STATE: BIHAR

Agriculture Contingency Plan for District: Gopalganj

1.0 District Agriculture profile				
1.1	**Agro-Climatic/Ecological Zone**			
	Agro Ecological Sub Region (ICAR)	Eastern Plain, Hot Subhumid (moist) Eco-Region (13.1)		
	Agro-Climatic Zone (Planning Commission)	Middle Gangetic Plain Region (IV)		
	Agro Climatic Zone (NARP)	North West Alluvial Plain Zone (BI-1)		
	List all the districts or part thereof falling under the NARP Zone	Saran, Siwan, Goplaganj, Muzaffarpur, E. Champaran, W. Champaran, Sitamarhi, Sheohar, Vaishali, Darbhanga , Madhubani, Samastipur		
	Geographic coordinates of district headquarters	Latitude	Longitude	Altitude
		$26^0$26'N	$84^0$23'E	65 m
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	R.R.S Madhopur, W. Champaran		
	Mention the KVK located in the district AMFU Station	Gopalganj		

1.2	**Rainfall**	Normal RF(mm)	Normal Rainy days (number)	Normal Onset	Normal Cessation
	SW monsoon (June-Sep)	1207	-	2nd week of June	3rd week of September
	NE Monsoon(Oct-Dec)	196	-	1st week of October	1st week of November
	Winter (Jan-Feb)	43	-		
	Summer (March-May)	220	-		

	Annual	1667	-	-	-

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)	203.7	163.1	1.2	22.9	-	17.6	0	0	0	0

1. 4	**Major Soils**	**Area ('000 ha)**	**Percent (%) of total**
	Sandy loam	-	-
	Loam	-	-
	Clay loam	-	-

1.5	**Agricultural land use**	Area ('000 ha)	Cropping intensity %
	Net sown area	163.1	150.30
	Area sown more than once	82.2	
	Gross cropped area	245.2	

1.6	**Irrigation**	Area ('000 ha)		
	Net irrigated area	115.8		
	Gross irrigated area	-		
	Rainfed area	47.1		
	Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
	Canals	-	26.3	22.7
	Tanks	-	2.2	1.9
	Open wells	-	11.7	10.1
	Bore wells	-	56.07	48.4

	Lift irrigation schemes	-		
	Micro-irrigation			
	Other sources (please specify)		19.4	16.7
	Total Irrigated Area		115.8	
	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	14	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	-	-	87.2	-	-	-	-	87.2
	Pulses	-	-	6.9	-	-	3.5	0.8	11.3
	Maize	-	-	2.9	-	-	2.4	3.4	8.7
	wheat	-	-		-	-	91.2	0	91.2
	Sugarcane	-	-		-	-	25.3	10.8	36.2

	Horticulture crops - Fruits	**Area (‘000 ha)**
		Total
	Mango	2.9
	Guava	0.5
	Litchi	1.1
	Lemon	0.4
	Banana	0.6
	Horticulture crops - Vegetables	**Total**
	Cauliflower	1.8
	Oka	2.1
	Tomato	1.4
	Potato	11.7
	Brinjal	1.3
	Medicinal and Aromatic crops	
	Plantation crops	
	Fodder crops	
	Grazing land	
	Sericulture etc	

1.8	**Livestock**	**Male (‘000)**	**Female (‘000)**	**Total (‘000)**
	Non descriptive Cattle (local low yielding)	78.9	92.5	171.4
	Improved cattle			

	Crossbred cattle	3.3	13.7	17.1
	Non descriptive Buffaloes (local low yielding)			
	Descript Buffaloes	15.2	102.9	118.2
	Goat	72.6	143.6	216.3
	Sheep	0.4	0.7	1.1
	Others (Camel, Pig, Yak etc.)			
	Commercial dairy farms (Number)			
1.9	**Poultry**	**No. of farms**	**Total No. of birds ('000)**	
	Commercial		76714	
	Backyard		37880	

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**
	30	**229**	**209**

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)	**997.8**	3.2	2113.4
Others			

1.11 Production and Productivity of major crops

1.11	Name of	**Kharif**	**Rabi**	**Summer**	**Total**	**Crop**

	crop	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	**residue as fodder** (‘000 tons)
Major Field crops (Crops identified based on total acreage)										
	Rice	166.6	1910	-	-	-	-	193.3	1910	-
	Maize	-	-	-	-	-	-	16.6	1905	-
	Pulses	-	-	-	-	-	-	7.3	643	-
	Wheat	-	-	236.2	2580	-	-	247.7	2580	-
	Sugarcane	-	-	-	-	-	-	162.8	44940	-
Major Horticultural crops (Crops identified based on total acreage)										
	Fruits	-	-	-	-	-	-	50.2	9750	-
	Cauliflower	-	-	-	-	-	-	225.6	11860	-
	cabbage	-	-	-	-	-	-	11.3	16070	-
	Tomato	-	-	-	-	-	-	24.8	15330	-
	Onion	-	-	-	-	-	-	17.2	20900	-
	Brinjal	-	-	-	-	-	-	10.8	20000	-

