KRISHI VIGYAN KENDRA

BALEK (ROING)

LOWER DIBANG VALLEY DISTRICT

AGRICULTURE CONTIGENCY PLAN

(FOR LOWER DIBANG VALLEY DISTRICT)

(2015-16)

DIRECTORATE OF AGRICULTURE

GOVERNMENT OF ARUNACHAL PRADESH

State: Arunachal Pradesh

Agriculture Contingency Plan for District Lower Dibang Valley

2015-2016

1.0 District Agriculture profile*				
1.1	**Agro-Climatic/Ecological Zone**			
	Agro Ecological Sub Region (ICAR)	(HUMID/PER HUMID) Eastern Himalayas warm per-humid eco-region.		
	Agro-Climatic Zone (Planning Commission)	Eastern Himalayan Region, Zone- III		
	Agro Climatic Zone (NARP)	Sub-Tropical Sub- Humid.		
	List all the districts falling under the NARP Zone* (*>50% area falling in the zone)	Lower Dibang Valley District		
	Geographic coordinates of district headquarters headquarters	**Latitude**	**Longitude**	**Altitude**
		27’30’N to 28’33’N	95’15’E to 96’30’E	390 mtrs.
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS			
	Mention the KVK located in the district with full address	Krishi Vigyan Kendra, Balek, Lower Dibang Valley District, Arunachal Pradesh PIN-792110		
	Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro-advisories in the Zone	**ICAR Research Complex Centre, Basar Arunachal Pradesh**		

1.2	**Rainfall**	**Normal RF(mm)**	**Normal Rainy days (number)**	**Normal Onset (specify week and month)**	**Normal Cessation (specify week**

					and month)
	Pre-monsoon (March-May):	813.4		1st March	29th May
	South West Monsoon (June-Sep):	2813		1st June	20th Sept.
	Post Monsoon (Oct-Dec):	302.7		5th Oct	1st Dec
	North east Monsoon (Jan-Feb):	97		6th Jan	4th Feb
	Annual	**4026.1mm**			

Source: Hydromet Division, New Delhi, Indian Meteorological Deptt.

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	Cur fallo
		3900 Sq Km	25024 ha	324436 ha	7220 ha	1385 ha	1450 ha		7220 ha	116

Source: Deptt. of Agriculture, Lower Dibang Valley,Roing 2006-2007

1. 4	**Major Soils (common names like red sandy loam deep soils (etc.,)***	**Area (ha)**	**Percent (%) of total geographical area**

* mention colour, depth and texture (heavy, light, sandy, loamy, clayey etc) and give vernacular name, if any, in brackets (data source: Soil Resource Maps of NBSS & LUP); ** Pl. give the details of the major soils occupying more than 5% of total geographical area. Degree of soil acidity (pH) may also be indicated

1.5	**Agricultural land use**	Area (ha)	Cropping intensity %
	Net sown area	22408 ha	112 %
	Area sown more than once	2616	
	Gross cropped area	25024 ha	

Source: Deptt. of Agriculture, Lower Dibang Valley,Roing 2006-2007

1.6	**Irrigation**	
	Net irrigated area	7401.79 ha

	Gross irrigated area	7401.79		
	Rainfed area	14847.74		
	Sources of Irrigation	Number	Area (ha)	Percentage of total irrigated area
	Canals	-		Area may be indicated
	Tanks	2 Nos.		
	Open wells	-		
	Bore wells	-		
	Lift irrigation schemes	-		
	Micro-irrigation	-		
	Other sources (spring)	3 Nos.		
	Total Irrigated Area	-	2431 ha	
	Pump sets	-		
	No. of Tractors	10		
	Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	No. of blocks/ Tehsils	(%) area	Quality of water (specify the problem such as high levels of arsenic, fluoride, saline etc)
	Over exploited			
	Critical			
	Semi- critical			
	Safe			
	Wastewater availability and use			
	Ground water quality			
*over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%				

Source: Deptt. of Agriculture, Lower ***Dibang Valley,Roing 2006-2007***

1.6. a.	**Fertilizer and Pesticides use**	Type	Total quantity (tonnes)
1	Fertilizers*	Urea,SSP&MOP	28(NPK)
2	Chemical Pesticides*	Insecticides, Fungicides, Weedicides, Others (Specify)	

