State: Bihar

Agriculture Contingency Plan for District:Banka

1.0 District Agriculture profile				
1.1	**Agro-Climatic/Ecological Zone**			
	Agro Ecological Sub Region (ICAR)	Eastern Plain, Hot Subhumid (moist) Eco-sub region (13.1)		
	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 or part thereof falling under the NARP Zone	Begusarai, Saharsa, Supaul, Madhepura, Purnea , Kishanganj, Araria, Katihar		
	Geographic coordinates of district headquarters	Latitude	Longitude	Altitude
		24^0 30'to $25^0$08' N	$86^0$30' to 87^0 12'E	43 m
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	-		
	Mention the KVK located in the district	Banka		

1.2	**Rainfall**	Normal RF(mm)	Normal Onset	Normal Cessation
	SW monsoon (June-Sep):	903.7	2^{nd} week June	2^{nd} Week of September
	NE Monsoon(Oct-Dec):	180.3	-	
	Winter (Jan- March)	14.0	-	
	Summer (Apr-May)	88.0	-	
	Annual	1170.0	-	

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)	305.62	160.4	43.31	41.2	1.7	2.0	7.3	41.2	3.8	3.7

1. 4	**Major Soils (common names like red sandy loam deep soils (etc.,)***	**Area ('000 ha)**	**Percent (%) of total**
	Sandy Soils	36.132	12.30
	Coarse Sandy Loam Soils	41.104	14.00
	Fine Sandy Loam Soils	112.925	38.45
	Clayey Soils	103.511	35.25

1.5	**Agricultural land use**	Area ('000 ha)	Cropping intensity %
	Net sown area	152.3	106
	Area sown more than once	70.40	
	Gross cropped area	160.41	

1.6	**Irrigation**	Area ('000 ha)
	Net irrigated area	115
	Gross irrigated area	-
	Rainfed area	-

	Sources of Irrigation	Number	Area (‘000 ha)	Percentage of total irrigated area
	Canals	8	90.0	
	Tanks	445	2.98	
	Open wells	3368	7.24	
	Bore wells	16043	23.8	
	Lift irrigation schemes	66	-	
	Micro-irrigation			
	Other sources (please specify)		3.418	
	Total Irrigated Area		127.5	
	Pump sets	-	-	
	No. of Tractors	420		
	Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	No. of blocks/ Tehsils	(%) area	Quality of water (specify the problem such as high levels of arsenic, fluoride, saline etc)
	Over exploited			
	Critical			
	Semi- critical			
	Safe			
	Wastewater availability and use			
	Ground water quality			
*over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%				

1.7 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**

	Paddy	99.42							
	Maize	12.59							
	Pigeonpea	5.13							
	Blackgram	1.862.4							

	Horticulture crops - Fruits	**Area ('000 ha)**		
		Total	**Irrigated**	**Rainfed**
		8294.3		
	Horticulture crops - Vegetables	**Total**	**Irrigated**	**Rainfed**
	Cauliflower	1103	-	-
	Cabbage	990	-	-
	Tomato	1334	-	-
	Onion	725	--	-
	Brinjal	448	-	-
	Medicinal and Aromatic crops	-		
	Plantation crops			
	Fodder crops			
	Total fodder crop area	-		
	Grazing land	--		

	Sericulture etc	-		
	Others (specify)	-		

1.8	**Livestock**	**Male ('000)**	**Female ('000)**	**Total ('000)**
	Non descriptive Cattle (local low yielding)			77100
	Crossbred cattle			1856
	Non descriptive Buffaloes (local low yielding)			4822
	Graded Buffaloes			536
	Goat			11292
	Sheep			841
	Others (Camel, Pig, Yak etc.)			7668
	Commercial dairy farms (Number)			
1.9	**Poultry**	**No. of farms**	**Total No. of birds ('000)**	
	Commercial		487556	
	Backyard			

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)	
	286	**5**	**83**	**-**	**198**	**2**

ii) Inland (Data Source: Fisheries Department)	**No. Farmer owned ponds**	**No. of Reservoirs**	**No. of village tanks**
	76	**-**	**130**

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

1.11 Production and Productivity of major crops

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	1960	0.17	-	-					
	Wheat	-	-	2150	0.146					
	Maize	1950	0.66	-	-					
	Sugarcane	-	-	-	-					
	Pulses	-	-	-	-					
Major Horticultural crops (Crops to be identified based on total acreage)										
	Fruits							2550.7	4650	
	Cauliflower							-	-	

	cabbage							3034.2	4040	
	Tomato							24083.4	15330	
	Onion							27242.5	30900	
	Brinjal							5800	10000	

