Condition			Suggested Contingency measures		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
Limited release of water in canals due to low rainfall	Upland	Rice-Wheat Lentil Chickpea Oilseed	Short duration Rice –Late Wheat Paddy-Prabhat, Dhanlaxmi, Richharia, Turanta Late Wheat – HUW-234, DBW-14, HP-1744, HD-2643	• Direct seeding Rice • Dapog Nursery • SRI technology • Spray of 20 kg/ha of nitrogenous fertilizer over & above basal dose • Potassic fertilizer spray with adjuvant • Moisture conservation through mulching	Seeds from BRBN, RAU, Pusa, NSC, TDC
	Medium land	Pigeonpea Early vegetable-Wheat Paddy-Prabhat, Dhanlaxmi, Richharia, Turanta, Saroj Rajendra Bhagawati, Rajendra Suwasni Rajshree,, Wheat- HD-2733, PBW-343, HP-1731, HD- 282 Pigeonpea – Bahar, Pusa-9 Narendra Arhar-I Gram- Pusa-236, KPG-39 (Uday) , Pusa-372, SG-2 Lentil- PL-406, Malika, Arun Wheat- HD-2733, PBW-343, HP-1731, HD-282 Mustard- 66-197-3, Rajendra Sarson-I			

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]**
	Low land	Rice-Wheat	Mid. Duration rice – Wheat Lentil Chickpea Oilseed Rice- Rajshree, Santosh , Sita, Rajendra Suwasni Chickpea- Pusa-236, KPG-39 (Uday) , Pusa-372, SG-2 Lentil- PL-406, Malika, Arun Wheat- HD-2733, PBW-343, HP-1731, HD-282	• Direct seeding Rice • Dapog Nursery • SRI technology • Spray of 20 kg/ha of nitrogenous fertilizer above basal dose • Application of Potassic fertilizer • Moisture conservation	Seeds from BRBN, RAU, Pusa, NSC, TDC

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]**
Non release of water in canals under delayed onset of monsoon in catchment	Medium land	Paddy/Lentil/Chickpea/Oilseed Paddy- Prabhat, Dhanlaxmi, Richharia, Rajendra Bhagwati, Saroj Chickpea- Pusa-236, KPG-39 (Uday) , Pusa-372, SG-2 Lentil- PL-406, Malika, Arun Oilseed- 66-197-3, Rajendra Sarson-I	Pigeonpea Blackgram-Lentil Chickpea Oilseeds Sesame-Lentil Chickpea Oilseed Pigeonpea : Bahar, Pusa-9 Narendra, Arhar-I	❖ Mulching for moisture conservation ❖ Spray of potassic fertilizer with adjuvant ❖ Use of FYM/compost/Vermicompost ❖ Mechanical weeding	Seeds from BRBN, RAU, Pusa, NSC, TDC

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]**
			Sesamum – Krishna, Pragati Blackgram : T-9, Navin, Pant, Urd-30, Pant Urd-19		

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	Medium land	Paddy – Wheat Lentil Chickpea Oilseed Paddy- Prabhat, Dhanlaxmi, Richharia, Rajendra Bhagwati, Saroj Chickpea- Pusa-236, KPG-39 (Uday) , Pusa-372, SG-2 Lentil- PL-406, Malika, Arun Oilseed- 66-197-3, Rajendra Sarson-I	Cucurbits-Wheat /Sesamum Blackgram Fodder (Sorghum + Fenugreek) Sesame:Krishna, Pragati Blackgram- T-9, Navin, Pant Urd-30 , Pant Urd-19 Wheat: HD-2733,PBW-343, HP-1731, HD-282	❖ Mulching for moisture conservation ❖ Spray of potassic fertilizer with adjuvant ❖ Use of FYM/compost/vermicompost ❖ Mechanical weeding	Seeds from BRBN, RAU, Pusa, NSC, TDC