* If break up is not available, indicate total quantity used in the district for any recent year, mention here the year and source of statist

Source: Deptt. of Agriculture, Lower Dibang Valley,Roing 2006-2007

1.7 Area under major field crops & horticulture (as per latest figures) (2006-07)

1.7	**Sl.No.**	**Major field crops cultivated**	**Area (ha)**						
			Kharif			***Rabi***			
			Irrigated	**Rainfed**	**Total**	**Irrigated**	**Rainfed**	**Total**	**Summer**

	1	Paddy	-	-	-	-	-	-	-
	2	Maize	-	-	-	-	-	-	-
	3	Millet	-	-	-	-	-	-	-
	4	Wheat	-	-	-	-	-	-	-
	5	Pulse	-	-	-	-	-	-	-
	6	Oilseeds	-	-	-	-	-	-	-
	7	Potato	-	-	-	-	-	-	-
	Sl.No.	**Horticulture crops - Fruits**	**Area (ha)**						
			Total			**Irrigated**			**R**
	1	Orange	2025						
	2	Banana	250						
	3	Litchi	98						
	4	Pine-apple	195						
	5								
	Sl. No.	**Horticulture crops - Vegetables**	**Total**			**Irrigated**			**R**
	1		387						
	Sl. No.	**Medicinal and Aromatic crops**	**Total**			**Irrigated**			**R**
	1		**125**						
		Spices crops	**Total**			**Irrigated**			**R**
	1	Ginger	815						
	2	Black Pepper	165						
	3	Large Cardamom	280						
	4								
		Plantation crops	**Total**			**Irrigated**			**R**
	1								
	2								
	3								
		Fodder crops	**Total**			**Irrigated**			**R**
	1								
	2								
	3								
		Total fodder crop area							
		Grazing land							
		Sericulture etc							
		Others (specify)							

Source: Deptt. of Agriculture, Lower Dibang Valley,Roing 2006-2007

Source: 19th Quinquiennial Livestock Census, 2012, Deptt. of AH & Vety., Govt. of Arunachal Pradesh

1.8	**Livestock**	**Male**	**Female**	**T**
	Indigenous cattle	-	-	2
	Improved / Crossbred cattle	-	-	
	Buffaloes (local low yielding)	-	--	2
	Improved Buffaloes	-	-	

	Goat	-	-	1
	Sheep	-	-	
	Pig	-	-	1
	Mithun	-	-	2
	Yak	-	-	
	Others (Horse, mule, donkey etc., specify)	-	-	
	Commercial dairy farms (Number)			
1.9	**Poultry**	**No. of farms**	**Total No. of birds**	
	Commercial	-	44392	
	Backyard (Duck)	-	8869	

1.10 Fisheries (Data source: Chief Planning Officer)

A. Capture

i) Marine (Data Source: Fisheries Department)	**No. of fishermen**	**Boats**		**Nets**	
		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 villag**

B. Culture

		Water Spread Area (ha)	**Yield (t/ha)**	**Produc**
	i) **Brackish water** (Data Source: MPEDA/ Fisheries Department)			
	ii) **Fresh water** (Data Source: Fisheries Department)			
	Others			

1.11 Production and Productivity of major crops

1.11	Name of crop	**Kharif**		**Rabi**		**Summer**		**Total**	
		Production (' t)	Productivity (kg/ha)	Production (t)	Productivity (kg/ha)	Production (t)	Productivity (kg/ha)	Production (t)	Product (kg/ha)
Major Field crops (Crops to be identified based on total acreage)									
Crop 1	Paddy	-	-	-	-	-	-	13270	