1.12	**Sowing window for 5 major field crops** (start and end of normal sowing period)	**Rice**	**Maize**	**Wheat**	**Pulses**	**Sugarcane**
	Kharif- Rainfed	June	May-June	-	May-June	-
	Kharif-Irrigated	July-August	May-June	-	May-June	-
	Rabi- Rainfed	October- November	-	1st week of November - 2nd week of November	-	October-November
	Rabi-Irrigated	November-December	-	2nd week of November -1st week of January	October-November	October-November

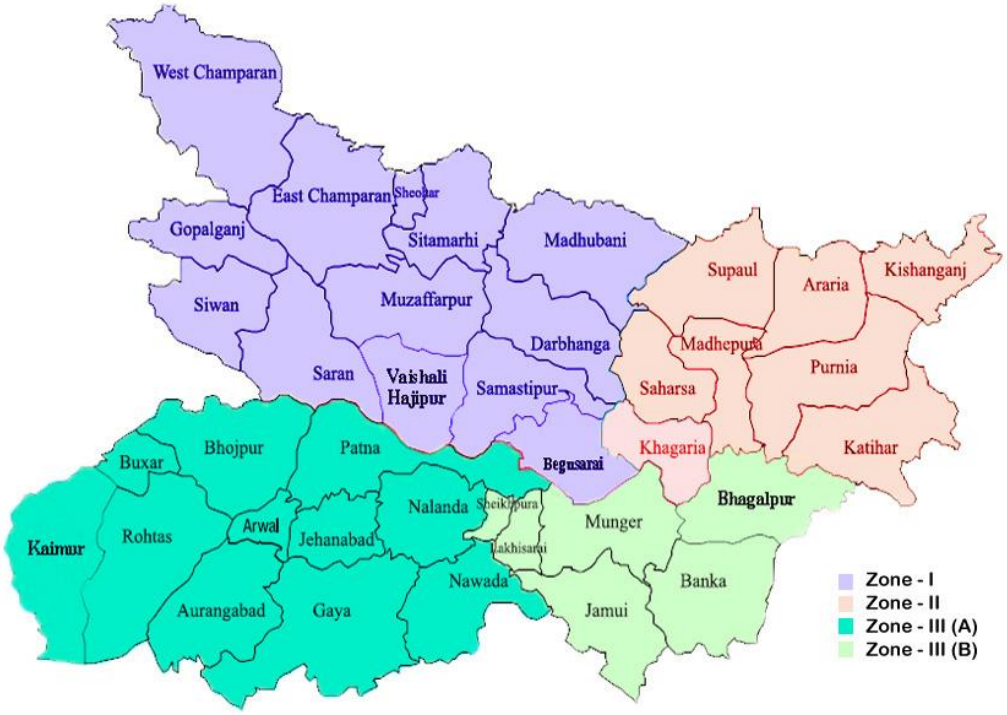
1.13	**What is the major contingency the district is prone to?** (Tick mark)	**Regular**	**Occasional**	**None**
	Drought		√	
	Flood	√		
	Cyclone			√
	Hail storm		√	
	Heat wave	√		
	Cold wave	√		

	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: No
		Soil map as Annexure 3	Enclosed: Yes