Condition			Suggested Contingency measures

	Major Farming situation[f]	Normal Crop/cropping system[g]	Change in crop/cropping system[h]	Agronomic measures[i]	Remarks on Implementation[j]
Insufficient groundwater recharge due to low rainfall	Upland/Medium land	Paddy – Wheat Paddy:Prabhat, Dhanlaxmi, Richharia, Rajendra Bhagwati, Saroj Wheat: HD-2733, PBW343, HP-1731, HD-2824	Short duration Rice. – Late Wheat Paddy-Prabhat, Dhanlaxmi, Richharia, Turanta Wheat- HD-2733, PBW 343, HP-1731, HD-2824	❖ Mulching moisture conservation ❖ Spray of potassic fertilizer with adjuvant ❖ Use of FYM/compost/Vermicompost ❖ Mechanical weeding	Seeds from BRBN, RAU, Pusa, NSC, TDC

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

Condition	Suggested contingency measure			
Continuous high rainfall in a short span leading to water logging	**Vegetative stage[k]**	**Flowering stage[l]**	**Crop maturity stage[m]**	**Post harvest[n]**
Rice	• Drainage management • Retransplanting through Dapog nursery if needed • Gap filling, if required • Resowing through drum seeder	• Drainage management • Subsequent crop like Toria may be taken if present crop is substantially damaged/affected	• Drainage management • Subsequent crop if totally damaged • Harvest at physiological maturity	• Proper drying • Transportation
Vegetables	• Drainage management • Resowing, if completely damaged	• Drainage management	• Drainage management	Harvest at proper time
Maize	• Drainage management • Gap filling, if needed • Resowing, if sequentially affected • Sowing of R&F should be	• Drainage management • Alternative Rabi maize or other rabi crop if substantially damaged	• Drainage management • Subsequent crop if totally damaged • Harvest at	• Proper drying • Safer storage and Transportation

	adopted		physiological maturity	
Pigeonpea	• Drainage management • Gap filling if needed • September sowing of Pigeonpea if Kharif pigeonpea is completely affected • Sowing of R&F should be adopted	• Drainage management		• Proper drying • Safer storage and Transportation
Horticulture				
Mango	• Drainage management • Gap filling • Replanting if completely damaged	• Drainage management	• Drenching with copper fungicides • Drainage management	• Storage and transportation at safer place
Banana	• Drainage management • Gap filling • Replanting if completely damaged	• Drainage management	• Drainage management	• Storage at safer place
Guava	• Replanting if completely damaged • Gap filling • Drainage management	• Drainage management	• Drenching with copper fungicides • Drainage management	• Storage at safer place
Lemon	• Drainage management • Re-plantation	• Drainage management	• Drainage management	• Storage at safer place
Coconut	• Drainage management • Re-plantation	• Drainage management	• Drainage management	• Storage at safer place
Heavy rainfall with high speed winds in a short span[2]				
Paddy	• Gap filling, if required			• Safer storage

Maize	• Gap filling, if damage less than 20% • If more, damage replanting			• Safer storage
Pigeonpea	• Gap filling. If required			• Safer storage
Horticulture				
Mango	• Drainage management • Replanting, if completely damaged	-	-	Safe storage and transportation
Litchi	• Drainage management • Replanting, if completely damaged	-	-	Safe storage and transportation
Banana	• Drainage management • Replanting, if completely damaged	Bamboo support to surviving plant i.e. Staking	Bamboo support to surviving plant i.e. Staking	Safe storage and transportation
Papaya	• Drainage management • Replanting, if completely damaged	-	-	Safe storage and transportation
Outbreak of pests and diseases due to unseasonal rains				
Paddy	Seedling treatment with Carbendazim + Imidachloropid	Spraying of specific pesticides with adjuvant	spraying of specific pesticides with adjuvant	• Proper sun drying of harvested crop • Safer storage
Maize	• Granular insecticide Thimmet- 10 g or Carbofuron – 3 g in whorl of maize • Use of pesticides	Spraying of specific pesticides with adjuvant	spraying of specific pesticides with adjuvant	• Proper sun drying of harvested crop • Safer storage