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

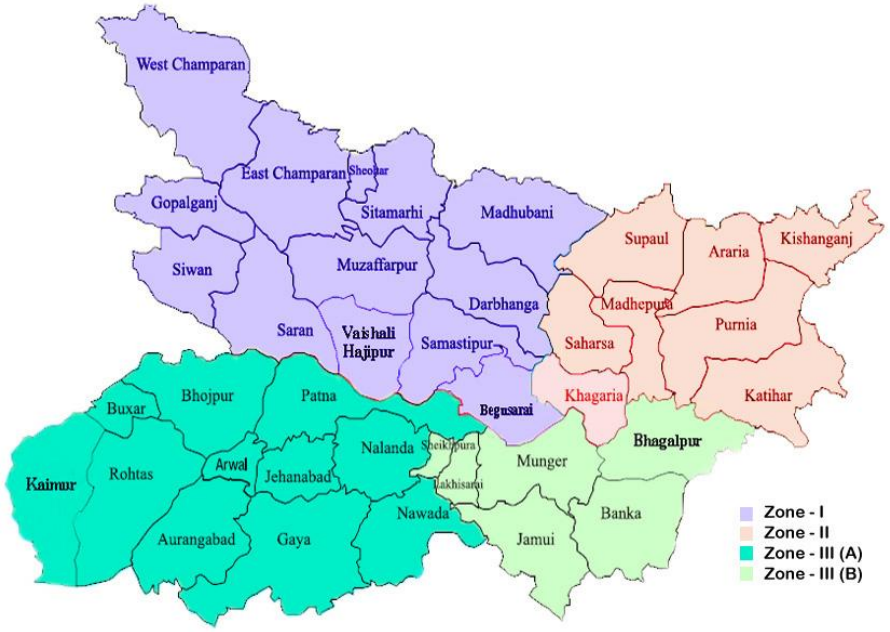
					January	

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)	√		

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

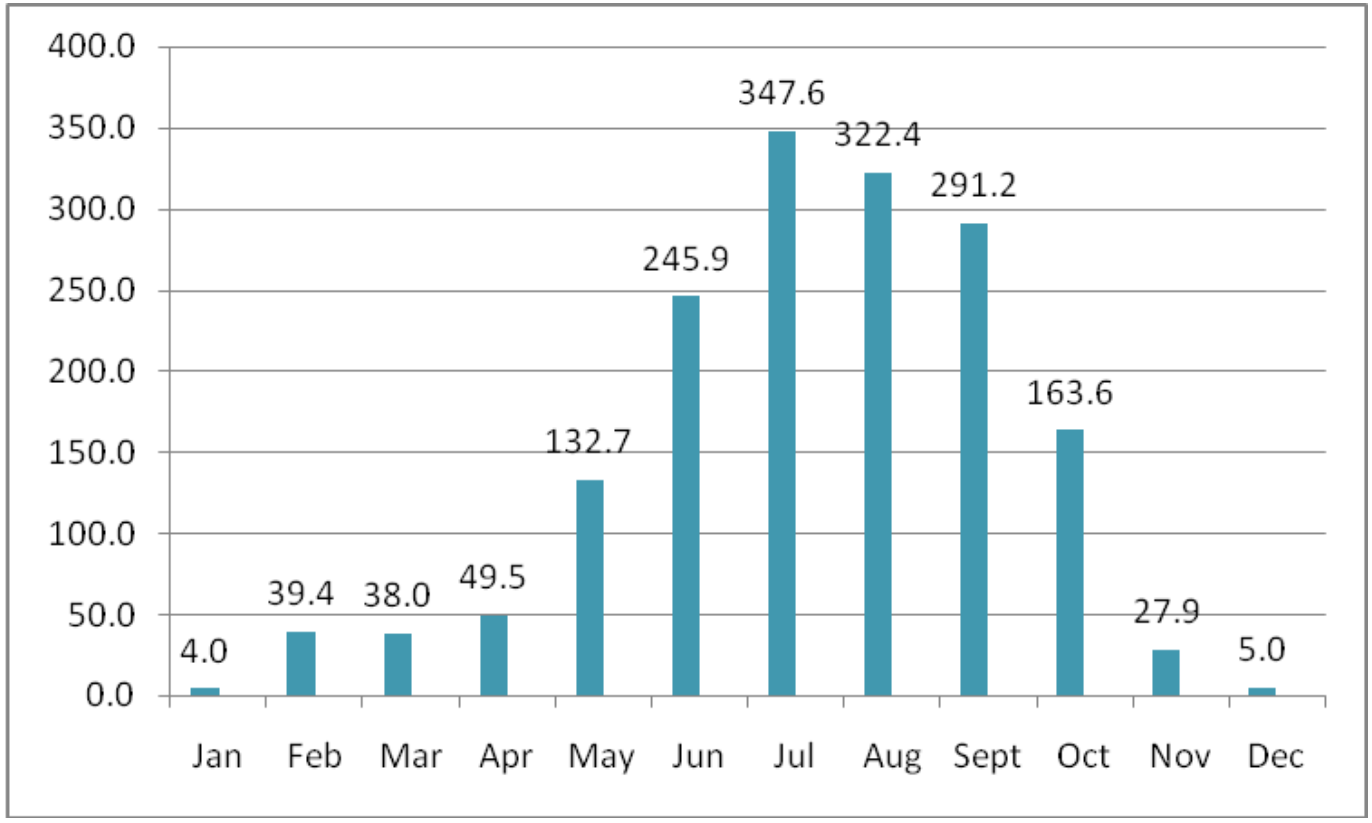
Agro climatic Zones of Bihar



Source: krishi.bih.nic.in

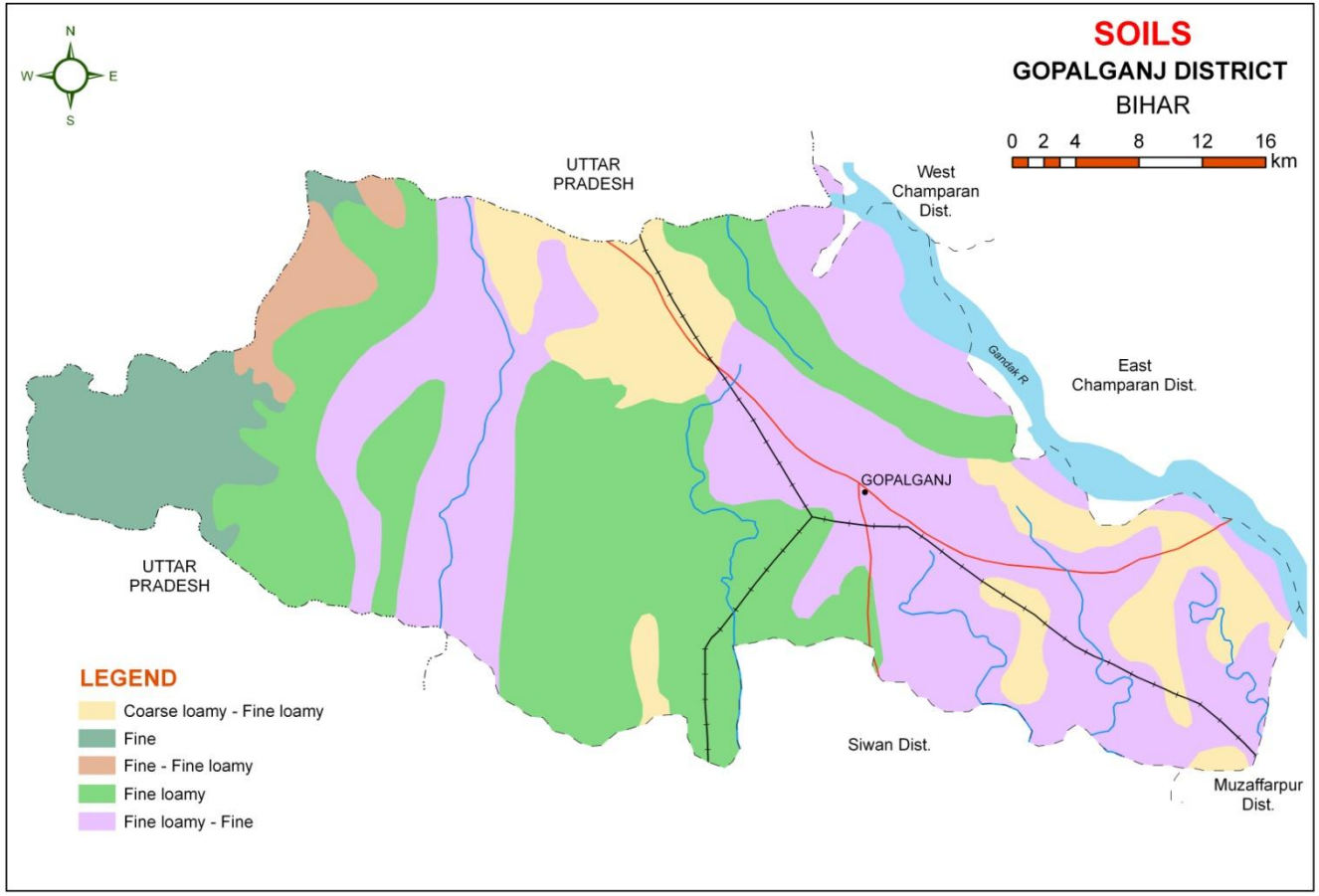
Annexure II

Mean Annual Rainfall (mm)



Annexure – III

Soil map



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**	**Normal Crop / Cropping system**	**Change in crop / cropping system including variety**	**Agronomic measures**	**Remarks on Implementation**
Delay by 2 weeks 4th week of July	Up land Very deep, fine loam to clay loamy soils	Rice-Wheat	Rice (Short Duration) - Wheat Rice- Prabhat, Dhanlaxmi, Richharia, Turanta, Saroj Wheat- HD -2733, PBW-343, HP-1731, HD-2824	• Normal Package of practices • Life saving irrigation • Direct seeding of rice	
	Medium land Loamy soils	Maize-wheat Rice-Wheat	Medium duration Rice Rice - Rajendra Bhagawati, Rajendra Suwasni Rajshree, Prabhat , Late Wheat – HUW-234,DBW-14, HP-1744, HD-2643 Maize - Shaktiman-1,2,3,4, Suwan, Ganga-11, Deoki Pusa early hybrid Macca-3	• Normal Package of practices • Life saving irrigation • Direct seeding of rice	
		Pigeonpea-Greengram Pigeonpea – Bahar, Pusa-9 Narendra Arhar-I	No change	• Normal Package of practices • Life saving irrigation	

		Greengram – Samrat, Pusa Vishal, SML 668, PDM-44, T-44			
	Low land Very deep clay loamy soils	Rice-Wheat	Medium duration Rice –Late wheat Rice- Rajshree, Santosh, Sita Rajendra Suwasni, Rajendra Sweta Late Wheat–HUW-234, C-306, DBW-14, HP-1744, HD-2643	• Normal package of practices • Life saving irrigation to the seedling in nursery	