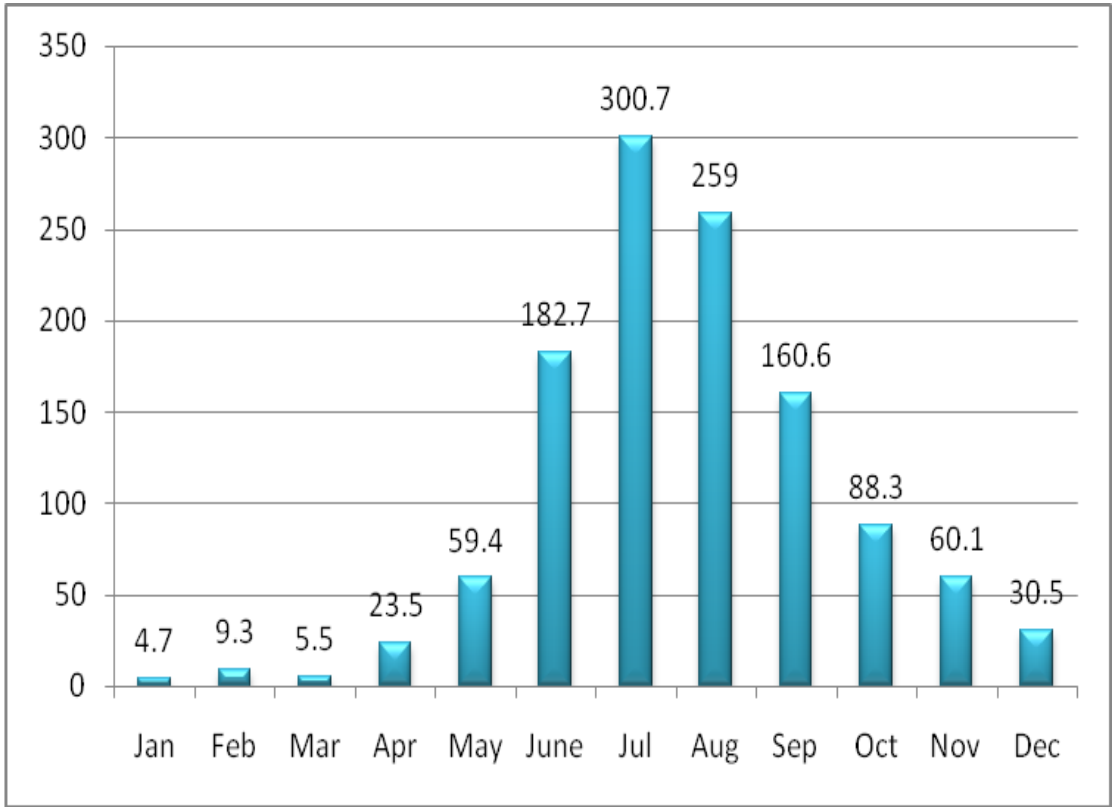
Annexure I

Agro climatic Zones of Bihar

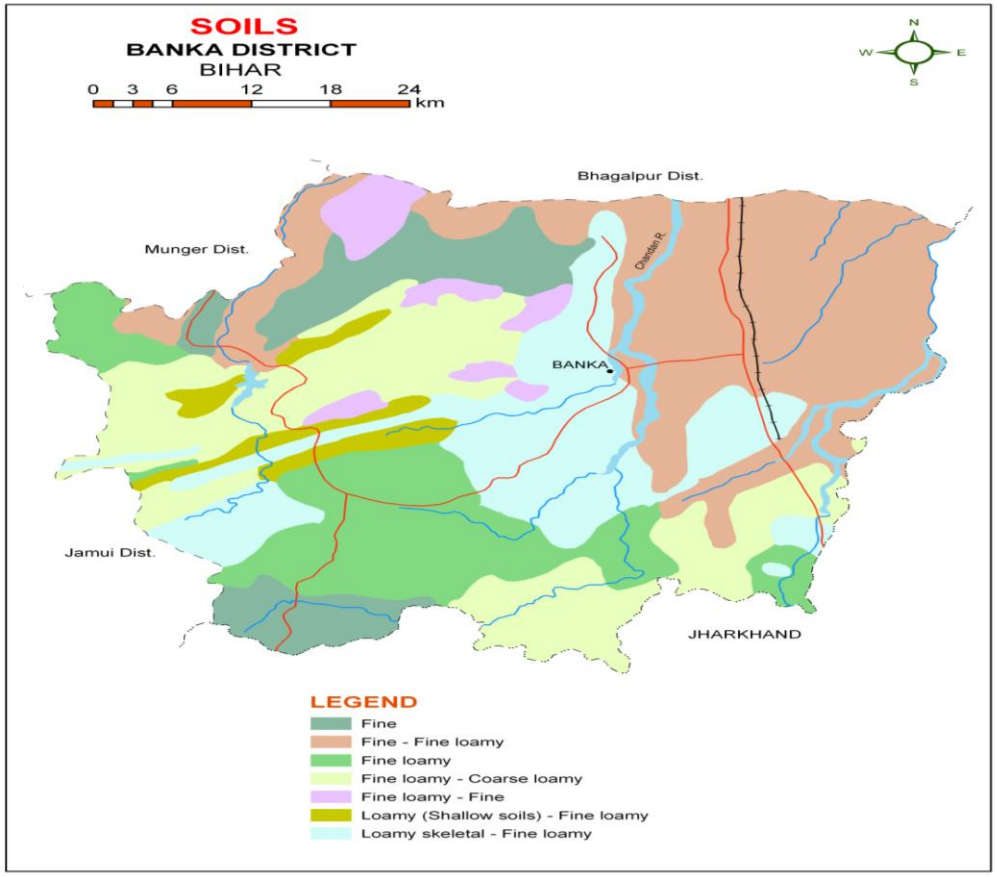


Source: krishi.bih.nic.in

Annexure II


350
300
250
200
150
100
50
0
4.7
9.3
5.5
23.5
59.4
182.7
300.7
259
160.6
88.3
60.1
30.5
Jan
Feb
Mar
Apr
May
June
Jul
Aug
Sep
Oct
Nov
Dec