Pigeonpea	• Use of pesticides for Pod borer	Spraying of specific pesticides with adjuvant	Spraying of specific pesticides with adjuvant	• Proper drying of harvested crop • Safer storage
Horticulture				
Vegetable	• Drainage of standing water • Spraying of pesticides with adjuvant.	Spraying of specific pesticides with adjuvant	Spraying of specific pesticides with adjuvant	Safe storage & transportation
Mango	• Drainage of standing water • Spraying of pesticides with adjuvant.	Spraying of specific pesticides with adjuvant	Spraying of specific pesticides with adjuvant	Safe storage & transportation
Litchi	• Drainage of standing water • Spraying of pesticides with adjuvant.	Spraying of specific pesticides with adjuvant	Spraying of specific pesticides with adjuvant	Safe storage & transportation
Banana	• Drainage of standing water • Spraying of pesticides with adjuvant.	Spraying of specific pesticides with adjuvant	Spraying of specific pesticides with adjuvant	Safe storage & transportation
Papaya	• Drainage of standing water • Spraying of pesticides with adjuvant.	Spraying of specific pesticides with adjuvant	Spraying of specific pesticides with adjuvant	Safe storage & transportation

2.3 Floods

Condition	**Suggested contingency measure[o]**			
Transient water logging/ partial inundation[1]	**Seedling / nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Paddy For such situation varieties like Swarna Sub-1 and local	• Drainage management • Resowing, if completely damaged	• Gap filling/ transplanting using 40-45 days old seedling	Lentil as Paira crop	• Proper drying • Safer storage • Transportation

variety like Desaria, Barogar etc. should be used				
Maize	• Replanting , if substantially damaged	• Toria	Lentil	• Proper drying • Safer storage • Transportation
Pigeon pea	• Resowing, if substantially damaged	• Toria • Late Rai • Rabi Maize	Spring maize Var. Suwan	• Proper drying • Safer storage • Transportation
Horticulture				
Vegetable	• Resowing or Replanting, if substantially damaged as the case may be	• Nursery development in raised bed	-	• Safer storage and Transportation
Mango	• Replanting, if substantially damaged	• Drenching with Copper fungicides.	• Drenching with Copper fungicides	• Judicious harvesting.
Litchi	• Replanting, if substantially damaged	-	-	• Judicious harvesting
Banana	• Replanting, if substantially damaged	-	-	• Judicious harvesting
Guava	• Replanting, if substantially damaged	-	-	• Judicious harvesting
Continuous submergence for more than 2 days[2]				
Rice (Grow- Swarna Sub-1)	• Drainage management • Replanting, if substantially damaged	• Sub-surface drainage management		
Wheat	• Drainage management • Replanting, if substantially damaged	• Sub-surface drainage management		
Maize	• Drainage management • Replanting, if	• Sub-surface drainage management		

	substantially damaged			
Chickpea	• Drainage management • Replanting, if substantially damaged	• Sub-surface drainage management		
Horticulture				
Mango	• Drainage management • Replanting, if substantially damaged	• Sub-surface drainage management		
Guava	• Drainage management • Replanting, if substantially damaged	• Sub-surface drainage management		
Banana	• Drainage management • Replanting, if substantially damaged	• Sub-surface drainage management		
Lemon	• Drainage management • Replanting, if substantially damaged	• Sub-surface drainage management		
Sea water intrusion[3] NA				

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

Extreme event type	**Suggested contingency measure[r]**			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Heat Wave[p]				
Paddy		Life saving irrigation	Life saving irrigation	
Maize	Life saving irrigation	Life saving irrigation	Life saving irrigation	
Pigeonpea	Life saving irrigation	Life saving irrigation	Life saving irrigation	
Wheat			Life saving irrigation for terminal heat	
Horticulture				
Mango	Life saving irrigation	Life saving irrigation	Life saving irrigation	

Litchi	Life saving irrigation	Life saving irrigation	Life saving irrigation	
Papaya	Life saving irrigation	Life saving irrigation	Life saving irrigation	
Cold wave[q]				
Wheat		• Irrigation • Interculturing • Mulching by weeds		
Pigeonpea		• Irrigation • Interculturing • Mulching by weeds		
Lentil		• Irrigation • Interculturing • Mulching by weeds		
Horticulture				
Bhendi		• Irrigation • Interculturing • Mulching by weeds		
Brinjal		• Irrigation • Interculturing • Mulching by weeds		
Chili		• Irrigation • Interculturing • Mulching by weeds		
Tomato		• Irrigation • Interculturing • Mulching by weeds		
Lauki		• Irrigation • Interculturing • Mulching by weeds		