		Sugarcane (February and October Planting) Sugarcane – BO 141, BO 147, BO 136, BO91	No change	▪ Weeding ▪ Inter culturing ▪ Life saving irrigation ▪ Fertilizer, Pesticides application ▪ Propping etc.	

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delay by 4 weeks 1st week of August	Upland Very deep, fine loam to clay loamy soils	Rice-Wheat	Short Duration Rice –Wheat Rice- Prabhat, Dhanlaxmi, Richharia, Turanta, Saroj Wheat- HD-2733, PBW-343, HP-1731, HD-2824	• Life saving irrigation to rice nursery • Direct seeding of short duration rice may also be done	Seeds from RAU, Pusa
	Medium land Loamy soils	Maize-wheat Rice-Wheat	Medium duration Rice-Late wheat **Maize** - Shaktiman-1,2,3,4, Suwa, Ganga-11, Deoki Pusa early hybrid Maka-3 **Rice** - Rajendra Bhagawati, Rajendra Suwasni	• Life saving irrigation to rice nursery • Application of potash with adjuvant • Application of Organic manure and vermi compost • Enhanced dose of nitrogen	

			Rajshree, Prabhat Late Wheat – HUW-234, C-306, DBW-14, HP-1744, HD-2643	with full basal dose of NPK	
		Pigeonpea (Arhar) – Greengram	Pigeonpea –Greengram Pigeonpea – Bahar, Pusa-9 Narendra Arhar-I Greengram – Samrat, Pusa Vishal, SML 668, PDM-44, T-44		
	Low land Very deep clay loamy soils	Rice-wheat	Short Duration Rice-Wheat Rice- Rajshree, Santosh, Sita Rajendra Suwasni Rajendra Sweta Wheat - HD-2733, PBW-343, HP-1731, HD-2824	• SRI • Para grass cultivation for fodder	
		Sugarcane (February and October Planting) Sugarcane – BO 141, BO 147, BO 136, BO91	No change	▪ Weeding ▪ Inter culturing ▪ Life saving irrigation ▪ Fertilizer and, Pesticides application ▪ Propping etc.	

