

State: Bihar

Agriculture Contingency Plan for District: West Champaran

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)	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	Latitude
		26 ⁰ 16' – 27 ⁰ 31' N	83 ⁰ 50' – 85 ⁰ 18' E
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	RRS Madhopur, W. Champaran	
	Mention the KVK located in the district	West Champaran	
	Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro-advisories in the Zone	Rajendra Agricultural University, Pusa, Samastipur	

1.2	Rainfall	Normal RF(mm)	Normal Rainy days (number)	Normal Onset	Normal Cessation
	SW monsoon (June-Sep)	1017	48	2 nd week of June	1 st week of October
	NE Monsoon(Oct-Dec)	85	05		
	Winter (Jan- Feb)	24	03		
	Summer (March -May)	75	06		
	Annual	1201	62		

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)	484	271	92	36	1	24	20	3	25	8

Source: District Agriculture Office, Bettiah, West Champaran

1.4	Major Soils	Area ('000 ha)	Percent (%) of total
	Sandy soils	95.459	22.51
	Coarse sandy loamy soils	23.065	5.44
	Fine sandy loamy soils	97.668	23.04
	Clayey soils	68.892	16.25
	Saline / calcareous soils	138.881	32.76

1.5	Agricultural land use	Area ('000 ha)	Cropping intensity %
	Net sown area	271	145
	Area sown more than once	122.1	
	Gross cropped area	393.1	

1.6	Irrigation	Area ('000 ha)		
\	Net irrigated area	137.2		
	Gross irrigated area	207.8		
	Rainfed area	133.7		
	Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
	Canals		77.3	37.2
	Tanks	172	0.4	0.21
	Open wells	618	0.6	0.3
	Bore wells	15257	124.8	60.05
	Lift irrigation schemes	242	1.6	0.8
	Micro-irrigation			
	Other sources	38	3.03	1.46
	Total Irrigated Area		207.86	

	Pump sets			
	No. of Tractors	8100		
	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	18		
	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)								
		<i>Kharif</i>			<i>Rabi</i>			Summer		
		Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	Irrigated	Rainfed	Grand total
	Rice	86.2	75.7	161.9	75.2	19.7	94.9			257
	Maize	0.3	0.2	0.5	5.0		5			5.5
	Pulses	1.6	1.0	26	5.25	9.7	15			41
	Wheat	-					95			95
	Sugarcane	-					6			67
	Oil seeds	-			6.3	8.7	15			15

	Horticulture crops - Fruits	Area ('000 ha)		
		Total	Irrigated	Rainfed
	Mango	7.2		
	Guava	1.6		

	Litchi	2		
	Lemon	1.6		
	Banana	0.9		
	Papaya	0.04		
	Awala	0.08		
	Horticulture crops - Vegetables	Total	Irrigated	Rainfed
	Potato	11.9		
	Onion	2.2		
	Tomato	1.9		
	Cauliflower	2.6		
	Cabbage	1.5		
	Brinjal	1.9		
	Bhendi	2.6		
	Chilli	1.4		
	Bottle guord	1.4		
	Sponge guord	1.5		
	Cucumber	0.04		
	Ridge guord	0.3		
	Bitter guord	0.3		
	Ash guord	0.01		
	Water melon	0.02		
	Musk Melon	0.01		
	Parval	0.18		
	Cow pea	0.4		
	Pea	0.3		
	Raddish	0.6		
	Carrot	0.2		
	Sweet Potato	0.02		
	Medicinal and Aromatic crops			
	Plantation crops			
	Fodder crops			
	Total fodder crop area			
	Grazing land			
	Sericulture etc			

1.8	Livestock	Male ('000)	Female ('000)	Total ('000)
	Non descriptive Cattle (local low yielding)	131.7	162.3	294.1
	Crossbred cattle	6.1	28.5	34.6
	Non descriptive Buffaloes (local low yielding)	32.0	142.1	174.1
	Graded Buffaloes			
	Goat	87.7	207.3	295.1
	Sheep	4.3	7.7	12.07
	Others (Camel, Pig, Yak etc.)			
	Commercial dairy farms (Number)			

1.9	Poultry	No. of farms	Total No. of birds ('000)
	Commercial		429.2
	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)	
	ii) Inland (Data Source: Fisheries Department)	No. Farmer owned ponds		No. of Reservoirs		No. of village tanks	
		1000	0		813		
	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)	8500	1.69	14.4
--	------	------	------

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 identified based on total acreage)										
	Rice	523	3041							
	Maize	0.9	1750	225	4500					
	Pulses	1.9	700	4.2	600					
	Oil Seeds			18.7	1250					
	Wheat			259	2728					
	Sugarcane							3424	50700	
Major Horticultural crops (Crops identified based on total acreage)										
	Fruits							173.6	11900	
	Vegetables							487.3	16400	
	Spices							365		

1.12	Sowing window for 5 major field crops (start and end of normal sowing period)	Rice	Pulses	Maize	Wheat	Sugarcane
	Kharif- Rainfed	3 rd week of May – 4 th week of June	June- July	May - June	-	-
	Kharif-Irrigated	3 rd week of May –	July - August	May-June	-	-

		4 th week of June				
	Rabi- Rainfed		October – November	-	1 st week of November – 2 nd week of November	
	Rabi-Irrigated		November - December	October – November	2 nd week of November – 4 th week of December	2 nd week of October - 2 nd week of November
	Winter					February - March