Annexure III



Source : NBSS& LUP, Regional Centre, Kolkata

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**	**Crops/Cropping System**	**Change in Crops/Cropping System**	**Agronomic Measures**	**Remarks on implementation**
Delayed by 2 weeks 4th week of June	Midland	Paddy-Wheat/ Paddy-wheat-green gram	Paddy (Short Duration)-Wheat	Adopt Dapog Nursery, SRI Adopt Machine transplanting Direct seeding with short duration varieties	
	Upland	Maize-wheat	No change	Inter culture Mulching Application of Organic manure and vermicompost initially	
		Red gram	No change		

Condition	**Suggested Contingency Measures**				
Early Season Drought (Delayed	**Major Farming Situation**	**Crop/Cropping System**	**Change in Crop/Cropping System**	**Agro climatic Measures**	**Remarks on implementation**

Onset)					
Delay by 4 weeks (2^{nd} week of July)	Medium low land Midland Upland	Paddy-Wheat/Paddy-wheat-green gram	Paddy (Short Duration)-Wheat	Adopt Dapog Nursery, SRI Adopt Machine transplanting Direct seeding with short duration varieties Para grass cultivation for fodder in low land	Seeds from KVK, IRS & BRU, Bikramganj , RAU, Pusa, NSC, BRBN etc.
		Maize-wheat	-	Life saving irrigation, Application of potash (K_2O)during drought spell @ 10 kg ha^{-1}), Inter culture, Mulching, Application of Organic manure and vermi compost initially Para grass cultivation for fodder in low land	
		Red Gram	-		

Condition	**Suggested Contingency Measures**				
Early Season Drought (Delayed Onset)	**Major Farming Situation**	**Crop/Cropping System**	**Change in Crop/Cropping System**	**Agro climatic Measures**	**Remarks on implementation**

Delay by 6 weeks (4^{th} week of July)	Medium low land Midland Upland	Paddy-Wheat	Paddy (Short Duration)-Wheat	Adopt Dapog Nursery, SRI Adopt Machine transplanting Direct seeding with short duration varieties Para grass cultivation for fodder in low lands	Seeds from KVK, IRS & BRU, Bikramganj , RAU, Pusa, NSC, BRBN etc.
		Maize-wheat	Maize-wheat	Life saving irrigation, Application of potash (K_2O)during drought spell @ 10 kg ha^{-1}), Inter culturing operation, Mulching, Application of Organic manure and vermicompost initially	
		Redgram	September red gram(Sarad and T--9)		

Condition	**Suggested Contingency Measures**				
Early Season Drought (Delayed Onset)	**Major Farming Situation**	**Crop/Cropping System**	**Change in Crop/Cropping System**	**Agro climatic Measures**	**Remarks on implementation**
Delay by 8 weeks (2^{nd} week of August)	Medium low land Midland	Paddy-Wheat	1. Paddy (Short Duration)-Late sown wheat 2. Blackgram-Wheat	Dapog Nursery, SRI, Machine transplanting, Zero tillage sown paddy and wheat to make up the time, Direct seeding of short duration paddy/ Blackgram - Pusa Naveen	Seeds from KVK, IRS & BRU, Bikramganj , RAU, Pusa, NSC, BRBN etc.
		Maize-Wheat	Sesame –maize Sesame-Wheat	Life saving irrigation, Application of potash (K_2O)during drought spell @ 10 kg ha^{-1}),, Inter culturing operation, Mulching, Application of Organic manure and	

				vermicompost initially	
	Upland	Redgram	September Red gram	Life saving irrigation, Application of potash (K_2O)during drought spell @ 10 kg ha^{-1}), Inter culture, Mulching, Application of Organic manure and vermi compost initially	
		Sesame-Potato-wheat	Sesame-Potato Sesame-wheat		

Condition	**Suggested Contingency Measures**				
Early season drought (Normal Onset)	**Major farming Situation**	**Crop/Cropping System**	**Crop Management**	**Soil Nutrient and Moisture conservation measures**	**Remarks on implantation**
Normal Onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	Medium low land	Paddy-Wheat	Life saving irrigation, Gap filling through Dapog nursery	Application of potash must at final land preparation, inter culturing, mulching through weeds, conservation tillage,	
	Midland	Maize-wheat	Life saving irrigation, Gap filling	Application of potash must at final land preparation, inter culturing, mulching through weeds, conservation tillage,	
	Upland	Redgram	Presowing irrigation, Adopt higher seed rate		