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delay by 6 weeks 3rd week of August	Upland Very deep, fine loam to clay loamy soils	Rice-Wheat	Short Duration Rice-Wheat Rice- Prabhat, Dhanlaxmi, Richharia, Turanta, Saroj Wheat - HD-2733, PBW-343, HP-1731, HD-2824	• Spray of Potassic fertilizer with adjuvant at vegetative stage • Protective spray of pesticides with adjuvant against BLB & Blasts and Helmintho sporium leaf	Seeds from RAU, Pusa, NSC, TDC , BRBN etc

				spot	
	Medium land Loamy soils	Maize-wheat Rice- Wheat	Short Duration Rice-Wheat Rice - Rajendra Bhagawati, Rajendra Suwasni Rajshree, Prabhat Wheat - HD-2733, PBW-343, HP-1731, HD-2824 Maize - Shaktiman-1,2,3,4, Suwan, Ganga-11, Deoki, Pusa early hybrid Maka-3	• Life saving irrigation to seedling if raised earlier • Application of potassic fertilizer with adjuvant at vegetative stage in rice • Intercultivation in maize • Application of Organic manure and vermi compost . in Rice and maize	
		Pigeonpea (Arhar) Pigeonpea – Bahar, Pusa-9, Narendra Arhar-I	Sept. Pigeonpea (30th August to 10th September) Pigeonpea - Pusa, Sharad Greengram- Samrat, Pusa Vishal, SML 668, T-44, PDM 44	▪ Irrigation for maize crop ▪ Normal practices in Pigeonpea	
	Low land Very deep clay loamy soils	Rice-wheat-green gram (Greengram)	Rice (Short Duration)-Wheat/Vegetable/Pulses/ Oilseed Rice- Rajshree, Santosh, Sita Rajendra Suwasni Rajendra Sweta Wheat - HD-2733, PBW-343, HP-1731, HD-2824 Oilseed- 66-197-3, Rajendra Sarson-I	• Dapog Nursery raised 20 days old seedling should be used for Rice • Spray of Potassic fertilizer with adjuvant at vegetative stage • 35-40 days old seedling transplantation • Protective spray of pesticides • Enhanced basal dose of NPK	

		Sugarcane (Februry and October Planting) Sugarcane – BO 141, BO 147, BO 136, BO91	No change	▪ Weeding ▪ Inter culturing ▪ Life saving irrigation ▪ Fertilizer and Pesticides application ▪ Propping etc.	

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delay by 8 weeks 1st week of September	Upland Very deep, fine loam to clay loamy soils	Rice-Wheat	Early Rice - Pigeonpea/Greengram/ Late wheat/Vegetable/pulses/ oilseed Rice- Prabhat, Dhanlaxmi, Richharia, Turanta, Saroj Late Wheat – HUW-234, DBW-14, HP-1744, HD- 2643 Greengram – Samrat, Pusa Vishal, SML 668, PDM-44, T-44 Sept. Pigeonpea –Pusa-9 Sharad Blackgram- T-9, Navin, Pant Urd-30 , Pant, Urd-19 Mustard- 66-197-3, Rajendra Sarson-I	• Zero tillage wheat • Spray of potassic fertilizer with adjuvant in Rice at vegetative stage • Life saving irrigation to Rice nursery raised • Direct seeding of rice • Enhanced basal dose of NPK in rice to boost early vegetative growth • Protective spray of pesticides with adjuvant against pest & disease • Application of organic manure and vermi compost initially for Rice and other crops	Seeds from RAU, Pusa, NSC, TDC , BRBN etc
	Medium land Loamy soils	Maize-Wheat Rice-Wheat	Rice –Rabi maize Rice-Late Wheat	• Zero tillage wheat • Spray of potassic fertilizer with adjuvant in Rice at vegetative stage	

			Rice - Rajendra Bhagawati, Rajendra Suwasni Rajshree, Prabhat Rabi Maize- Saktiman-1,2,3,4, Laxmi, Deoki, Rajendra Hybrid-1,2 Late Wheat –HUW-234, C-306, DBW-14,HP-1744, HD-2643	• Life saving irrigation to Rice nursery raised • Direct seeding of rice • Enhanced basal dose of NPK in rice to boost early vegetative growth • Protective spray of pesticides with adjuvant against pest & disease • Application of organic manure and vermi compost initially for Rice and other crops	
		Pigeonpea –Greengram	September Pigeonpea-Greengram Greengram – Samrat, Pusa Vishal, SML 668, PDM-44, T-44 Sept.Pigeonpea–Pusa-9, Sharad	• Application of organic manure and vermi compost initially for rice and other crops	
	Low land Very deep clay loamy soils	Rice- Potato	Rice-Potato Rice-wheat Rice- Rajshree, Santosh, Sita, Rajendra Suwasni Rajendra Sweta Wheat- HD-2733, PBW-343, HP-1731, HD-2824 Potato – PJ376, Rajendra Aloo-1,2,3, Kufri Jyoti	• Application of organic manure and vermi compost initially for Rice and other crops • Transplanting of 35-40 days old seedling	

		Rice-wheat-Green gram	Sept. Pigeonpea-Greengram Sesame-Rabi maize Pigeonpea – Sharad, Pusa-9 Rabi Maize - Saktiman-1,2,3,4, Laxmi, Deoki, Rajendra Hybrid – 1,2 Greengram – Samrat, Pusa Vishal, SML 668, PDM-44, T-44 Sesame – Krishna, Pragati	• Normal practices for sesame, Pigeonpea	
		Sugarcane (February and October Planting) Sugarcane – BO 141, BO 147, BO 136, BO91	No change	▪ Weeding ▪ Interculturing ▪ Life saving irrigation ▪ Fertizer, Pesticides application, propping etc.	