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	√		

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

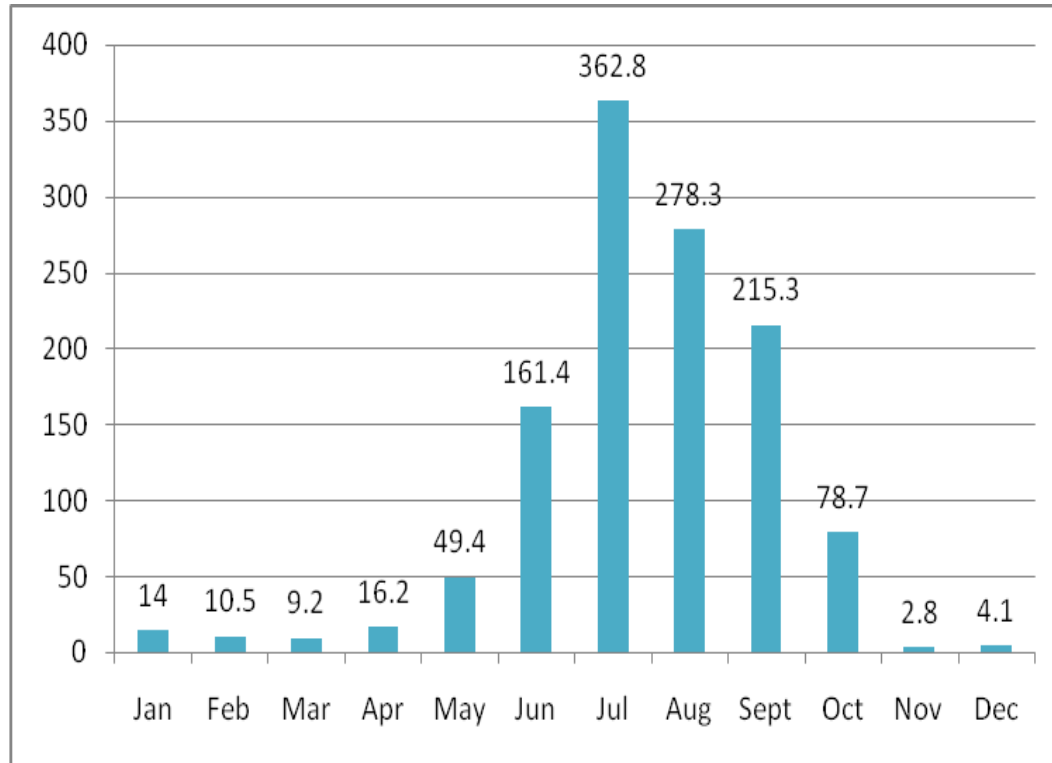
Annexure I

Agro climatic Zones of Bihar



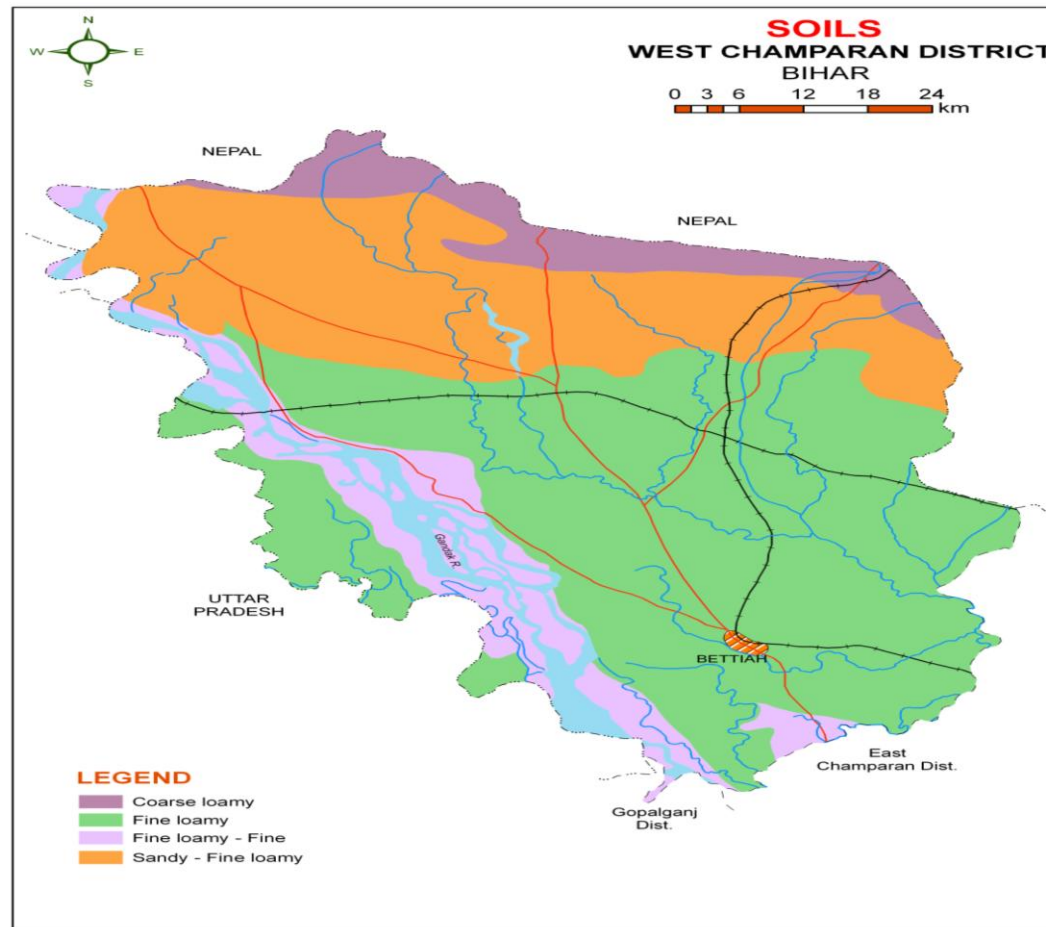
Source: krishi.bih.nic.in

Annexure II
Mean annual rainfall (mm)



*Rainfall was given for chamaparan district erstwhile

Annexure III



Source : NBSS& LUP, Regional Centre, Kolkata

2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures		
			Change in crop / cropping system including variety	Agronomic measures	Remarks on Implementation
Early season drought (delayed onset) Delay by 2 weeks 1 st week of July	Upland Coarse loamy to Sandy loamy soils	Rice-Wheat Pigeonpea-Greengram Maize-Wheat	Short duration Rice – Wheat Pigeonpea – Greengram Rice- Prefer Long to medium duration varieties Pigeonpea – Bahar, Pusa-9 Narendra Arhar-I	<ul style="list-style-type: none"> • Normal package of Practices • Direct sowing of rice can be done • Life saving irrigation 	-
	Medium land fine loamy soils	Rice- Wheat Sugarcane Maize-wheat	Rice (Medium duration Rice)-Wheat Rice- Prefer Long to medium duration varieties	<ul style="list-style-type: none"> • Normal package of Practices • Direct seeding of rice can be done • Life saving irrigation 	
	Lowland clay loamy soils	Rice – Wheat Sugarcane	Rice – Wheat Rice- Prefer Long to medium duration varieties Rice- Rajshree (140d), Rajendra Suwasni (115-120 d), Rajendra Sweta, Mahamaya (125-130d), Birsamati (130 d), ‘ Swarna sub-1	<ul style="list-style-type: none"> • Normal package of Practices • Life saving irrigation • Dapog method of nursery raising 	