Condition	**Suggested Contingency Measures**				
Mid season drought (long dry spell consecutive 2 weeks rainless (>25 mm period)	**Major farming Situation**	**Crop/Cropping System**	**Crop Management**	**Soil Nutrient and Moisture conservation measures**	**Remarks on implantation**
At vegetative Stage	Medium low land	Paddy-Wheat/ Paddy-Rai-Potato	Foliar spray of (1%) urea on the crops	Inter culturing, Mulching through weeds, Conservation tillage, Life saving irrigation,	-
	Midland	Maize-wheat	Foliar spray of (1%) urea on the crops	Inter culturing, Mulching through weeds, Conservation tillage, Life saving irrigation,	
	Upland	Redgram		Inter culturing, Mulching through weeds Conservation tillage, Application of potash (K_2O)during drought spell @ 10 kg ha^{-1}),	

Condition	**Suggested Contingency Measures**				
Mid season drought (long dry spell consecutive 2 weeks rainless (>25 mm period)	**Major farming Situation**	**Crop/Cropping System**	**Crop Management**	**Soil Nutrient and Moisture conservation measures**	**Remarks on implantation**
At reproductive Stage	Medium low land	Paddy-Wheat	Foliar spray of (1%) urea on the crops	Life saving irrigation, Inter culturing, Mulching through weeds, Conservation tillage,	
	Midland	Maize-wheat	Foliar spray of (1%) urea on the crops	Life saving irrigation, Inter culturing, Mulching through weeds, Conservation tillage	
	Upland	Red Gram	-		

Condition	**Suggested Contingency Measures**				
Terminal Drought	**Major farming Situation**	**Crop/Cropping System**	**Crop Management**	**Rabi Crop Planting**	**Remarks on implantation**
	Medium low land	Paddy-Wheat	• Foliar spray (1%) MOP • Mulching	Open the furrow during evening and leave furrow open overnight and planking in the next morning before	
	Midland	Maize-wheat			

	Upland	Redgram	• Harvest at physiological maturity	sunrise for growing of early rabi crops	

2.1.2 Drought - Irrigated situation

Condition	Major Farming Situation	Crop/Cropping System	Change in Crops/ Cropping	Agronomic Measures	Remarks on Implementation
Delayed/Limited release of water in canals due to low rainfall	Medium low land	Paddy-Wheat	1) Paddy (Short Duration)-Late sown wheat 2) Vegetable – Wheat	Dapog Nursery, SRI, Machine transplanting, Zero tillage sown paddy and wheat to make up the time, Direct seeding of short duration paddy/ Cultivation of Lobia, Rajma	
	Midland	Maize-wheat	Sesame –maize Sesame-wheat	Life saving irrigation, Application of potash (K_2O)during drought spell @ 10 kg ha^{-1}), Inter culturing operation, Mulching, Application of Organic manure and vermicompost initially	
	Upland	Redgram	September Red gram		

Condition	Major Farming Situation	Crop/Cropping System	Change in Crops/ Cropping	Agronomic Measures	Remarks on Implementation

Non Release of water in canals under delayed onset of monsoon in catchments	Medium low land Midland Upland	Paddy-Wheat	Paddy (Short Duration)-Late sown wheat	Dapog Nursery, SRI, Machine transplanting, Zero tillage sown paddy and wheat to make up the time, Direct seeding of short duration paddy	
		Maize-wheat	Sesame –maize Sesame-wheat	Life saving irrigation, Application of potash (K_2O)during drought spell @ 10 kg ha^{-1}), Inter culturing operation, Mulching, Application of Organic manure and vermicompost initially	
		Redgram	September Red gram		

Condition	**Major Farming Situation**	**Crop/Cropping System**	**Change in Crops/ Cropping**	**Agronomic Measures**	**Remarks *on Implementation***
Lack of inflows into tanks due to insufficient/Delayed onset of monsoon	Medium low land	Paddy-Wheat	Paddy (Short Duration)-Late sown wheat	Dapog Nursery, SRI, Machine transplanting, Zero tillage sown paddy and wheat to make up the time, Direct seeding of short duration paddy	
	Midland	Maize-wheat	Sesame – maize Sesame-wheat	Life saving irrigation, Application of potash (K_2O)during drought spell @ 10 kg ha^{-1}), Inter culturing operation, Mulching, Application of Organic manure and vermicompost initially	
	Upland	Red Gram	September Red gram		

Condition	**Major Farming Situation**	**Crop/Cropping System**	**Change in Crops/ Cropping**	**Agronomic Measures**	**Remarks on Implementation**
Insufficient groundwater recharge due to low rainfall	Medium low land	Paddy-Wheat	Paddy (Short Duration)-Late sown wheat	Dapog Nursery, SRI, Machine transplanting, Zero tillage sown paddy and wheat to make up the time, Direct seeding of short duration paddy	
	Midland	Maize-wheat	Sesame – maize Sesame-wheat	Life saving irrigation, Application of potash (K_2O)during drought spell @ 10 kg ha^{-1}), Inter culturing operation, Mulching, Application of Organic manure and vermicompost initially	
	Upland	Redgram	September Red gram		