Frost				
Wheat		• Irrigation • Interculturing • Mulching by weeds		
Greengram		• Irrigation • Interculturing • Mulching by weeds		
Pigeonpea		• Irrigation • Interculturing • Mulching by weeds		
Lentil		• Irrigation • Interculturing • Mulching by weeds		
Horticulture				
Bhendi	Treat the seeds in 0.2% soln. of Dithane M-45	• Irrigation • Interculturing • Mulching by weeds		
Brinjal		• Irrigation • Interculturing • Mulching by weeds		
Chilli		• Irrigation • Interculturing • Mulching by weeds		
Tomato & Potato	Treat the seeds in 0.2% Soln. of Dithane M-45	• Earthing up to 15 cm height. • Irrigation • Interculturing • Mulching by weeds	Spray of Dithane M-45/ Mancozeb @ 2.5 gm/l of water in 3rd week of December at 10 days interval 3 times	Harvest in dry weather
Hailstorm				

Horticulture				
Cyclone NA				
Horticulture				

2.5 Contingent strategies for Livestock, Poultry & Fisheries

2.5.1 Livestock

	Suggested contingency measures		
	Before the event[s]	**During the event**	**After the event**
Drought			
Feed and fodder availability			
Drinking water			
Health and disease management			
Floods			
Feed and fodder availability	1. Planning of Cultivation of fodder tree to combat such situation 2. Storage of Improved Quality Fodder 3. Conservation & Storage of • Feed & Fodder • Hay & Silage: — Preserve the fodder in the form of hay from Berseem & other grasses as well as silage from (a) Maize- harvesting at well developed cob. (b) Sorghum - at flowering stage. (c) Oat	1. Feeding of Complete Feed Block 2. Feeding of Urea-Molasses-Mineral-Block & Fodder 3. Feeding of stored Hay/Silage/Improved Quality Fodder 4. Feeding of Tree leaves some of which are as follows: 1. Bamboo leaves 2. Neem 3. Bargad 4. Peepal 5. Seesam 6. Subabul Use of unconventional feed	Production of forage crops 1. Balanced feeding of animal supported with little higher concentrate mixture 2. Cultivation of fodder Rabi maize if water stagnated upto November/ December 3. Sorghum/Cowpea 4. Maize in September

	(d) Hybrid Napier – 40-45 day old. (e) Water hycianth mixing with Paddy straw in ratio of 4:1 with 70 kg molasses /ton of clean water hycianth. (f) Potato leaves mixing with wheat straw in ratio of 7:1 and should be supplemented with 3% molasses. Hay: – Berseem/Lucerne and other grasses. • Bales of hay and other dry fodder should be stored in dry places at a height of last flood level and covered with asbestos sheet or polythene sheet. 4. Development & storage of: – (a) Complete Feed Block (CFB) (b) Urea-Molasses-Mineral-Block (U.M.M.B) 5. Development of Fodder Bank	stuff: (i) Aquatic Plants – Water hyacianth (i) Lotus (ii) Aquatic weeds	
Drinking water			