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Early season drought (delayed onset) Delay by 4 weeks 3 rd week of July	Upland Coarse loamy to Sandy loam soils	Rice- Wheat Pigeonpea – Greengram Sugarcane Maize-Wheat	Rice-Wheat Rice- Prefer Medium to short duration varieties like Saroj (100-110d), Birsa Dhan-201 (100-115d)	<ul style="list-style-type: none"> • Direct seeding of rice with medium duration drought tolerant varieties with pre emergence herbicide application under sufficient soil moisture conditions followed up with a post-emergence weedicide application 20-25 days later for effective weed management. ▪ Normal sowing of rice can be used with enhanced NPK to boost the early vegetative growth in late plantings under sufficient moisture ▪ Interculture for timely weed control in direct seeded rice 	Seeds from RAU, Pusa, NSC, TDC , BRBN etc.
	Medium land fine loamy soils	Rice – Wheat Maize-Wheat Sugarcane	Rice-Wheat Direct sowing / 20d old dapog seedlings with medium to short duration varieties – BR34, Rajendra Dhan-201(130-135d), Rajendra Bhagwati,	<ul style="list-style-type: none"> • Where field is moist, direct seeding of medium duration varieties (125 days) can be done during second fortnight of July in midlands. Post-emergence herbicide application use is essential 	
	Lowland clay loam soils	Rice – Wheat	Rice- Direct/ dapog seedlings with Rajshree, Santosh , Sita, Rajendra Suwasni, Rajendra Sweta, Swarna	<ul style="list-style-type: none"> • Use mat nursery/ dapog nursery , mat nursery (dapog method) can be 	

			sub-1	<p>raised for quick availability of young seedlings for transplanting of medium duration varieties by first fortnight of August in mid and low lands</p> <ul style="list-style-type: none"> • Raise staggered community nursery preferably with short duration varieties in mid and lowlands • Transplant with 30-35 days old seedling may be used with 3-4 seedling per hill with close spacing. • Enhanced dose of nitrogen with full basal dose of NPK at the time of transplanting to boost the early vegetative growth in late plantings under sufficient moisture • Timely interculture for weed control in direct seeded rice • Life saving irrigation 	
--	--	--	-------	--	--

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Early season drought (delayed onset)					
Delay by 6 weeks	Upland	Rice-Wheat Pigeonpea-Greengram	Blackgram/ Finger millet-Wheat Blackgram- T-9, Navin, Pant Blackgram-30 , Pant	-	Seeds from RAU, Pusa, NSC, TDC ,

1 st week of August	Coarse loamy to Sandy loam soils	Blackgram/ Finger millet-Wheat Sugarcane	Blackgram-19 Finger millet- DB-7, BR-5, BR-10, Coimbatore-1		BRBN etc.
		Rice-Wheat	Rice – Wheat Blackgram/ Finger millet-Wheat Blackgram- T-9, Navin, Pant Blackgram-30 , Pant Blackgram-19 Finger millet- DB-7, BR-5, BR-10, Coimbatore-1 Rice- Prefer short (early matured) varieties like Birsa Dhan 105 (85- 90d), Birsa Dhan-106 (90-95d), Rajendra Bhagavathi (early-upland and midland), Dhanlaxmi , Richharia(<100d), Saroj (100- 110d), Birsa Dhan-201 (100-115d)	<ul style="list-style-type: none"> • Direct seeding of Rice • Application of fertilizers especially phosphorous and potash to be ensured under late transplanted conditions in severely affected districts • Life saving irrigation 	
	Medium land fine loamy soils	Rice – Wheat	Blackgram/ Finger millet-Wheat Blackgram- T-9, Navin, Pant urd-30 , 19 Finger millet- DB-7, BR-5, BR-10, Coimbatore-1	-	
		Rice – Wheat	Rice (Short duration)-Wheat Rice- Prabhat, Dhanlaxmi, Richharia, Turanta Saroj	<ul style="list-style-type: none"> • Mat nursery (dapog method)/ Community nursery can be raised for 	

	Lowland	Rice-Wheat-Greengram (Greengram)	<p>Rice (Short Duration)-Wheat Rice- Prabhat, Dhanlaxmi, Richharia, Turanta, Saroj</p> <p>If dry spell continues, direct seeding of short duration rice varieties (100 days) can be done in midlands by first fortnight of August and extra short duration (70-75 days) up to 25th August</p>	<p>quick availability of young seedlings for transplanting of medium duration varieties by first fortnight of August</p> <ul style="list-style-type: none"> • Direct seedling of Rice • Raise staggered community nursery preferably with medium duration varieties in mid and lowlands • Enhanced basal dose of NPK to boost the early vegetative growth • Application of fertilizers especially phosphorous and potash to be ensured under late transplanted conditions in severely affected districts • Life saving irrigation 	
--	---------	----------------------------------	--	--	--

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
<p>Early season drought (delayed onset)</p> <p>Delay by 8 weeks</p> <p>3rd week of August</p>	<p>Upland</p> <p>Coarse loamy to Sandy loamy soils</p>	<p>Rice-Wheat</p> <p>Sugarcane</p>	<p>Black gram/ Finger millet - Rabi maize</p> <p>Black gram/ Finger millet -Sep.</p> <p>Pigeonpea</p> <p>Black gram/ Finger millet -Late wheat</p> <p>Black gram/ Finger millet -vegetables</p> <p>Black gram/ Finger millet -Lentil</p> <p>Black gram/ Finger millet -Potato</p> <p>Black gram/ Finger millet -Rai</p>	<ul style="list-style-type: none"> • Interculturing • Enhanced basal dose of NPK to boost the early vegetative growth. • Moisture conservation • Supply of contingency crop seeds of Toria, Maize (QPM varieties, Swann composite- 	<p>Seeds from RAU, Pusa, NSC, TDC , BRBN etc</p>