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

Condition	**Suggested Contingency Measures**			
Continuous High Rainfall in a short span leading to water logging	**Vegetative Stage**	**Flowering stage**	**Crop Maturity Stage**	**Post Harvest**
Paddy	Drainage, retransplanting	Drainage, alternative crops if totally	Drainage, alternative crops if totally damaged	

	through Dapog nursery, paddy transplanter, drum seeder, Zero tillage, firb planter	damaged		
Maize	Resowing	Drainage, alternative crops if totally damaged	Drainage, alternative crops if totally damaged	
Chick Pea	October sowing	Drainage, alternative crops if totally damaged	Drainage, alternative crops if totally damaged	

Horticulture				
Bhindi	Drainage, resowing	Drainage, alternative crops if totally damaged	Harvest the vegetable at physiological maturity	Harvest and prepare for sell.
Brinjal	Drainage, retansplanting	Drainage, alternative crops if totally damaged	Harvest the vegetable at physiological maturity	Harvest and prepare for sell.
Chili	Drainage, retansplanting	Drainage, alternative crops if totally damaged	Harvest the vegetable at physiological maturity	Harvest and prepare for sell.
Tomato	Drainage, retansplanting	Drainage, alternative crops if totally damaged	Harvest the vegetable at physiological maturity	Harvest and prepare for sell.
Lauki	Drainage, re transplanting	Drainage, alternative crops if totally damaged	Harvest the vegetable at physiological maturity	Harvest and prepare for sell.

Heavy Rainfall with High wind speed in a short span				
Paddy		Drainage, alternative crops if totally damaged	Drainage, alternative crops if totally damaged	Harvest and prepare for sell.
Maize		Drainage, alternative crops if totally damaged	Drainage, alternative crops if totally damaged	Harvest and prepare for sell.
Chick Pea		Drainage, alternative crops if totally damaged	Drainage, alternative crops if totally damaged	Harvest and prepare for sell.
Horticulture				
Bhindi, Brinjal, Chili, Tomato, Lauki		Drainage, alternative crops if totally damaged	Harvest the vegetable at physiological maturity	Harvest and prepare for sell
Out break of pests and diseases due to un seasonal rains				
Rice	❖ Seedling treatment with granular insecticide – Cartap hydrochloride or phorate 10G or carbofuran 3G. Maintain shallow water in nursery beds ❖ Providing good drainage.	❖ Use copper fungicides against Bacterial leaf blight. ❖ Split application of N fertilizer (3-4 times)	❖ Harvest at physiological maturity	Proper drying and safe storage

Maize	❖ Drainage, and yellowing mainly due to nitrogen deficiency apply N split doses ❖ Application of granular insecticides viz. Thimet 10g, or Carbofuran 3g. in whorl of maize	❖ Foliar blight control through Mancozeb @ 2.5g/l or Zineb/ Maneb @ 2.5-4 g/lit of water (2-4 applications at 8-10 days interval)	❖ Cob harvesting from standing crop ❖ Harvest at physiological maturity	❖ Storage in safe places like farmer warehouse/tent covering of produce ❖ Ensure 10-12% moisture in grains before storage ❖ Proper dying
Pigeonpea	❖ Provide drainage ❖ Seed treatment with 1 g carbendizim +2g thiram/kg seed.	Provide drainage	Provide drainage	❖ Proper dying • Storage at safe place and transportation
Horticulture				
Bhindi, Brinjal, Chili, Tomato, Lauki	Adopt IPM & IDM			Harvest and prepare for sell

2.3 Floods

Condition	**Suggested Contingency Measures**

Transient water logging/Partial inundation	**Seeding Nursery Stage**	**Vegetative Stage**	**Reproductive Stage**	**At harvest**
Paddy	Drainage, re transplanting through Dapog nursery, use paddy transplanter, drum seeder, firb planter	Drainage, alternative crops if totally damaged	Harvest at physiological maturity	Harvest and prepare for sell
Maize	Re sowing	Drainage, alternative crops if totally damaged	Harvest at physiological maturity	Harvest and prepare for sell
Redgram	September sowing	Drainage, alternative crops if totally damaged		
Sugarcane	Drainage	Drainage		
Horticulture				
Bhindi, Brinjal, Chili, Tomato, Lauki	Drainage, retansplanting Spray Ridomil M-Z, 2gm/lt to check damping off	Apply 25 kg Urea /acre	Harvest the vegetable at physiological maturity	Harvest and prepare for sell
Continuous Submergence for more than 2 days				
Paddy	Drainage, retansplanting			
Maize	Drainage	Drainage, alternative crops if totally damaged	Drainage, alternative crops if totally damaged	Harvest and prepare for sell
Red gram	Drainage	Drainage, alternative crops if totally damaged	Drainage, alternative crops if totally damaged	Harvest and prepare for sell
Sugarcane	Drainage	Drainage	Harvest at physiological maturity	Harvest and prepare for sell