Condition			**Suggested Contingency measures**		
Early season drought **(Normal onset)**	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measues**	**Remarks on Implementation[e]**
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	Upland Very deep, fine loam to clay loamy soils	Rice-Wheat Rice-Prabhat, Dhanlaxmi, Richharia, Turanta, Saroj Wheat- HD-2733, PBW-343, HP-1731, HD-2824	• Life saving irrigation • Gap filling of existing crop	• Inter culturing • Mulching with weeds for moisture conservation • Conservation tillage • Inter culturing • Spray potassic fertilizer with adjuvant at vegetative stage • Protective spray of pesticides	Seeds from RAU, Pusa, NSC, TDC , BRBN etc

				with adjuvant against Pesticides and disease	
	Medium land Loamy soils	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-2824	• Life saving irrigation • Gap filling	• Application of potash must at final land preparation • Inter culturing • Mulching with weeds for moisture conservation • Conservation tillage • Inter cultivation • Spray potassic fertilizer with adjuvant at vegetative stage • Protective spray of pesticides with adjuvant against Pesticides and disease	
		Pigeonpea-Greengram Pigeonpea – Bahar, Pusa-9 Narendra Arhar-I Greengram – Samrat, Pusa Vishal, SML 668,	• Pre sowing irrigation • higher seed rate • Gap filling	• Application of potash must at final land preparation • Inter culturing • Mulching with weeds for moisture conservation • Conservation tillage • Inter culturing • Spray potassic fertilizer with adjuvant at vegetative stage • Protective spray of pesticides with adjuvant against Pesticides and disease	
	Low land Very deep clay loamy soils	Rice-wheat-Green gram Rice- Rajshree, Santosh, Sita, Rajendra Suwasni Rajendra Sweta Wheat- HD-2733, PBW-343, HP-1731, HD-2824 Greengram- SML-6-68, Pusa Vishal, Samarat	• Life saving irrigation • Gap filling through Dapog nursery	• Application of potash must at final land preparation • Inter culturing • Mulching with weeds for moisture conservation • Conservation tillage • Inter culturing • Spray potassic fertilizer with adjuvant at vegetative stage • Protective spray of pesticides with adjuvant against	

				Pesticides and disease	
		Sugarcane (feb & Oct) planting Var. – BO 141, BO 147, BO 136, BO91	No change	▪ Weeding ▪ Inter culturing ▪ Life saving irrigation ▪ Fertilizer, Pesticides application, propping etc.	

Condition			**Suggested Contingency measures**		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measues**	**Remarks on Implementation**
At vegetative stage	Upland Very deep, fine loam to clay loamy soils	Rice-Wheat Rice-Prabhat, Dhanlaxmi, Richharia, Turanta, Saroj Wheat- HD-2733, PBW-343, HP-1731, HD-2824	• Gap filling of existing crop • Postponement of top dressing • Protective spray of pesticides with adjuvant against BLB, BLAST & Helmintho sporium leaf spot	• Inter culturing • Mulching through weeds, • Conservation tillage • Life saving irrigation • Spray of potassic fertilizer with adjuvant • Spray (1%) Urea on the crops	
	Medium land Loamy soils	Rice-Potato Rice –Wheat Rice - Rajendra Bhagawati, Rajendra Suwasni, Rajshree, Prabhat Potato – PJ376, Rajendra Aloo-1,2,3, Kufri Jyoti Wheat- HD-2733, PBW-343, HP-1731, HD-2824	• Gap filling of existing crop • Postponement of top dressing • Protective spray of pesticides with adjuvant against BLB, BLAST & Helmintho sporium leaf spot	• Inter culturing • Mulching through weeds, • Conservation tillage • Life saving irrigation • Spray of potassic fertilizer with adjuvant • Spray (1%) Urea on the crops	
		Pigeonpea (Arhar)-			

		Greengram Pigeonpea – Bahar, Pusa-9 Narendra Arhar-I Greengram – Samrat, Pusa Vishal, SML 668, PDM-44, T-44			
	Low land Very deep clay loamy soils	Rice-wheat-Green gram Rice- Rajshree, Santosh, Sita, Rajendra Suwasni Rajendra Sweta Wheat- HD-2733, PBW-343, HP-1731, HD-2824 Green Gram- SML-6-68, Pusa Vishal, Samarat	• Gap filling of existing crop • Postponement of top dressing • Protective spray of pesticides with adjuvant against BLB, BLAST & Helmintho sporium leaf spot	• Inter culturing • Mulching through weeds, • Conservation tillage • Life saving irrigation • Spray of potassic fertilizer with adjuvant • Spray (1%) Urea on the crops	
		Sugarcane Var. – BO 141, BO 147, BO 136, BO91	• Life saving irrigation • Weed management	Mulching for moisture conservation	

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	Up land	Rice-Wheat Vegetable – Wheat Rice-Prabhat, Dhanlaxmi, Richharia, Turanta, Saroj Wheat- HD-2733, PBW-343 HP-1731, HD-2824	• IPM practices • Spray of pesticides with spreader	• Inter culturing • Mulching through weeds • Conservation tillage • Life saving irrigation • Spray of potassic fertilizer with adjuvant	
	Medium land Loamy soils	Maize-wheat Maize - Shaktiman-1,2,3,4, Suwan, Ganga-11, Deoki	• IPM practices • Spray of pesticides with spreader	• Inter culturing • Mulching through weeds • Conservation tillage • Life saving irrigation	

		Pusa early hybrid Maka-3 Wheat- HD-2733, PBW-343, HP-1731, HD-282		• Spray of potash and nitrogen fertilizer with adjuvant	
		Pigeonpea(Arhar)-Greengram Var. Bahar, Narendra Arhar-1	• If rice crop withers & gets damaged blackgram/sesame-Wheat should be followed • IPM practices • Spray of pesticides with spreader	• Inter cultivation, mulching through weeds • Life saving irrigation • Conservation tillage • Spray of potassic fertilizer with adjuvant	
	Low land Very deep clay loamy soils	Rice-wheat-Green gram Rice- Rajshree, Santosh, Sita, Rajendra Suwasni Rajendra Sweta Wheat- HD-2733, PBW-343, HP-1731, HD-2824 Green Gram- SML-6-68, Pusa Vishal, Samarat	• IPM practice	• Inter culturing • Mulching through weeds • Life saving irrigation • Conservation tillage • Spray of potassic fertilizer with adjuvant,	
		Sugarcane Var. – BO 141, BO 147, BO 136, BO91	• IPM practice • Life saving irrigation • Spray of potassic fertilizer with adjuvant	• Weeding • Inter culturing • Fertilizer, Pesticides application, propping etc	

Condition			**Suggested Contingency measures**		
Terminal drought (Early withdrawal of monsoon)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Rabi Crop planning**	**Remarks on Implementation**