			Blackgram- T-9, Navin, Pant Urd-30 , Pant Urd-19 Finger millet - DB-7, BR-5, BR-10, Coimbatore-1	65-70 days; HM-4 hybrid baby corn), Arhar (Bahar, NDA1, Pusa 9), Urd (Navin and T9), Cowpea and Horsegram need to be ensured for taking up of sowing in September in midlands	
	Medium land fine loamy soils	Maize-Wheat Rice-Wheat Sugarcane	Sesame –Rabi maize Sesame-Late Wheat Sesame – Krishna, Pragati Direct seeded rice (DSR) with short duration (80-90 days) varieties (Turanta dhan, Prabhat, Anjali, Vandana, CR- Dhan-40 etc.) can be taken up in midlands till the end of August subject to availability of at least one assured irrigation Early Rice-Prabhat, Dhanlaxmi, Richharia, Turanta	<ul style="list-style-type: none"> • Direct seeding of rice • Mat nursery (dapog method)/ Community nursery can be raised for quick availability of young seedlings for transplanting of medium duration varieties by first fortnight of August • Use of 20 days old dapog seedling in rice. • Enhanced basal dose of NPK in rice to boost early vegetative growth • Supply of contingency crop seeds of Toria, Maize (QPM varieties, Swann composite- 65-70 days; HM-4 hybrid baby corn), Arhar (Bahar, NDA1, Pusa 9), Urd (Navin and T9), Cowpea and Horsegram need to be ensured for taking up of sowing in September in midlands Fodder varieties of Jowar, Maize, Bajra in combination with legumes (cowpea and horsegram) can be taken up wherever feasible to meet the fodder requirements in deficit rainfall districts 	
		Pigeonpea –	September Pigeonpea-Greengram	<ul style="list-style-type: none"> • Application of organic 	

		Greengram	Sept.Pigeonpea–Pusa-9, Sharad Narendra Arhar-I	manure and vermicompost initially for Rice and other crops	
	Lowland clay loam soils	Rice- Potato	Rice-Potato/Wheat Rice- Rajshree, Santosh , Sita Rajendra Suwasni, Rajendra Sweta	<ul style="list-style-type: none"> • Double transplanting of rice (karuhan) can be done with 30 + 45 days old seedlings of long duration or photosensitive varieties up to 30th August with close planting (40-45 hills per square meter) • Application of organic manure and vermi compost initially for Rice and other crops. • Sowing of <i>rabi</i> crops such as Wheat, Lentil, Chickpea, Pea, Mustard (Pusa Mahak, RAU TS17), Linseed (Garima) and Vegetables can be taken up on time for maximizing productivity from lowlands with support from the government for timely supply of inputs and in a way <i>rabi</i> production would compensate the production loss during <i>kharif</i>. • Fodder varieties of Jowar, Maize, Bajra in combination with legumes (cowpea and horsegram) can be taken up wherever feasible to meet the fodder requirements in deficit rainfall districts 	

		Rice-wheat-Green gram	Sept. Pigeonpea-Greengram Sesame-Rabi maize Pigeonpea – Bahar, Pusa-9 Narendra Arhar-I Sesame – Krishna, Pragati	<ul style="list-style-type: none"> • Normal practices for sesame, Pigeonpea 	
--	--	-----------------------	--	--	--

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
Early season drought (Normal onset)					
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	Upland	Rice-Wheat	<ul style="list-style-type: none"> • Life saving irrigation • Gap filling of existing crop • Mechanical weed management 	<ul style="list-style-type: none"> • Inter cultivation • Mulching through mechanical weeding for moisture conservation • Conservation tillage 	-
	Coarse loamy to Sandy loam soils	Rice- Prabhat, Dhanlaxmi, Richharia, Turanta,			
	Medium land fine loam soils	Maize-wheat	<ul style="list-style-type: none"> • Life saving irrigation • Gap filling 		
		Maize - Shaktiman-1,2,3,4, Suwan, Ganga-11, Deoki, Pusa early hybrid Maka-3	<ul style="list-style-type: none"> • Pre sowing irrigation • higher seed rate • Gap filling 		
	Lowland clay loam soils	Rice-Wheat-Green gram	<ul style="list-style-type: none"> • Life saving irrigation • Gap filling through Dapog nursery 		
		Rice- Rajshree, Santosh , Sita, Rajendra Suwasni, Rajendra Sweta			

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)					
At vegetative stage	Upland Coarse loamy to Sandy loamy soils	Rice-Potato Rice –Wheat Rice- Prabhat, Dhanlaxmi, Richharia, Turanta, Saroj	<ul style="list-style-type: none"> • Gap filling with existing crop • Postponement of top dressing of nitrogen • Weed management through mechanical/chemical • Life saving irrigation • Foliar spray of (1%) Urea on the crops 	<ul style="list-style-type: none"> • Inter cultivation • Mulching through weeds • Foliar spray with 2@ MOP • Conservation tillage 	
		Pigeonpea(Arhar)-Greengram Pigeonpea – Bahar, Pusa-9 Narendra Arhar-I	-	<ul style="list-style-type: none"> • Inter Cultivation • Foliar spray with 2@ MOP • Mulching • Conservation tillage • Life saving irrigation 	-
	Medium land fine loam soils	Rice-Wheat-Green gram Rice- - Rajendra Bhagawati, Rajendra Suwasni Rajshree, Prabhat	<ul style="list-style-type: none"> • Gap filling of existing crop • Postponement of top dressing of N fertilizer • Spray (1%) Urea on the crops 	<ul style="list-style-type: none"> • Inter Cultivation • Foliar spray with 2@ MOP • Mulching • Conservation tillage • Life saving irrigation 	

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
Mid season drought (long dry spell)					

At flowering/ fruiting stage	Upland Coarse loamy to Sandy loam soils	Rice-Wheat Vegetables – Wheat Sugarcane Rice-Prabhat, Dhanlaxmi, Richharia, Turanta, Saroj Sugarcane - BO- 147	<ul style="list-style-type: none"> • Postponement of top dressing of N fertilizer • Foliar spray with (1%) Urea on the crops 	<ul style="list-style-type: none"> • Intercultivation • Foliar spray with (1%) MOP • Mulching • Conservation tillage • Life saving irrigation 	-
	Medium land fine loam soils	Maize-wheat Maize - Shaktiman-1,2,3,4 Suwan, Ganga-11, Deoki, Pusa early hybrid Maka-3	<ul style="list-style-type: none"> • Clipping of maize leaves • Postponement of top dressing of N fertilizer • Spray (1%) Urea on the crops 	<ul style="list-style-type: none"> • Interculturing • Foliar spray with (1%) MOP • Mulching • Conservation tillage 	
		Pigeonpea (Arhar)-Greengram Var. Bahar, Narendra Arhar-1	<ul style="list-style-type: none"> • Postponement of top dressing of N fertilizer • Spray (1%) Urea on the crops 	<ul style="list-style-type: none"> • Interculturing • Mulching • Conservation tillage 	
	Lowland clay loam soils	Rice-Wheat-Green gram		<ul style="list-style-type: none"> • Foliar spray with (1%) MOP 	