Crop 2	Maize	-	-	-	-	-	-	10044	
Crop 3	Millet	-	-	-	-	-	-	1073	
Crop 4	Wheat	-	-	-	-	-	-	386	
Crop 5	Pulse	-	-	-	-	-	-	662	
Crop 6	Oilseeds	-	-	-	-	-	-	4542	
Crop 7	Potato	-	-	-	-	-	-	2360	
Major Horticultural crops (Crops to be identified based on total acreage)									
Crop 1	Orange	-	-	-	-	-	-	3000	
Crop 2	Banana	-	-	-	-	-	-	680	
Crop 3	Litchi	-	-	-	-	-	-	30	
Crop 4	*Pine apple*	-	-	-	-	-	-	550	
Crop 5	Vegetables	-	-	-	-	-	-	387	
Major spice crops									
Crop 1	Black pepper	-	-	-	-	-	-	6	
Crop 2	Ginger	-	-	-	-	-	-	2960	
Crop 3	Large Cardamom	-	-	-	-	-	-	10	
Crop 4									

1.12	**Sowing window for 5 major field crops** (start and end of normal sowing period)	Rice	Maize	Black gram	Rapeseeds	Ginger
	Kharif- Rainfed	May to June	Mid of March to April			
	Kharif-Irrigated					
	Rabi- Rainfed		Mid of Sept to Oct	Sept to Oct	Sept to Oct	March to Ap
	Rabi-Irrigated					

1.13	**What is the major contingency the district is prone to?** (Tick mark)	**Regular***	**Occasional**	
	Drought		√	
	Flood		√	
	Cyclone		√	
	Hail storm		√	
	Heat wave			√
	Cold wave			
	Frost			√
	Sea water intrusion			√
	Snowfall			√
	Landslides			√

	Earthquake			√
	Pests and disease outbreak (specify)		√	
	Others (like fog, cloud bursting etc.)			

*When contingency occurs in six out of 10 years

1.14	**Include Digital maps of the district for**	Location map of district within State as Annexure I	Enclosed: Yes / No
		Mean annual rainfall as Annexure 2	Enclosed: Yes / No
		Soil map as Annexure 3	Enclosed: Yes / No

2.0 Strategies for weather related contingencies

2. Drought

2.1 Drought (Rainfed situation)

Drought-Pre-Monsoon (Last week of March to First week of April) Normal

Condition			**Suggested Contingency measures**	
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop / Cropping system[b]**	**Change in crop /cropping system[c] including variety**	**Agronomic measures[d]**
Delay by 2 weeks (2nd to 3rd week of April)	**Very gently sloping plain with shallow loamy soils**	Maize	No change	▪ Short duration crops/varieties like RCM-1-75, RCM-1-76 ▪ Conservation of pre-monsoon soil moisture through soil/straw/grass mulching practices ▪ Maize + groundnut/soya bean/rice bean inter cropping. ▪ Hydropriming/ seed soaking in water for 24hr and followed by shade drying before sowing. ▪ Application of organic manure before sowing.
		Millet	No change	▪ Short duration crops/varieties of finger millet (VR-708, GPU-67), foxtail millet (SR-16, Meera

		Vegetable crops	No change	**<u>Bottle gourd</u>** ▪ Punjab Round, Pusa Sandesh, Narendra Shishir, Punjab Komal. ▪ Use of organic manures (FYM 5 tones/ha or vermicompost 1 ton/ha) ▪ Raise crop on ridge-furrow or raised bed planting system ▪ Conservation of soil moisture through soil/straw/grass mulching practices. **<u>Chilli</u>** ▪ Kashi Anmol, Arka Lohit, Kashi Early, IIHR -Sel. 132 ▪ Raise crop on ridge-furrow raised bed planting system ▪ Use of organic manures (FYM 5 tones/ha or vermicompost 1 ton/ha) to enhance water holding capacity of soil ▪ Conservation of soil moisture through soil/straw/grass mulching practices. ▪ Do not allow weeds to grow during plant's early growth stage. ▪ Mixed cropping of various vegetable crops.
	Nearly label plan with very deep coarse loamy soils	Maize	No change	▪ Short duration crops/varieties like RCM-1-75, RCM-1-76, Allrounder, HQPM-1 , DA-61 A ▪ Conservation of pre-monsoon soil moisture through soil/straw/grass mulching practices ▪ Maize + groundnut/soya bean/rice bean inter cropping. ▪ Hydropriming/ seed soaking in water for 24hr and followed by shade drying before sowing. ▪ Application of organic manure before sowing.
		Millet	No change	▪ Short duration crops/varieties of finger millet (VR-708, GPU-67), foxtail millet (SR-16, Meera)
		Vegetable crops	No change	**<u>Bottle gourd</u>** ▪ Punjab Round, Pusa Sandesh, Narendra Shishir, Punjab Komal. ▪ Use of organic manures (FYM 5 tones/ha or vermicompost 1 ton/ha) ▪ Raise crop on ridge-furrow or raised bed planting system