Horticulture				
Bhindi, Brinjal, Chili, Tomato, Lauki	Drainage, retansplanting Spray Ridomil M-Z, 2gm/lt to check damping off	Drainage, alternative crops if totally damaged	Drainage, alternative crops if totally damaged	
Old orchard	1. After flood spray Endosulfan / Chlorpyriphos/ Dimethoate @ 1-1.5ml/lt on trees 2. Drench the tree with carbenazim @ 1 gm/lt 3. Prune the diseased and dried branches and apply Blitox-50 @ 3gm/ lt 4. Apply Bordeaux Paste up to 5'ht			
Sea Water Inundation	Not applicable			

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

Condition	**Suggested Contingency Measures**			
Extreme Event Type	**Seeding Nursery Stage**	**Vegetative Stage**	**Reproductive Stage**	**At harvest**
Heat wave				
Horticulture				
Bhindi, Brinjal, Chili, Tomato, Lauki			Provide irrigation	
Cold Wave				
Wheat, Chickpea, Redgram, Lentil		Irrigation, interculturing, mulching by weeds		
Horticulture				
Bhindi, Brinjal, Chili, Tomato, Lauki		Irrigation, interculturing, mulching by weeds		
Frost				
Wheat, Chickpea, Redgram,		Irrigation, interculturing, mulching by weeds		

Lentil				
Horticulture				
Bhindi, Brinjal, Chili, Lauki	Treat the seeds in 0.2% soln of Dithane M-45	Irrigation, interculturing, mulching by weeds		
Tomato & Potato	Treat the seeds in 0.2% soln of Dithane M-45	Earth up to 15cm ht. Irrigation interculturing, mulching by weeds	Spray Dithane M-45/ Mancozeb @ 2.5 gm/lt of water in 3rd week of December at 10 days interval 3 times	Harvest in dry weather
Hail storm	Not applicable			

2.5 Contingent Strategies for Livestock, Poultry & Fisheries

2.5.1. Livestock

	Suggested contingency measures		
	Before the event	**During the event**	**After the event**
Drought			
Feed & fodder availability	Silage making of leguminous and Non leguminous fodder	Feeding of unconventional livestock feed such as Karanj cake, leaves of trees , Urea treated straw	Feeding of leaves of subabul etc, Urea-molasses feeding
Drinking water	Recharge the ponds with fresh water	Provides animal water from well, Tube well , Hand pump, etc	provide water from hand pump, tube well etc.
Health & disease management	Give vaccine for tick borne diseases like thalaria	Check the population of tick, fleas, mosquito by keeping the environment clean & disinfected by chemicals, fumigation in barn.	Take care about he disease spread by tick, mites, fleas etc.
Floods			
Feed & fodder availability	Hay making of grasses & fodders.	Feeding the animals with tree leaves like subabul, Banana etc. and Urea molasses	Dry the greens then feed it, Do not feed animals mouldy fodders.
Drinking water	Hand pump and tube well should be	Drink the animals always fresh water, running water, not	Drink the animals running

	on higher places	stagnant water	water, water from hand pump, tube well
Health & disease management	Give vaccine for H.S., B.Q, Anthrax etc	De worm animals regularly special care for Fasciolosis (Liver fluke)	Do not graze the animals where snail population is more, control the snail population.
Cyclone			
Feed & fodder availability	Silage & hay making	feed animals silage or hay, urea molasses	Do not feed animals moist mouldy fodder, feed animals dry fodder
Drinking water	Pump, hand pump at higher places	Always drink animals fresh water	Drink animals fresh or running water
Health & disease management	Provide animals proper housing.	Keep the animals in good quality house that shouldn't be damaged due to cyclone, in case of causality provide first aid immediately.	Provide proper treatment to injured animals, deep burial of dead animals and disinfect the environment with good quality disinfectants like bleaching powder etc.
Heat waves and cold waves			
Shade/ environment management	Construct animal house well ventilated and spacious with shady trees around.	In case of heat wave provide the animals shade with kachcha roof, well ventilated. In cold wave protect the animals with clothing of jute etc. Proper bedding, protection from cold wind with jute carton etc provide warmth with fire	Provide well ventilated house with shady trees.
Health & disease management	In case of heat wave Anthelmintic & Antiprotozoal drug must be provided, keep fleas & mosquito free environment.	In case of heat wave- Provide animals cool places & keep them cool by bathing twice, Protect from heat stroke by keeping them on cool places and do not allow them to graze during day time, feed animals light diet	After heat wave :- Provide animals anti-stress drug keep environment clean, provide adequate nutrition

		during cool time i.e. early morning & evening, regular feeding of digestive tonics	& fresh water, feeding digestive tonics, after cold wave keep animals in sun light, Let them graze, Provide them quality concentrate.