Condition			Suggested Contingency measures		
Terminal drought (Early withdrawal of monsoon)	Major Farming situation	Normal Crop/cropping system	Crop management	Rabi Crop planning	Remarks on Implementati on
	Upland Coarse loamy to Sandy loam soils	Rice-Wheat Rice-Prabhat, Dhanlaxmi, Richharia, Turanta , Saroj	<ul style="list-style-type: none"> • Life saving irrigation • Mulching • Thinning • Clipping of leaves in maize 	<ul style="list-style-type: none"> • Foliar application with 2% Urea or MOP • 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 • Sowing of <i>rabi</i> crops such as Wheat, Lentil, Chickpea, Pea, Mustard (Pusa Mahak, RAU TS17), Linseed (Garima) and Vegetables can be taken up on 	
	Medium land fine loam soils	Maize-wheat Maize - Shaktiman-1,2,3,4, Suwan, Ganga-11, Deoki, Pusa early hybrid Maka-3			
		Pigeonpea Var. Bahar, Narendra Arhar-1			
	Lowland clay loam	Rice-Wheat-Green gram			

	soils	Rice- Rajshree, Santosh , Sita, Rajendra Suwasni, Rajendra Sweta		time for maximizing productivity from lowlands with support from the government for timely supply of inputs and in a way <i>rabi</i> production would compensate the production loss during <i>kharif</i> .	
--	-------	--	--	---	--

2.1.2 Drought - Irrigated situation

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delayed release of water in canals due to low rainfall	Upland Coarse loamy to Sandy loam soils	Rice-Wheat	1) Rice (Short Duration)-Late sown wheat 2) Vegetables –Wheat Cultivation of Lobia, Rajma Rice-Prabhat, Dhanlaxmi, Richharia, Turanta	❖ Direct Sowing with short duration Rice	Seeds from RAU, Pusa, NSC, TDC , BRBN etc
	Medium land fine loam soils	Maize-wheat	Sesame –maize Sesame-wheat Sesame – Krishna, Pragati	❖ Inter culturing operation ❖ Application of Organic manure and vermicompost initially ❖ Mulching ❖ Life saving irrigation	
		Pigeonpea	September Pigeonpea Var. Bahar, Narendra Arhar-1	❖ Gap filling ❖ Inter culturing operation ❖ Application of Organic manure and vermicompost initially ❖ Mulching ❖ Life saving irrigation	
	Lowland clay loam soils	Rice-Wheat-Green gram	Rice (Short Duration)-Wheat Rice-Prabhat, Dhanlaxmi,	❖ Use Dapog Nursery seedlings ❖ SRI method of planting ❖ Machine transplanting ❖ Direct seeding of short	

Condition			Suggested Contingency measures		Remarks on Implementation
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	
			Richharia, Turanta	duration Rice	

Condition			Suggested Contingency measures		Remarks on Implementation
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	
Limited release of water in canals due to low rainfall	Upland Coarse loamy to Sandy loam soils	Rice-Wheat	1) Rice (Short Duration)-Late sown wheat 2) Vegetables –Wheat Cultivation of Lobia, Rajma Rice-Prabhat, Dhanlaxmi, Richharia, Turanta	❖ Direct seeding of short duration Rice	Seeds from RAU, Pusa, NSC, TDC , BRBN etc
	Medium land fine loam soils	Maize-wheat	Sesame –Maize Sesame-wheat Sesame – Krishna, Pragati	❖ Use Dapog Nursery seedlings ❖ SRI method ❖ Machine transplanting ❖ Direct sowing of short duration Rice	
		Pigeonpea	Sept Pigeonpea		
	Lowland clay loam soils	Rice-Wheat-Green gram	Rice (Short Duration)-Wheat Rice-Prabhat, Dhanlaxmi, Richharia, Turanta	❖ Inter culturing operation, ❖ Mulching ❖ Application of Organic manure and vermicompost initially ❖ Life saving irrigation	

Condition			Suggested Contingency measures	
-----------	--	--	--------------------------------	--

	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Non release of water in canals under delayed onset of monsoon in catchment	Medium land fine loam soils	Rice-Wheat	Rice (Short Duration)-Late sown wheat Rice-Prabhat, Dhanlaxmi, Richharia, Turanta	❖ Direct seeding of short duration Rice	Seeds from RAU, Pusa, NSC, TDC , BRBN etc
		Maize-Wheat	Sesame –Maize /Sesame-Wheat / Sesame – Krishna, Pragati	❖ Inter cultivation ❖ Mulching ❖ Application of Organic manure and vermicompost	
		Pigeonpea	September Pigeonpea		
	Lowland	Rice-Wheat-Green gram	Rice (Short Duration)-Wheat (Late sown) Rice-Prabhat, Dhanlaxmi, Richharia, Turanta	❖ Dapog Nursery ❖ Adopt SRI ❖ Machine transplanting	

Condition	Suggested Contingency measures				
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	Upland	Rice-Wheat	Rice (Short Duration)-Late sown wheat Rice-Prabhat, Dhanlaxmi, Richharia, Turanta	❖ Direct sowing of short duration Rice	Seeds from RAU, Pusa, NSC, TDC , BRBN etc
	Medium land	Maize-Wheat	Sesame –Maize Sesame-Wheat Sesame – Krishna, Pragati	❖ Life saving irrigation ❖ Inter culturing operation ❖ Mulching ❖ Application of Organic manure and	

Condition	Suggested Contingency measures				
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
		Pigeonpea	September Pigeonpea	vermicompost initially	
Lowland	Rice-Wheat-Greengram	Rice (Short Duration)-Wheat (Late sown) Rice-Prabhat, Dhanlaxmi, Richharia, Turanta	❖ SRI method planting ❖ Direct sowing of short duration Rice		