	Up land Very deep, fine loam to clay loamy soils	Rice-Wheat Rice-Prabhat, Dhanlaxmi, Richharia, Rajendra Bhagwati, Saroj Wheat- HD-2733, PBW-343, HP-1731, HD-2824	• Spray of potassic fertilizer with adjuvant • IPM practices • Life saving irrigation • Mulching • Thinning	• Open the furrow during evening leave it open overnight and plank morning before sunrise for growing of early rabi crops like wheat Rabi Maize/Pulses /Oilseeds/ Vegetables etc. • Use stored water at critical stage of growth • To clean irrigation channel for preventing loss of moisture through seepage	Seeds from RAU, Pusa, NSC, TDC , BRBN etc
	Medium land Loamy soils	Maize-wheat Maize - Shaktiman-1,2,3,4, Suwan, Ganga-11, Deoki Pusa early hybrid Macca-3 Wheat- HD-2733, PBW-343, HP-1731, HD-282		• 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 • Use stored water at critical stage of growth • To clean irrigation channel for preventing loss of moisture through seepage	
		Pigeonpea (Arhar) Var. Bahar, Narendra Arhar-1		• 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 • Use stored water at critical stage of growth • To clean irrigation channel for preventing loss of moisture through seepage	

	Low land Very deep clay loamy soils	Rice-wheat-Green gram Rice-Rajshree, Santosh, Sita, Rajendra Suwasni Rajendra Sweta Wheat- HD-2733, PBW-343, HP-1731, HD-2824 Green Gram- 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	
		Sugarcane (Feb & Oct. planting)	Var. – BO 141, BO 147, BO 136, BO91	• Life saving irrigation • Mulching • IPM practices • Weed management • Fertilizer & Pesticides application Propping etc. -	

2.1.2 Drought - Irrigated situation

Condition			**Suggested Contingency measures**		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delayed limited release of water in canals due to low rainfall	Upland Very deep, fine loam to clay loamy soils	Rice-Wheat	1) Rice (Short Duration)-Late sown wheat 2) Vegetable –Wheat 3) Lobia-Rajmash Rice-Prabhat, Dhanlaxmi, Richharia, Turanta, Saroj Late Wheat – HUW-234, DBW-14, HP-744, HD-2643 Wheat- HD-2733, PBW-343,	• Zero tillage wheat • Direct seeding of short duration rice • Life saving irrigation • Application of potassic fertilizer with adjuvant • Inter culturing • Mulching • Application of Organic manure and vermi	Seeds from RAU, Pusa, NSC, TDC , BRBN etc Seeds from RAU, Pusa

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
			HP-1731, HD-2824	compost.	
	Medium land Loamy soils	Maize-wheat	Rice –maize Rice-wheat Rice - Rajendra Bhagawati, Rajendra Suwasni Rajshree, Prabhat Maize - Shaktiman-1,2,3,4, Suwan, Ganga-11, Deok , Pusa early hybrid Macca-3 Wheat- HD-2733, PBW-343, HP-1731, HD-2824		
		Pigeonpea (Arhar)-Greengram Pigeonpea - Bahar, Narendra Arhar-1 Greengram – Samrat, Pusa Vishal, SML 668, PDM-44, T-44	No change		

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Limited release of water in canals due to low rainfall	Upland Very deep, fine loam to clay loamy soils	Rice-Wheat	1) Rice (Short Duration)-Late sown wheat 2) Vegetable –Wheat 3) Lobia-Rajmash Rice-Prabhat, Dhanlaxmi, Richharia, Turanta, Saroj	• Zero tillage wheat • Direct seeding of short duration Rice • Life saving irrigation • Application of potassic fertilizer with adjuvant • Inter culturing • Mulching	Seeds from RAU, Pusa, NSC, TDC , BRBN etc

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
			Late Wheat – HUW-234, DBW-14, HP- 1744, HD-2643 Wheat- HD-2733, PBW-343, HP-1731, HD-2824	• Application of Organic manure and vermi compost . • Normal practices Application of Organic manure and vermi compost • Dapog Nursery-medium land nursery • Zero tillage wheat • Direct seeding of short duration Rice	
	Medium land Loamy soils	Maize-wheat	Rice –maize Rice -wheat Rice - Rajendra Bhagawati, Rajendra Suwasni Rajshree, Prabhat Maize - Shaktiman-1,2,3,4, Suwan, Ganga-11, Deoki, Pusa early hybrid Maka-3 Wheat- HD-2733, PBW-343, HP-1731, HD-2824		
		Pigeonpea (Arhar)-Greengram Pigeonpea -Bahar, Narendra Arhar-1 Greengram – Samrat, Pusa Vishal, SML 668, PDM-44, T-44	No change		

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	Upland Very deep to medium deep black, fine loam to clay loamy soils	Rice-Wheat	Rice (Short Duration)-Late sown wheat Rice-Prabhat, Dhanlaxmi, Richharia, Turanta, Saroj Late Wheat – HUW-234, DBW-14, HP-1744 HD-2643	• Spray of potassic fertilizer with adjuvant • Zero tillage wheat • Direct seeding of short duration Rice • Life saving irrigation • Mulching for moisture conservation • Application of organic manure and vermicompost	Seeds from RAU, Pusa, NSC, TDC , BRBN etc
	Medium land Loamy soils	Maize-wheat	Maize-Wheat Maize - Shaktiman-1,2,3,4, Suwan, Ganga-11, Deoki Pusa early hybrid Macca-3 Wheat- HD-2733, PBW-343, HP-1731, HD-2824		
		Pigeonpea	September Red gram Pigeonpea - Bahar, Narendra Arhar-1		

Condition			Suggested Contingency measures		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	Upland Very deep to	Rice-Wheat	Rice (Short Duration)-Late sown wheat Pigeonpea-Greengram Blackgram– Wheat Sesame – Wheat	• Life saving irrigation • Mulching for moisture conservation • Zero tillage wheat	Seeds from RAU, Pusa, NSC, TDC , BRBN etc