				▪ Conservation of soil moisture through soil/straw/grass mulching practices. **Chilli** ▪ Kashi Anmol, Arka Lohit, Kashi Early, IIHR -Sel. 132 ▪ Raise crop on ridge-furrow raised bed planting system ▪ Use of organic manures (FYM 5 tones/ha or vermicompost 1 ton/ha) to enhance water holding capacity of soil ▪ Conservation of soil moisture through soil/straw/grass mulching practices. ▪ Do not allow weeds to grow during plant's early growth stage. ▪ Mixed cropping of various vegetable crops.

2.1.2 **Drought-irrigated situation** : NA in this district

Normal onset of pre- monsoon

Condition			**Suggested Contingency measures**	
Early season drought **(Normal onset)**	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management**	**Soil nutrient & moisture conservation measures[d]**
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	**Very gently sloping plain with shallow loamy soils**	Maize	▪ If the germination is less than 30% of optimum plant population, re sowing should be done ▪ Gap filling to be done to maintain optimum plant density ▪ Mulching of locally available material ▪ Foliar application of 1% MoP	▪ Provide irrigation from the available sources
		Millet(Finger Millet)	▪ If the germination is less than 30% of optimum plant population re sowing should be done ▪ Gap filling to be done to maintain optimum plant density ▪ Mulching of locally available material ▪ Foliar application of 1% MoP	▪ Provide irrigation from the available sources
		Vegetable crops(Bottle gourd, Chilli, beans, okra, brinjal)	▪ Gap filling with available seedlings. ▪ Mulching of locally available material ▪ Foliar application of 1% MoP	▪ Provide irrigation from the available sources ▪ Prefer Drip/sprinkler irrigation
	Nearly label plan with very deep coarse loamy soils	Maize	▪ If the germination is less than 30% of optimum plant population, re sowing should be done ▪ Gap filling to be done to maintain optimum plant density ▪ Mulching of locally available material ▪	▪ Provide irrigation from the available sources
		Millet(Finger Millet)	▪ If the germination is less than 30% of optimum plant population re sowing should be done ▪ Gap filling to be done to maintain optimum plant density ▪ Mulching of locally available material ▪ Foliar application of 1% MoP	▪ Provide irrigation from the available sources

		Vegetable	▪ Gap filling with available seedlings. ▪ Mulching of locally available material ▪ Foliar application of 1% MoP	▪ Provide irrigation from the available sources ▪ Prefer Drip/sprinkler irrigation

Condition			**Suggested Contingency measures**	
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm)period)	**Major Farming situation[a]**	**Normal Crop /cropping systemidues[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measues[d]**
Vegetative stage	**Very gently sloping plain with shallow loamy soils**	Maize	▪ Weeding ▪ Interculture ▪ Mulching of locally available material ▪ Foliar application of 1% MoP	▪ Provide irrigation from th available sources
		Millet(Finger Millet)	▪ Weeding ▪ Interculture ▪ Mulching of locally available material ▪ Foliar application of 1% MoP	▪ Provide irrigation from the available sources
		Vegetable crops(Bottle gourd, Chilli, beans, okra, brinjal)	▪ Weeding ▪ Interculture ▪ Mulching of locally available material	▪ Provide irrigation from th available sources ▪ Prefer Drip/sprinkler irrigation
	Nearly label plan with very deep coarse loamy soils	Maize	▪ Weeding ▪ Interculture ▪ Mulching of locally available material ▪ Foliar application of 1% MoP	▪ Provide irrigation from the available sources
		Millet(Finger Millet)	▪ Weeding ▪ Interculture ▪ Mulching of locally available material ▪ Foliar application of 1% MoP	▪ Provide irrigation from th available sources ▪ Prefer Drip/sprinkler irrigation