2.5.2 Poultry

	Suggested contingent measures		
	Before the event	**During the Event**	**After the events**
Drought			
Shortage of feed ingredients	Maize is replaced by broken rice, Kodo, Sawan, Mustard cake replaced groundnut cake.	Small millets and molasses can replace cereals, mustard cake, saya bean meal cake can replace ground nut cake	Cotton seed cake, sun flower seed meal replace groundnut cake, Small millets can replace cereals.
Drinking water	Harvest water in water tanks with sanitation measures & use after proper disinfection of water	Give water 4 times in a day in earthed utensils, Water should be clean with beaching powder. Periodically provide electoral powder etc in water	Give fresh water in adlibdom.
Health & Disease Management	Vaccinate the stock with Fowlpox, Fowl cholera, Marex disease etc	Give sulpha drugs to check cholera, Amproliium, salts etc to cheek coccidiosis	Give Anti-stress drugs for cope up the condition, provide adequate feed & water
Flood			
Shortage of feed ingredients	Stock the cereals (Maize, Rice, Wheat bran etc) on higher places and Maize is replace by sorghum	Feed shorghum in place of maize, replace G/N cake by mustard or cotton seed cake, Fish meal can be replaced by Live residue meal.	Small millets can replace maize. Sunflower meal can replace g/n cake
Drinking water	Fresh water of hand pump or tube well	Disinfected fresh water should be given to	Fresh water with proper

	of higher palace should be used	birds, bleaching powdered water can be used	disinfection with carbofuran etc must be used.
Health & diseases management	Use dewormer regularly & vaccinate the birds with proper vaccine	Give dewormer periodically, vaccine of fowl cholera, Ranikhet disease must be given. Anti coccidial drug in preventive doses also be given.	Anti-stress and Multi vitamin and minerals must be given.
Cyclone			
Shortage of feed ingredients	Stock the cereals (Maize, Rice, Wheat bran etc) on higher places and Maize is replace by sorghum	Feed shorghum in place of maize, replace G/N cake by mustard or cotton seed cake, Fish meal can be replaced by Live residue meal.	Small millets can replace maize. Sunflower meal can replace g/n cake
Drinking water	Fresh water of hand pump or tube well of higher palace should be used	Disinfected fresh water should be given to birds, bleaching powdered water can be used	Fresh water with proper disinfection with carbofuran etc must be used.
Health & diseases management	Provide poultry proper housing.	Keep the birds in good quality house that shouldn't be damaged due to cyclone.	Provide proper treatment to injured birds, deep burial of dead birds and disinfect the environment with good quality disinfectants like bleaching powder etc.
Heat waves and cold waves			
Shade/ environment management	Construct poultry house well ventilated with shady trees around.	In case of heat wave the poultry house with straws on roof, well ventilated, windows with carton of jute soaked in water, if possible cool the house with cooler. In cold wave protect the poultry with carton of jute etc., provide warmth with electrical bulb or gas burner etc.	Provide well ventilated house with shady trees.
Health & disease management	In case of heat wave Anthelmintic & Antiprotozoal drug must be provided, keep fleas & mosquito free environment.	In case of heat wave- provide poultry cool places, Protect from heat stroke by keeping them in well ventilated places, feed birds moisten diet during cool time i.e. early	After heat wave :- Provide birds anti-stress drug keep environment clean, provide adequate nutrition & fresh water,

		morning & evening, regular feeding of digestive tonics and electoral powder	feeding digestive tonics, after cold wave keep poultry with maximum light in house.

2.5.3 Fisheries/ Aquaculture – Not applicable

	Suggested contingency measures		
	Before the event	**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			
(ii) Impact of salt load build up in ponds / change in water quality			
(iii) Any other			
2) Floods			
A. Capture			
Marine			
Inland			
(i) Average compensation paid due to loss of human life			
(ii) No. of boats / nets/damaged			

(iii) No.of houses damaged			
(iv) Loss of stock			
(v) Changes in water quality			
(vi) Health and diseases			
B. Aquaculture			
(i) Inundation with flood water			
(ii) Water contamination and changes in water quality			
(iii) Health and diseases			
(iv) Loss of stock and inputs (feed, chemicals etc)			
(v) Infrastructure damage (pumps, aerators, huts etc)			
(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			
(iii) Any other			

[a] based on forewarning wherever available