Health and disease management	During flood stress becomes an incriminating factor for the precipitation of diseases in livestock and poultry. So, necessary vaccination of livestock and poultry should be done against economically important contagious disease. This will be helpful not only to check epidemic in animals, but also to reduce the probability of zoonoses in human beings. Care should be taken for mass vaccination of livestock and poultry with a view to covering 80% of livestock population in order to achieve herd immunity. Mass vaccination should be conducted by a team of Department staff with proper maintenance of detailed Inoculation Register. Pro-active steps should be taken to receive and stock the required doses of vaccines against different diseases for their use in face of Flood.	During flood, all efforts should be made to rescue most of the livestock and poultry as carefully as possible. The people should be made conscious through announcement with the help of mikes or other means of communication, so that they may escape with their livestock and poultry to safe area. The fisherman or the people who knows swimming should be deputed for the rescue of drowning and floating animals and birds. During flood do not leave halter or headstalls on animals. Do not tie animals together when releasing. Report the location, identification and disposition of livestock and poultry to authorities handling the disaster. **Health camp and treatment** Water borne diseases are one of the most common phenomena during the flood Diarrhoeal diseases outbreaks	Adequate attention is to be paid to disinfect the premises of temporary sheds with the help of bleaching powder, phenol, carbolic acid etc. In no case the carcass/ cadaver should come in contact with healthy animals rehabilitated in sheds. Arrangements should be made accordingly. **De-worming after the flood:** Immediately after flood, the animals like cattle, buffalo. Sheep, goat, pig, dog and poultry need to be de-wormed with suitable broad spectrum anthelmentics. This will enable the animals to regain proper health. In water logged area, sucks can be introduced as biological control measures against snails to protect livestock from parasitec disease. **Treatment of sick animals:** The **Disposal of Carcass:** the disposal

		can Report the location, identification and disposition of livestock and poulrty to authorities handling the disaster. **Health camp and treatment** Water borne diseases are one of the most common phenomena during the flood Diarrhoeal diseases outbreaks can occur after drinking contaminated water. Diseases that can occur during flood should be given special attention and accordingly medicines should be available in the health camp for the following mentioned diseases. **Salmonella spp.** **Escherichia coli** **Giardiasis** **Amoebiasis** **Rotavirus** **Leptospirosis** **Scabies** **Black leg** **Malignant Edema** **Foot rot** **Anthrax**	of dead animals and birds are to be done by Animal Husbandry Department. Accordingly, necessary arrangement should be made for prompt and easy disposal of carcasses during the Flood and Post-Flood period. Carcasses of animals affected by the disease are the chief source of soil infection. They harbour the germs in large numbers and liberate them from both artificial and natural body openings into the surrounding soil. **Methods of Carcass disposal to be adopted** **Burial** **Burning** **Composting** **Vulturing** **s. Health Camp after the flood:**

		Botulism **Tetanus** **Red water** **Black disease** **Entertoxemia** **Liver fluke** **Amphistomiasis** **Brooders pnemonia** **Treatment of Non infectious** Arrangement should be made for the treatment of drowning and traumatic injuries, aspiration pneumonia, lameness and other surgical cases in the health camp. **Disinfection of livestock premises and Poultry shed** Disinfection of livestock premises and the temporary sheds should be done with the help of bleaching powder, phenol, carbolic acid etc	Protection of livestock from out breaking and communicable diseases be made. Health camps are to be organised in Flood affected areas to restore the normal breeding capability of breedable population as well as to restore the normal health of livestock and poultry.
Cyclone			
Feed and fodder availability			
Drinking water			
Health and disease management			
Heat wave and cold wave			
Shelter/environment management			
Health and disease management			

[s] based on forewarning wherever available

2.5.2 Poultry

	Suggested contingency measures			Convergence/linkages with ongoing programs, if any
	Before the event[a]	**During the event**	**After the event**	
Drought				
Shortage of feed ingredients				
Drinking water				
Health and disease management				
Floods				
Shortage of feed ingredients				
Drinking water				
Health and disease management	**Vaccines to be used for different animals and Poultry** **Cattle and Buffalo** Hemorrhagic SepticemiaVaccine Black Quarter Vaccine FMD Vaccine Anthrax Vaccine as per endemicity.			