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]**
	medium deep black, fine loam to clay loamy soils		Rice-Prabhat, Dhanlaxmi, Richharia, Turanta, Saroj Late Wheat – HUW-234, DBW-14, HP-1744, HD-2643 Pigeonpea – Bahar, Pusa-9 Narendra Arhar-I Greengram – Samrat, Pusa Vishal, SML 668, PDM-44, T-44 Blackgram- T-9, Navin, Pant Urd-30 , Pant Urd-19	• Direct seeding of short duration Rice • Spray of potassic fertilizer with adjuvant • Application of organic manure and vermi compost	
	Medium land Loamy soils	Maize-wheat	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-2824		
		Pigeonpea (Arhar) – Greengram Pigeonpea - Bahar, Narendra Arhar-1 Greengram – Samrat, Pusa Vishal, SML 668, PDM-44, T-44	No change		

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 Very deep to medium deep black, fine loam to clay loamy soils	Rice-Wheat	1.Black gram-Wheat 2. Sesamum-Wheat 3.Pigeonpea – Greengram Pigeonpea – Bahar, Pusa-9 Narendra Arhar-I Sesame – Krishna, Pragati Blackgram - T-9, Navin, Pant Urd-30 , Pant Urd-19 Greengram – Samrat, Pusa Vishal, SML 668, PDM-44, T-44 Wheat -HD-2733, PBW-343, HP-1731, HD-2824	• Life saving irrigation • Zero tillage wheat • Spray of potassic fertilizer with adjuvant	Seeds from RAU, Pusa, NSC, TDC , BRBN etc
	Medium land Loamy soils	Maize-wheat	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-2824	• Life saving irrigation • Spray of potassic fertilizer with adjuvant • Interculturing • Mulching for moisture conservation • Zero tillage wheat • Application of organic manure and vermicompost .	
		Pigeonpea	September Pigeonpea Pigeonpea -Bahar, Narendra Arhar-1		

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**	**Flowering stage**	**Crop maturity stage**	**Post harvest**
Rice	• Drainage management • Re transplanting through Dapog nursery if needed • Gap filling • Re sowing through drum seeder	• Drainage management • Subsequently crop if totally damaged i.e. Toria	• Drainage management • Harvest at physiological maturity	Storage at safer place
Maize	• Drainage management • Gap filling • Re sowing, if completely damaged	• Drainage management • Alternative maize or other rabi crop if totally damaged	• Drainage management • Harvest at physiological maturity	Storage at safer place
Pigeonpea	• Drainage management • September sowing if kharif pigeon pea is completely damaged • Gap filling if needed	• Drainage management • Alternative maize or other rabi crop if totally damaged	• Drainage management • Harvest at physiological maturity	Storage at safer place
Sugarcane	• Drainage management	• propping	• Drainage management • Harvest the crop at proper maturity	Storage at safer place
Horticulture				
Vegetables	• Drainage management • Re sowing, if needed • Gap filling, if needed	• Drainage management • Alternative vegetable if totally damaged	• Harvest at proper maturity • Drainage management	
Mango	• Replanting if completely damaged • Gap filling • Drainage management	• Drainage management	• Drenching with copper fungicides • Drainage management • Harvesting at proper maturity	
Banana	• Replanting if completely damaged • Gap filling • Drainage management	• Drainage management	• Drainage management	

Guava	• Replanting if completely damaged • Gap filling • Drainage management	• Drainage management	• Drenching with copper fungicides • Drainage management	
Heavy rainfall with high speed winds in a short span[2]				
Rice	• Drainage management • Replanting if completely damaged • Gap filling if needed	• Drainage management • Subsequent crop if totally damaged i.e. Toria	• Drainage management • Subsequent crop if totally damaged	Storage at safer place
Maize	• Drainage management • Re sowing If completely damaged • Gap filling if needed	• Drainage management • Alternative maize or other crop if totally damaged	• Drainage management • Subsequent crop if totally damaged	Storage at safer place
Pigeonpea	• Re sowing If completely damaged • Gap filling if needed • Drainage management	• Drainage management • Alternative crop if totally damaged	• Drainage management • Alternative crop if totally damaged	Storage at safer place
Sugarcane	• Drainage management	• propping	• propping	
Horticulture				
Vegetables	• Drainage management • Re sowing • Gap filling as the case may be	• Drainage management • Alternative vegetable if totally damaged	• Harvest at proper maturity	
Mango	• Drainage management • Replanting if substantially damaged	• Drainage management • Drenching with copper fungicides	• Drainage management • Harvest at proper time	
Banana	• Drainage management • Replanting if substantially damaged	• Drainage management • Staking	• Drainage management • Harvest at proper time	
Guava	• Drainage management • Replanting if substantially damaged	• Drainage management • Drenching with copper fungicides	• Drainage management • Harvest at proper time	
Outbreak of pests and diseases due to unseasonal rains				
Rice	• Seedling treatment with	• Spray of specific pesticides with	• Spray of specific pesticides with	Storage at safer

	Carbendazim + Imidacloprid • Spray of pesticides with adjuvant	adjuvant • Drainage management	adjuvant • Drainage management	place
Maize	• Application of granular insecticides viz. Thimet 10 g/Carbofuran 3g in whorl of maize	• Spray of specific pesticides with adjuvant • Drainage management	• Spray of specific pesticides with adjuvant • Drainage management	Storage at safer place
Pigeonpea	• Use of pesticides	• Spray of specific pesticides with adjuvant • Drainage management	• Spray of specific pesticides with adjuvant • Drainage management	Storage at safer place
Sugarcane	• Use of pesticides	• Spray of specific pesticides with adjuvant • Drainage management	• Spray of specific pesticides with adjuvant • Drainage management	
Horticulture				
Vegetables	• Spray of pesticides with adjuvant • Drainage management	• Spray of specific pesticides with adjuvant • Drainage management	• Spray of specific pesticides with adjuvant • Drainage management	
Mango	• Spray of pesticides with adjuvant • Drainage management	• Spray of specific pesticides with adjuvant • Drainage management	• Spray of specific pesticides with adjuvant • Drainage management	
Banana	• Spray of pesticides with adjuvant • Drainage management	• Spray of specific pesticides with adjuvant • Drainage management	• Spray of specific pesticides with adjuvant • Drainage management	
Guava	• Spray of pesticides with adjuvant • Drainage management	• Spray of specific pesticides with adjuvant • Drainage management	• Spray of specific pesticides with adjuvant • Drainage management	