Condition	Suggested Contingency measures				
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Insufficient groundwater recharge due to low rainfall	Upland	Rice-Wheat	Rice (Short Duration)-Late sown wheat Rice-Prabhat, Dhanlaxmi, Richharia, Turanta	❖ Direct seeding of short duration Rice ❖ Zero tillage sown Rice and wheat to make up the time	Seeds from RAU, Pusa, NSC, TDC , BRBN etc
	Medium land	Maize-Wheat	Sesame –Maize /Sesame-Wheat Sesame– Krishna, Pragati	❖ Life saving irrigation ❖ Application of potash ❖ Inter cultivation ❖ Mulching ❖ Application of Organic manure and vermicompost initially	
		Pigeonpea	September Pigeonpea Var. Bahar, Narendra Arhar-1		
Lowland	Rice-wheat-green gram	Rice (Short Duration)-Wheat (Late sown)	❖ Use Dapog Nursery seedlings ❖ SRI method of planting ❖ Machine transplanting		

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

Condition	Suggested contingency measure			
	Vegetative stage	Flowering stage	Crop maturity stage	Post harvest
Continuous high rainfall in a short span leading to water logging				
Rice	<ul style="list-style-type: none"> • Drainage management • Re transplanting through Dapog nursery if needed • Gap filling • Resowing through drum seeder 	<ul style="list-style-type: none"> • Drainage management 	<ul style="list-style-type: none"> • Drainage management • Subsequent crop if totally damaged • Harvest at physiological maturity 	Storage at safer place
Maize	<ul style="list-style-type: none"> • Drainage management • Gap filling • Resowing, if completely damaged 	<ul style="list-style-type: none"> • Drainage management • Alternative maize or other rabi crop if totally damaged 	<ul style="list-style-type: none"> • Drainage management • Subsequent if totally damaged • Harvest at physiological maturity 	Storage at safer place
Pigeonpea	<ul style="list-style-type: none"> • Drainage management • September sowing if Kharif pigeonpea is completely damaged • Gap filling if needed 	<ul style="list-style-type: none"> • Drainage management • Alternative maize or other rabi crop if totally damaged 	<ul style="list-style-type: none"> • Drainage management • Subsequent if totally damaged • Harvest at physiological maturity 	Storage at safer place
Sugarcane	Drainage Management	Tying or propping	Tying or propping	
Vegetables	<ul style="list-style-type: none"> • Resowing , if required • Replanting 	<ul style="list-style-type: none"> • Drainage management 	<ul style="list-style-type: none"> • Drainage management 	Storage at safer place
Horticulture				
Mango, Litchi, Banana, Papaya	<ul style="list-style-type: none"> • Drainage management • Gap filling 	<ul style="list-style-type: none"> • Drainage management 	<ul style="list-style-type: none"> • Drenching with copper fungicides • Drainage management • Harvesting at proper maturity 	
Heavy rainfall with high speed winds in a short span				
Rice	<ul style="list-style-type: none"> • Drainage management • Replanting if completely damaged • Gap filling if needed 	<ul style="list-style-type: none"> • Drainage management • Subsequent crop i.e. Toria 	<ul style="list-style-type: none"> • Drainage management • Subsequent crop i.e. Toria 	Storage at safer place
Maize	<ul style="list-style-type: none"> • Resowing If completely damaged • Gap filling if needed 	<ul style="list-style-type: none"> • Drainage management • Alternative maize or other 	<ul style="list-style-type: none"> • Drainage management • Subsequent crop if totally 	Storage at safer place

	<ul style="list-style-type: none"> • Drainage management 	crop if totally damaged	damaged	
Pigeonpea	<ul style="list-style-type: none"> • Resowing If completely damaged • Gap filling if needed • Drainage management 	<ul style="list-style-type: none"> • Drainage management • Alternative crop if totally damaged 	<ul style="list-style-type: none"> • Drainage management • Alternative crop if totally damaged 	Storage at safer place
Sugarcane	<ul style="list-style-type: none"> • Drainage Management 	<ul style="list-style-type: none"> • Tying or propping 	<ul style="list-style-type: none"> • Tying or propping 	Harvest and prepare for sale
Vegetables	<ul style="list-style-type: none"> ▪ Drainage management ▪ Gap filling 	<ul style="list-style-type: none"> • Drainage management 	<ul style="list-style-type: none"> • Drainage management • Drenching with copper fungicide 	
Horticulture				
Mango, Litchi, Banana, Papaya	<ul style="list-style-type: none"> • Drainage management 	<ul style="list-style-type: none"> • Drainage management • Drenching with copper fungicides 	<ul style="list-style-type: none"> • Drainage management • Harvest at proper time • Drenching with copper fungicide 	

Outbreak of pests and diseases due to unseasonal rains	Vegetative stage	Flowering stage	Crop maturity stage	Post harvest
Rice	<ul style="list-style-type: none"> ❖ Seedling treatment with granular insecticide – Cartap hydrochloride or phorate 10G or carbofuran 3G. ❖ Maintain shallow water in nursery beds ❖ Providing good drainage. 	<ul style="list-style-type: none"> ❖ Use copper fungicides against Bacterial leaf blight. ❖ Split application of N fertilizer (3-4 times) 	<ul style="list-style-type: none"> ❖ Harvest at physiological maturity 	<ul style="list-style-type: none"> ❖ Proper drying ❖ Storage at safe place and transportation
Maize	<ul style="list-style-type: none"> ❖ 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 	<ul style="list-style-type: none"> ❖ 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) 	<ul style="list-style-type: none"> ❖ Cob harvesting from standing crop ❖ Harvest at physiological maturity 	<ul style="list-style-type: none"> ❖ Storage in safe places like farmer warehouse/tent covering of produce ❖ Ensure 10-12% moisture in grains before storage ❖ Proper drying