Condition			**Suggested Contingency measures**	
Mid season drought (long dry	**Major Farming**	**Normal Crop /cropping**	**Crop management[c]**	**Soil nutrient & moisture conservation measues[d]**

spell, consecutive 2 weeks rainless (>2.5 mm)period)	**situation[a]**	**systemidues[b]**		
Reproductive stage	**Very gently sloping plain with shallow loamy soils**	Maize	▪ Weeding ▪ Interculture ▪ Mulching of locally available material ▪ Foliar application of 1% MoP	▪ Provide irrigation from the available sources
		Millet(Finger Millet)	▪ Weeding ▪ Interculture ▪ Mulching of locally available material ▪ Foliar application of 1% MoP	▪ Provide irrigation from the available sources
		Vegetable crops(Bottle gourd, Chilli, beans, okra, brinjal)	▪ Weeding ▪ Interculture	▪ Provide irrigation from the available sources ▪ Prefer Drip/sprinkler irrigation
			▪ Weeding ▪ Interculture ▪ Mulching of locally available material ▪ Foliar application of 1% MoP	▪ Provide irrigation from the available sources
	Nearly label plan with very deep coarse loamy soils	Maize	▪ Weeding ▪ Interculture ▪ Mulching of locally available material ▪ Foliar application of 1% MoP	▪ Provide irrigation from the available sources
		Millet(Finger Millet)	▪ Weeding ▪ Interculture ▪ Mulching of locally available material ▪ Foliar application of 1% MoP	▪ Provide irrigation from the available sources
		Vegetable crops(Bottle gourd, Chilli, beans, okra, brinjal)	▪ Weeding ▪ Interculture	▪ Provide irrigation from the available sources ▪ Prefer Drip/sprinkler irrigation

Condition			Suggested Contingency measures		
Terminal drought (Early withdrawal of monsoon)	**Major Farming situation**[a]	**Normal Crop/cropping system**[b]	**Crop management**[c]	**Rabi Crop planning**[d]	**Remark Implem**
	Very gently sloping plain with shallow loamy soils	Maize	▪ Harvest at physiological maturity.	▪ Planning for early sowing of pulse crop like Blackgam/Greengram and buckwheat	Scheme Deptt./R
		Millet(Finger Millet)	▪ Harvest at physiological maturity.	▪ Planning for early sowing of pulse crop like Blackgam/Greengram and buckwheat	Scheme Deptt./R
		Vegetable crops(Bottle gourd, Chilli, beans, okra, brinjal)	▪ Harvesting at optimum age	▪ Planning for early cole crops like cabbage, cauliflower, knolKhol	Scheme Deptt./R
	Nearly label plan with very deep coarse loamy soils	Maize	Maize	▪ Harvest at physiological maturity.	▪ Plannin sowing like Blackga and buc
		Millet(Finger Millet)	Millet(Finger Millet)	▪ Harvest at physiological maturity.	▪ Plannin sowing like Blackga and buc
		Vegetable crops(Bottle gourd, Chilli, beans, okra, brinjal)	Vegetable crops(Bottle gourd, Chilli, beans, okra, brinjal)	▪ Harvesting at optimum age	▪ Plannin crops lik cauliflo

Normal onset of monsoon

2.2 **Drought-Normal onset of Monsoon (1st week of June) Normal**

Condition			Suggested Contingency measures	
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop /Cropping system[b]**	**Change in crop /cropping system[c] including variety**	**Agronomic measures[d]**
Delay by 2 weeks (2nd to 3rd week of April)	**Very gently sloping plain with shallow loamy soils**	Paddy	No change	▪ Short duration varieties Mahsuri,CAU-R1, IR-8,Shillong Rice,Disang,Luit,Kolabeera
		Maize		▪ Short duration crops/varieties like RCM-1-75, RCM-1-76, Allrounder, HQPM-1 , DA-61 A
	Nearly label plan with very deep coarse loamy soils	Paddy		▪ Medium duration varieties Mahsuri,CAU-R1, IR-8,Joymoti, Kanaklata,Mula gobhoru,TTB-404,TTB-303
		Maize		▪ Short duration crops/varieties like RCM-1-75, RCM-1-76, Allrounder, HQPM-1 , DA-61 A ▪