2.3 Floods

Condition	**Suggested contingency measure[o]**			
Transient water logging/ partial inundation[1]	**Seedling / nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Rice For such situation var. like Swarna-Sub-I & local var. of Desaria Barogar etc. should be taken	• Drainage management • Re transplanting through Dapog nursery if completely damaged • Gap filling	• Drainage management • Alternative crops if totally damaged • Gap filling • 40-45 days old seedlings may be used • Kharuhan (double transplanting)	• Drainage management • Harvest at physiological maturity • Lentil as paira crop can be taken	Storage at safer place
Maize	• Drainage management • Re sowing if substantially damaged • Gap filling, if needed	• Drainage management • Alternative crops if totally damaged like maize or subsequent crop i.e. Toria	• Drainage management • Harvest at physiological maturity	Storage at safer place
Pigeonpea	• Drainage management • Re sowing if substantially damaged • Gap filling if needed	• Drainage management • Any rabi crop can e taken, if completely damaged	• Drainage management • Harvest at physiological maturity	Storage at safer place
Sugarcane	• Drainage management	• Drainage management	• Drainage management • Harvest at physiological maturity	
Horticulture				
Vegetables	• Drainage management • Replanting • Spray Ridomil M-Z, 2gm/lt to check damping off	• Drainage management • Apply 25 kg Urea /Acre	• Drainage management • Harvest the vegetable at proper time	
Mango	• Replanting if substantially damaged • Gap filling • Drainage management	• Drenching with copper fungicides • Drainage management	• Drenching with copper fungicides • Drainage management	Judicious harvesting
Guava	• Replanting if substantially damaged	• Drenching with copper fungicides	• Drenching with copper fungicides	Judicious harvesting

	• Gap filling • Drainage management	• Drainage management	• Drainage management	
Banana	• Replanting if substantially damaged • Gap filling • Drainage management	• Drenching with copper fungicides • Drainage management	• Drenching with copper fungicides • Drainage management	Judicious harvesting
Continuous submergence for more than 2 days[2]				
Rice (for such situation Swarna Sub-1 should be grown)	• Gap filling, if needed • Re-sowing if damaged after receding of flood	• Replanting through Kharuhan (double transplanting) by 3-4 seedlings per hill • Short duration rice variety	• Toria/Late wheat if completely damaged	Storage at safer place
Maize	• Re-sowing if damaged after receding of flood	• Re sowing or gap filling as the case may be	• Toria/Late wheat if completely damaged	Storage at safer place
Horticulture				
Mango	• Drainage management			
Guava	• Drainage management			
Banana	• Drainage management			
Sea water intrusion[3]	Not Applicable			

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]				
Rice		Life saving irrigation Spray of potassic fertilizer with adjuvant	Life saving irrigation Spray of potassic fertilizer with adjuvant	
Maize	Life saving irrigation	Life saving irrigation	Life saving irrigation Spray of potassic fertilizer with adjuvant	

Pigeonpea	Life saving irrigation	Life saving irrigation	Life saving irrigation Spray of potassic fertilizer with adjuvant	
Wheat		Life saving irrigation	Life saving irrigation Spray of potassic fertilizer with adjuvant (terminal heat)	
Rice				
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, inter culturing, mulching by weeds		
Chickpea		Irrigation, inter culturing, mulching by weeds		
Pigeonpea		Irrigation, inter culturing, mulching by weeds		
lentil		Irrigation, inter culturing, mulching by weeds		
Horticulture		Irrigation, inter culturing, mulching by weeds		
Vegetables		Irrigation, inter culturing, mulching by weeds		
Frost				
wheat		Irrigation, inter culturing, mulching by weeds		
Chickpea		Irrigation inter culturing, mulching by weeds		
Pigeonpea		Irrigation inter culturing, mulching by weeds		
Lentil		Irrigation inter culturing, mulching by weeds		
Horticulture				
Tomato & Potato	Treat the seeds in 0.2% soln of Dithane M-45	Earth up to 15cm ht. Irrigation inter culturing,	Spray Dithane M-45/ Mancozeb @ 2.5 gm/lt of	Harvest in dry weather

		mulching by weeds	water in 3rd week of December at 10 days interval 3 times	
Hailstorm	Not Applicable			
Cyclone	Not Applicable			

2.5 Contingent strategies for Livestock, Poultry & Fisheries

2.5.1 Livestock

	Suggested contingency measures		
	Before the events	**During the event**	**After the event**
Drought	Not Applicable		
Floods			
Feed and fodder availability	**1.** Cultivation of fodder tree **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) Jowar - at flowering stage. (c) Oat (d) Hybrid Napier – 40-45 day old. (e) Water hycianth mixing with Rice straw in ratio of 4:1 with 70 kg molasses /ton of clean water	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 stuff: (i) Aquatic Plants – water	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 Nov/ December **3.** Jowar/Cowpea **4.** Maize in September

	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	hycianth (i) Lotus (ii) Aquatic weeds	
Drinking water			
Health and disease management	**Veterinary Preparedness with Medicines, Vaccines and provision for mobile ambulatory van.** • **Vaccination** During flood stress becomes an incriminating factor for the precipitation of diseases in livestock and poultry. So, necessary vaccination of	**Animal safety, Health camp and Treatment** **Important Suggestions for animal and Poultry safety** During flood, all efforts should be made to rescue most of the livestock and poultry as carefully as possible. The people should be made	**anitation, deworming, treatment, health camps Culling of Sick animals and disposal of carcass** **Maintenance of Sanitation:** 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/

	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.	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 can Report the location, identification and disposition of livestock and poulrty to authorities handling the disaster. **Health camp and treatment**	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 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

		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** **Botulism** **Tetanus** **Red water** **Black disease** **Entertoxemia** **Liver fluke** **Amphistomiasis** **Brooders pnemonia** **Treatment of Non infectious** Arrangement should be made for the treatment of	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:** 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

		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	normal health of livestock and poultry.
Cyclone	Not Applicable		
Heat wave and cold wave	Not Applicable		

[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	Not Applicable			
Floods				
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	Not Applicable			
Heat wave and cold wave	Not Applicable			

[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			
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.	
2) Floods			
A. Capture			
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.
3. Cyclone / Tsunami	Not Applicable		
4. Heat wave and cold wave	Not Applicable		

[a] based on forewarning wherever available