Pigeonpea	<ul style="list-style-type: none"> ❖ Provide drainage ❖ Seed treatment with 1 g carbendazim +2g thiram/kg seed. 	Provide drainage	Provide drainage	<ul style="list-style-type: none"> ❖ Proper drying • Storage at safe place and transportation
Sugarcane	Provide drainage	Provide drainage	Provide drainage	Harvest at physiological maturity
Horticulture				
Vegetables	<ul style="list-style-type: none"> • Drainage management 	<ul style="list-style-type: none"> • Drainage management 	<ul style="list-style-type: none"> • Drainage management 	
Mango	<p>Anthracnose:- The foliar infection can be controlled by spraying of copper oxychloride (0.3%)</p> <p>Use bio control agent viz <i>Streptosporangium pseudovulgare</i></p> <p>Bacterial canker: Regular inspection of orchards, sanitation and seedling certification are recommended as preventive measures. Mango stones for raising seedlings (root stock) should always be taken from healthy fruits. Use of wind-breaks helps in reducing brushing/ wounding and thus reduces the chance of infection.</p>	<p>Anthracnose:- Apply Carbendazim/ Thiophanate methyl (1g/lit) to control of Anthracnose. Blossom infection can be controlled effectively by spraying of Bavistin (0.1%) at 15 days interval.</p> <p>Mango powdery mildew: Spray wettable sulphur(0.2%) & calixin or karathane (0.1%) during second week of December</p>	<p>Mango powdery mildew: Prune diseased leaves and malformed panicles harbouring the pathogen to reduce primary inoculum load.</p> <p>Spray wettable sulphur (0.2%) when panicles are 3-4” in size</p> <p>Spray dinocap (0.1%) 15-20 days after first spray. Spray tridemorph (0.1%) 15-20 days after second spray.</p> <p>Spraying at full bloom needs to be avoided.</p> <p>Mango bacterial canker: Three sprays of Streptocycline (200 ppm) at 10 days intervals reduce fruit infection.</p> <p>In severe infection, spraying of Streptocycline (300 ppm) or copper oxychloride (0.3%) is more effective.</p>	<p>Harvest at proper time</p> <p>Anthracnose:- Pre-harvest sprays of hexaconazole (0.01%) or Carbendazim (0.1%) at 15 days interval should be done in such a way that the last spray falls 15 days prior to harvest.</p> <p>Diseased leaves, twigs, and fruits, should be collected and burnt to avoid the spread for next season</p>

Litchi	Fruit Fly: Monitor adult fruit flies emergence by using methyl eugenol or sex pheromone traps.	Fruit Fly: First Spray delta menthrin 0.0025% plus molasses 0.1% . after 10-12 days spray fenthion 0.05% + molasses 0.1% followed by dimethoate 0.045% + molasses 0.1% if required	Harvest at proper time	Fruit Fly: Collect all fallen infested fruits and put in a drum covered with fine wire mesh. Harvest fully matured fruits one week earlier to escape egg laying
Banana	Provide drainage	Provide drainage	Harvest at proper time	
Guava	Provide drainage	Provide drainage	Harvest at proper time	

2.3 Floods

Condition	Suggested contingency measures			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Transient water logging/partial inundation¹				
Water logging/Partial inundation	Seedling/ Nursery stage	Vegetative stage	Reproductive stage	At harvest
Rice	<ul style="list-style-type: none"> • Drainage management • Re transplanting through Dapog nursery if completely damaged • Gap filling 	<ul style="list-style-type: none"> • Drainage management • Alternative crops if totally damaged • Gap filling • Transplant can be done 40-45 days old seedlings Kharuhan (double transplanting) 	<ul style="list-style-type: none"> • Drainage management • Harvest at physiological maturity • Lentil as paira crop can be taken 	Storage at safer place
Maize	<ul style="list-style-type: none"> • Drainage management • Re sowing if substantially damaged • Gap filling, if needed 	<ul style="list-style-type: none"> • Drainage management • Alternative crops like maize or subsequent crop i.e. Toria 	<ul style="list-style-type: none"> • Drainage management • Harvest at physiological maturity 	Storage at safer place
Pigeon pea	<ul style="list-style-type: none"> • Drainage management • Re sowing if substantially damaged • Gap filling if needed 	<ul style="list-style-type: none"> • Drainage management • Any rabi crop can be taken, if completely damaged 	<ul style="list-style-type: none"> • Drainage management • Harvest at physiological maturity 	Storage at safer place
Sugarcane	<ul style="list-style-type: none"> • Drainage management 	<ul style="list-style-type: none"> • Drainage management 	<ul style="list-style-type: none"> • Harvest at physiological maturity 	Harvest and prepare for sell
Horticulture				

Mango Litchi Banana Guava	<ul style="list-style-type: none"> • Gap filling • Drainage management 	<ul style="list-style-type: none"> • Drenching with copper fungicides • Drainage management 	<ul style="list-style-type: none"> • Drenching with copper fungicides • Drainage management 	
Continuous submergence for more than 2 days²				
Rice (for such situation Swarna Sub-1 should be grown)	<ul style="list-style-type: none"> • Gap filling, if needed • Re-sowing if damaged after receding of flood 	<ul style="list-style-type: none"> • Retransplanting through Kharuhan (double transplanting) by 3-4 seedlings per hill • Short duration rice variety 	<ul style="list-style-type: none"> • Toria/Late wheat if completely damaged 	Storage at safer place
Maize	<ul style="list-style-type: none"> • Re-sowing if damaged after receding of flood 	<ul style="list-style-type: none"> • Resowing or gap filling as the case may be 	<ul style="list-style-type: none"> • Toria/Late wheat if completely damaged 	Storage at safer place
Sugarcane	<ul style="list-style-type: none"> • Drainage management 	<ul style="list-style-type: none"> • Drainage management 	<ul style="list-style-type: none"> • Harvest at physiological maturity 	Harvest and prepare for sell
Horticulture				
Mango	<ul style="list-style-type: none"> • Drainage management 			
Guava	<ul style="list-style-type: none"> • Drainage management 			
Banana	<ul style="list-style-type: none"> • Drainage management 			
Sea water intrusion	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				
Maize	Life saving irrigation	Life saving irrigation	Life saving irrigation	
Pigeonpea	Life saving irrigation	Life saving irrigation	Life saving irrigation	
Wheat			Life saving irrigation (Terminal heat)	
Sugarcane	Life saving irrigation	Life saving irrigation	Life saving irrigation	
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				
Wheat		Light irrigation, mulching		
Maize		Light irrigation, mulching		
Mustard		Light irrigation, mulching		
Potato		Light irrigation, mulching		
Pulses		Light irrigation, mulching		
Horticulture				
Vegetables		Light irrigation, mulching		
Frost				
Wheat		Light irrigation, mulching		
Pigeonpea		Light irrigation, mulching		
Lentil		Light irrigation, mulching		
Sugarcane		Light irrigation, mulching		
Horticulture				
Vegetables		Light irrigation, mulching		
Hailstorm	Not applicable			
Cyclone	Not applicable			

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			
Floods			
Feed and fodder availability	<ol style="list-style-type: none"> 1. Cultivation of fodder tree 2. Storage of Improved Quality Fodder 3. Conservation & Storage of 	<ol style="list-style-type: none"> 1. Feeding of Complete Feed Block 2. Feeding of Urea-Molasses-Mineral-Block & Fodder 3. Feeding of stored 	Production of forage crops <ol style="list-style-type: none"> 1. Balanced feeding of Animal supported with little higher concentrate