Normal onset of monsoon

Condition			Suggested Contingency measures	
Early season drought **(Normal onset)**	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management**	**Soil nutrient & moisture conservation measures[d]**
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	**Very gently sloping plain with shallow loamy soils**	Paddy	▪ Resowing or raisingof seedling with short duration variety ▪ Foliar application of 1% MoP	▪ Provide irrigation from th available sources ▪
		Maize	▪ Gap filling ▪ Weeding ▪ Foliar application of 1% MoP ▪ Application of organic manure, wherever possible	▪ Provide irrigation from th available sources
	Nearly label plan with very deep coarse loamy soils	Paddy	▪ Resowing or raisingof seedling with short duration variety ▪ Foliar application of 1% MoP	▪ Provide irrigation from th available sources
		Maize	▪ Gap filling ▪ Weeding ▪ Foliar application of 1% MoP ▪ Application of organic manure,	▪ Provide irrigation from th available sources

			wherever possible	

Condition			**Suggested Contingency measures**	
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm)period)	**Major Farming situation[a]**	**Normal Crop /cropping systemidues[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measues[d]**
Vegetative stage	**Very gently sloping plain with shallow loamy soils**	Paddy	▪ Foliar application of 1% MoP ▪ Timely plant protection of measures for gundhi bug	▪ Provide irrigation from the available sources
		Maize	▪ Foliar application of 1% MoP	▪ Provide irrigation from the available sources
	Nearly label plan with very deep coarse loamy soils	Paddy	▪ Foliar application of 1% MoP ▪ Timely plant protection of measures for gundhi bug	▪ Provide irrigation from the available sources
		Maize	▪ Foliar application of 1% MoP	▪ Provide irrigation from the available sources

Condition			**Suggested Contingency measures**	
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm)period)	**Major Farming situation[a]**	**Normal Crop /cropping systemidues[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measues[d]**
Reproductive stage	**Very gently sloping plain with shallow loamy soils**	Paddy	▪ Foliar application of 1% MoP ▪ Timely plant protection of measures for gundhi bug	▪ Provide irrigation from the available sources
		Maize	▪ Foliar application of 1% MoP	▪ Provide irrigation from the available sources
	Nearly label plan with very deep coarse loamy soils	Paddy	▪ Foliar application of 1% MoP ▪ Timely plant protection of measures for gundhi bug	▪ Provide irrigation from the available sources
		Maize	▪ Foliar application of 1% MoP	▪ Provide irrigation from the available sources

Condition			**Suggested Contingency measures**		
Terminal drought	**Major Farming**	**Normal Crop/cropping**	**Crop management[c]**	**Rabi Crop planning[d]**	**Remark Implem**

(Early withdrawal of monsoon)	**situation[a]**	**system[b]**			
	Very gently sloping plain with shallow loamy soils	Paddy	▪ Harvest at physiological maturity.	▪ Planning for zero tillage cultivation of pea, toria etc. ▪ Preparation for cole crops and potato	Schemes Deptt./R
		Maize	▪ Harvest at physiological maturity.	▪ Planning for zero tillage cultivation of pea, toria etc.	Schemes Deptt./R
	Nearly label plan with very deep coarse loamy soils	Paddy	▪ Harvest at physiological maturity.	▪ Planning for zero tillage cultivation of pea, toria etc. ▪ Preparation for cole crops and potato	Schemes Deptt./R
		Maize	▪ Harvest at physiological maturity.	▪ Planning for zero tillage cultivation of pea, toria etc.	Schemes Deptt./R