	Sheep and Goat Hemorrhagic Septicemia Vaccine PPR Vaccine FMD Vaccine Goat pox Vaccine Enterotoxemia Vaccine Anthrax Vaccine as per endemicity **Pigs** Hemorrhagic Septicemia Vaccine PPR Vaccine FMD Vaccine Goat pox Vaccine Enterotoxemia Vaccine Anthrax Vaccine as per endemicity. **Dogs** Rabies Vaccine **Poultry** Mareks disease vaccine RDV (F_1 & R_2B), FPV, IBRV & IBDV • **Medicines** All Districts should be earmarked for flood. An inventory of required medicines to treat the affected livestock in case of eventualities should be made. The Govt. should take steps to procure sufficient quantity of essential life saving medicines. **List of life saving Medicines** Corticosteroids			

	Nikethamide Antibloat Adrenaline Antihistaminic Antidotes for common poisoning Antisnake venom Broad spectrum antibiotics Anti-inflammatory Antipyretic and Analgesics Fluids and Electrolytes • **Mobile Veterinary Clinics** Mobile Veterinary Clinics should be kept ready at Veterinary Hospital or Veterinary Camps so that immediate treatment of injured and affected animals may be done. For this MVC must have adequate drugs like antibiotic, analgesic, dewormer, ointment, antisnake venom and emergency health care facilities along with trained personnel. A good no. of mobile clinic teams should be planned consisting dedicated and experienced technical workers with allotment of area of operation. The teams should be kept in readiness **having required stock of medicines and equipment** to work in any adverse situation. A telephone directory should be maintained at the District level by collecting the telephone nos. of Vets, Para-Vets, NGOs / youth clubs / societies, volunteers etc. to collect feedback and plan the activities during the emergency.			

	An emergency kit for poultry should be made ready well in advance. The Poultry kit should have Cage, mask, mash, pellet feed trough, waterers, detergents, poultry vaccines, Veterinary drugs, workers protection uniform etc.			
Cyclone				
Shortage of feed ingredients				
Drinking water				
Health and disease management				
Heat wave and cold wave				
Shelter/environment management				
Health and disease management				

[a] based on forewarning wherever available

2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	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			
(ii) Changes in water quality			
(iii) Any other			
B. Aquaculture			
(i) Shallow water in ponds due to insufficient rains/inflow	(i) Thinning of population (ii) Arrangement of water supply from external resource	(i) Partial harvesting (ii) Addition of water (iii) Stocking of air breathing fishes	(i) Maintenances of remaining stock till favorable condition achieved (ii) If not feasible, total harvesting or transfer of fishes may be done. (iii) Preparation of the pond for next crop.
(ii) Impact of salt load build up in ponds / change in water quality	(i) Regular monitoring of water quality parameter. (ii) Arrangement of aeration (iii) Addition of water from external resource	(i) Arrangement of aeration. (ii) Addition of water a. Monitoring of water quality b. Reduction of manuring according to water level.	
(iii) Any other			
2) Floods			
A. Capture			
Marine			
Inland			
(i) No. of boats / nets/damaged			

(ii) No. of houses damaged			
(iii) Loss of stock			
(iv) Changes in water quality			
(v) Health and diseases			
B. Aquaculture			
(i) Inundation with flood water	(i) Elevation/ Renovation of pond dyke. (ii) Sale of Table/marketable size fishes (iii) construction of earthen nursery ponds in upland areas	Collection of naturally bred seeds (Spawn /fry /fingerling) from flooded water Stocking in nursery ponds for rearing	-Retain the water in pond immediately after flood through repairing of damaged dyke etc. -Netting of pond -Removal of unwanted, predatory/weed fishes -Sell of large size fishes
(ii) Water contamination and changes in water quality	Arrangement of regular water quality monitoring		
(iii) Health and diseases	(a) Use lime/ potassium permanganate (b) Arrangement of CIFAX and medicines & chemical stock		-Sampling of fishes and water for disease analysis - Liming, use of drugs/ medicine if required in consultancy of fisheries experts
(iv) Loss of stock and inputs (feed, chemicals etc)	Raising the height of dyke by fencing with net and bamboo poles to prevent loss of stock	Arrangement of advance size fingerling/ yearlings for stocking	Stocking of large size fingerlings carp Fertilization of pond and regular feeding of fish

			Harvesting and sale of fish
(v) Infrastructure damage (pumps, aerators, huts etc)	Repairing/ arrangement of alternate safe place to keep pumps aerators etc.	A regular water on the flood and infrastructure facilities.	Re establishment of the infra structural facility.
(vi) Any other			
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)			
(ii) Health and Disease management			