	<ul style="list-style-type: none"> • Feed & Fodder • Hay & Silage: — Preserve the fodder in the form of hay from Berseem & other grasses as well as silage from <p>(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 hycianth. (f) Potato leaves mixing with wheat straw in ratio of 7:1 and should be supplemented with 3% molasses.</p> <p>Hay: –</p> <ul style="list-style-type: none"> • 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. <p>4. Development & storage of: – (a) Complete Feed Block (CFB) (b) Urea-Molasses-Mineral-Block (U.M.M.B)</p> <p>5. Development of Fodder Bank</p>	<p>Hay/Silage/Improved Quality Fodder</p> <p>4. Feeding of Tree leaves some of which are as follows:</p> <ol style="list-style-type: none"> 1. Bamboo leaves 2. Neem 3. Bargad 4. Peepal 5. Seesam 6. Subabul <p><u>Use of unconventional feed stuff:</u></p> <ol style="list-style-type: none"> (i) Aquatic Plants – water hycianth (i) Lotus (ii) Aquatic weeds 	<p>mixture</p> <ol style="list-style-type: none"> 2. Cultivation of fodder Rabi maize if water stagnated upto Nov/ December 3. Jowar/Cowpea 4. Maize in September
Drinking water			

<p>Health and disease management</p>	<p>Veterinary Preparedness with Medicines, Vaccines and provision for mobile ambulatory van.</p> <ul style="list-style-type: none"> • Vaccination <p>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.</p> <p>This will be helpful not only to check epidemic in animals, but also to reduce the probability of zoonoses in human beings.</p> <p>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.</p> <p>Mass vaccination should be conducted by a team of Department staff with proper maintenance of detailed Inoculation Register.</p> <p>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.</p>	<p>Animal safety, Health camp and Treatment</p> <p>Important Suggestions for animal and Poultry safety</p> <p>During flood, all efforts should be made to rescue most of the livestock and poultry as carefully as possible.</p> <p>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.</p> <p>The fisherman or the people who knows swimming should be deputed for the rescue of drowning and floating animals and birds.</p> <p>During flood do not leave halter or headstalls on animals.</p> <p>Do not tie animals together when releasing.</p> <p>Report the location, identification and disposition of livestock and poultry to authorities handling the disaster.</p> <p>Health camp and treatment</p> <p>Water borne diseases are one of the most common phenomena during the flood</p> <p>Diarrhoeal diseases outbreaks can</p> <p>Report the location, identification and disposition of livestock and poultry to authorities handling the disaster.</p>	<p>Sanitation, deworming, treatment, health camps Culling of Sick animals and disposal of carcass</p> <p>Maintenance of Sanitation:</p> <p>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.</p> <p>De-worming after the flood:</p> <p>Immediately after flood, the animals like cattle, buffalo. Sheep, goat, pig, dog and poultry need to be de-wormed with suitable broad spectrum anthelmintics. This will enable the animals to regain proper health.</p> <p>In water logged area, sucks can be introduced as biological control measures against snails to protect livestock from parasitic disease.</p> <p>Treatment of sick animals:</p> <p>The</p>
--------------------------------------	---	--	--

		<p>Health camp and treatment</p> <p>Water borne diseases are one of the most common phenomena during the flood</p> <p>Diarrhoeal diseases outbreaks can occur after drinking contaminated water.</p> <p>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.</p> <p>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 pneumonia</p> <p>Treatment of Non infectious Arrangement should be made for</p>	<p>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 Post-Flood period.</p> <p>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.</p> <p>Methods of Carcass disposal to be adopted Burial Burning Composting Vulturing</p> <p>s. Health Camp after the flood: Protection of livestock from outbreaking 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.</p>
--	--	---	--

		<p>the treatment of drowning and traumatic injuries, aspiration pneumonia, lameness and other surgical cases in the health camp.</p> <p>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</p>	
Cyclone			
Heat wave and cold wave			

^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				
Floods				
Shortage of feed ingredients				
Drinking water				
Health and disease management	<p>Vaccines to be used for different animals and Poultry</p> <p>Cattle and Buffalo</p>			

	<p>Hemorrhagic Septicemia Vaccine Black Quarter Vaccine FMD Vaccine Anthrax Vaccine as per endemicity.</p> <p>Sheep and Goat Hemorrhagic Septicemia Vaccine PPR Vaccine FMD Vaccine Goat pox Vaccine Enterotoxemia Vaccine Anthrax Vaccine as per endemicity</p> <p>Pigs Hemorrhagic Septicemia Vaccine PPR Vaccine FMD Vaccine Goat pox Vaccine Enterotoxemia Vaccine Anthrax Vaccine as per endemicity.</p> <p>Dogs Rabies Vaccine</p> <p>Poultry Mareks disease vaccine RDV (F₁ & R₂B), FPV, IBRV & IBDV</p> <p>(Annexure-1)</p> <ul style="list-style-type: none"> • Medicines <p>All Districts should be earmarked for flood.</p> <p>An inventory of required medicines to treat the affected livestock in case of eventualities should be made.</p> <p>The Govt. should take steps to procure sufficient quantity of essential life saving</p>			
--	---	--	--	--

	<p>medicines.</p> <p>List of life saving Medicines</p> <p>Corticosteroids Nikethamide Antibloat Adrenaline Antihistaminic Antidotes for common poisoning Antisnake venom Broad spectrum antibiotics Anti-inflammatory Antipyretic and Analgesics Fluids and Electrolytes</p> <p style="text-align: center;">• Mobile Veterinary Clinics</p> <p>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.</p> <p>The teams should be kept in readiness having required stock of medicines and equipment to work in any adverse situation.</p> <p>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.</p> <p>An emergency kit for poultry should be made ready well in advance. The Poultry kit should</p>			
--	---	--	--	--

	have Cage, mask, mash, pellet feed trough, waterers, detergents, poultry vaccines, Veterinary drugs, workers protection uniform etc.			
Cyclone				
Heat wave and cold wave				

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 (iii) Renovation of pond to protect the seepage of water,	(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 (iii) Monitoring of water quality (iv) Reduction of manuring according to water level. (v) Use of sanitizer	
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	Arrangement of regular water quality		-Netting of pond for the eradication of

water quality	monitoring		weed fishes, -Liming before stocking of fish seed
(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 -Sell of marketable size fish	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			
4. Heat wave and cold wave			