2.1.2 **Drought-irrigated situation**: NA in this district

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

Condition	**Suggested contingency measure**			
Continuous high rainfall in a short span leading to water logging	**Vegetative stage[k]**	**Flowering stage[l]**	**Crop maturity stage[m]**	**Post harvest[n]**
1. Rice	Draining of excess water from the field	Immediate provision of drainage system	▪ Drain out excess water before harvesting ▪ Harvesting at physiological maturity	Drying in well ventilated place and storing in air tight condition
2. Maize	Proper drainage system& Ridge planting	Proper drainage		
3. Black gram	Ridge planting along with proper drainage system.	Proper drainage		
4. Rapeseed Mustard				
Heavy rainfall with high speed winds in a short span[2]				
Rice	Draining out of excess water	Draining out of excess water	Draining out of excess water before harvesting	Drying in well ventilated place and storing in air tight condition
Maize	Proper drainage system	Proper drainage		

	& Ridge planting			
Black gram	Ridge planting along with proper drainage system	Proper drainage		
Rapeseeds Mustard	Ridge planting along with proper drainage system	Proper drainage		
Horticulture				
Mandarin	Proper drainage	Application of PGRS. (Auxin) and boron to enhance fruit set	Draining out of excess water before harvesting, harvesting of crop at maturity.	
Rabi vegetables Kharif vegetable off season vegetables.	Ridge planting, proper drainage.	Proper drainage	Draining out of excess water and harvesting of crop at optimum stage.	Storing at optimum temperature.
Ginger	Ridge planting, proper drainage	Proper drainage	Draining out of excess water and harvesting of crop at optimum stage.	Storing at optimum temperature

Outbreak of pests and diseases due to unseasonal rains	**Vegetative stage[k]**	**Flowering stage[l]**	**Crop maturity stage**	**Post harvest**
Agronomical crops				
Paddy (Blast)	▪ Growing of trap crops ▪ Weeding of host plant	▪ Spraying of Mancozeb @ 2g/lt or Carbendazim @ 1 g/lt.	▪ Draining out of excess water	▪ Drying grains.
Paddy (Bacterial leaf blight)	▪ Destruction of weed hosts.	▪ Spraying of streptomycin and tetracycline.	▪ Drain out excess water to avoid flooded conditions.	
Paddy (Yellow Stem Borer)	▪ Collection and destruction of egg masses.	▪ Spraying of Chloropyriphos 20 EC @ 0.02 %.	▪ Harvesting at the optimum stage.	
Maize (Stalk rot)	▪ Proper drainage system & Ridge planting.	▪ Rouging of affected plant and its destruction.	▪ Spraying of streptocycline @ 0.020 %.	▪ Sun drying of the harvested cob to prevent spoilage.
Horticultural crops				
Mandarin Other fruits	Need based plant protection IPDM	Need based plant protection IPDM	Harvesting of crops at maturity stage	Safe storage against storage pests & disease.
 Rabi vegetables Kharif vegetable Off season vegetable 	Disease resistant varieties. Need based plant protection IPDM crop rotation	Bio agents Need based plant protection IPDM		Safe storage against storage pests & disease.

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

[l] Such as drainage in black soils, application of hormones/nutrient sprays to prevent flower drop or promote quick flowering/fruiting and indicate possibility of pest/disease outbreak with need based prophylactic / curative management etc.

[m] Such as drainage in black soils, measures for preventing seed germination etc and Indicate possibility of harvesting at physiological maturity immediately and shifting produce to safer place and protection against pest/disease damage in storage etc.

[n] Such as shifting of produce to safer place for drying and maintaining the quality of grain/fodder and protection against pest/disease damage in storage etc

2.3 Floods

Condition	Suggested contingency measure[o]			
Transient water logging/ partial inundation[1]	**Seedling / nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Rice	▪ Drainage of the Nursery bed. ▪ Re-sowing	▪ Drainage of excess water. ▪ Gap filling ▪ Management of pests & diseases	▪ Drainage of excess water. If flood comes during reproductive stage, emphasis should be given on forthcoming rabi crops. ▪ Utilization of residual soil moisture planning for rabi crops	▪ Drainage of excess water. ▪ Utilization of residual soil moisture
Maize	Proper drainage system & Ridge planting	▪ Drainage of excess water. ▪ Gap filling ▪ Management of pests & diseases	Drainage of excess water	▪ Drainage of excess water. ▪ Utilization of residual soil moisture
Horticulture /Plantation crops				
Orange	Drainage of excess water.			Shifting of the produce to drier place.
Ginger	Drainage of excess water.	▪ Drainage of excess water. And proper drainage system should be followed. ▪ Earthing up	▪ Proper drainage system should be followed.	▪ Shifting of the produce to drier place.
Vegetables	Drainage of excess water. Raised bed method should be followed in the nursery.	Drainage of excess water	▪ Drainage of excess water ▪ Growing of cole crops or winter vegetables after receding flood water and adoption of integrated farming system to obtain more income and to compensate the loss during kharif vegetables.	NA
Continuous submergence for more than 2 days[2]	NA	NA	NA	NA
Crop1				
Horticulture / Plantation crops				
Crop1 (specify)				
Sea water intrusion[3]	NA	NA	NA	NA
Crop1				
Crop5				

Horticulture / Plantation crops				
Crop1 (specify)				
Crop2				
Crop3				
Crop 4				
Crop 5				
Sea water intrusion[3]				
Crop1				
Crop2				
Crop3				

Notes:

Flood situation could arise during early season (eg. summer season) or in the main season; Accordingly contingency measures could be suggested

[1] Water logging due to heavy rainfall, poor drainage in vertisols, flash floods in streams and rivers due to high rainfall, breach of embankments

[2] If the water remains in the field due to continuous rains, poor infiltration and push back effect

[3] Entry of sea water into cultivated fields in coastal districts due to tidal wave during cyclones or tsunami; intrusion of seawater into groundwater in coastal districts

[o] Crop/field management depends on nature of material (sand or silt) deposited during floods. In sand deposited crop fields/ fallows indicate ameliorative measures such as early removal of sand for facilitating *rabi* crop or next kharif. In silt deposited indo-gangetic plains, indicate early *rabi* crop plan in current cropped areas and current fallow lands. Indicate drainage of stagnating water and strengthening of field bunds etc. In diara land areas indicate crop plans for receding situations. Usually rice cropped areas are flood prone causing loss of nurseries, delayed transplanting or damage to the already transplanted fields etc. Indicate community nursery raising, scheduling bushenings, re-transplanting in damaged fields and transplanting new areas or direct seeding including seed availability so that the season is not lost. Indicate steps for preventing pre-mature germination of submerged crop at maturity or harvested produce.

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

Extreme event type	**Suggested contingency measure[r]**			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Heat Wave[p]	**NA**			
Crop1				
Horticulture				
Crop1 (specify)				
Cold wave[q]	**NA**			
Crop1				
Horticulture				

Crop1 (specify)				
Frost	**NA**			
Crop1				
Horticulture				
Crop1 (specify)				
Hailstorm	.			.
Crop1				
Horticulture				
Orange	Nursery rising under polyhouse	Use of anti-hail nets.	NA	Harvest ripe fruit before hailstorm
Vegetables (cucurbits)	Nursery raising under polyhouse. Provide shade to protect from damage or resowing of the crops	Polyhouse cultivation & proper irrigation	Polyhouse cultivation & proper irrigation Proper crop management for the succeeding years	Picking of fruits at right edible stage depends upon individual varieties and marketing requirements. Fruits are harvested, packed in baskets and transported to markets.
Cyclone				
Crop1	NA	NA	NA	NA
Horticulture				
Crop1 (specify)	NA	NA	NA	NA
Sand deposition or heavy siltation				
Specify crop /horticulture/plantation	NA	NA	NA	NA

Notes:

[p] In regions where the normal maximum temperature is more than 40^0C, if the day temperature exceeds 3^0Cabove normal for 5 days it is defined as heat wave. Similarly, in regions where the normal temperature is less than 40^0C, if the day temperature remains 5^0C above normal for 5 days, it is defined as heat wave.

[q] In regions where normal minimum temperature remains 10^0C or above, if the minimum temperature remains 5^0C lower than normal continuously for 3 days or more it is considered as cold wave. Similarly in regions with normal minimum temperature is less than 10^0C, if the minimum temperature remains 3^0C lower than normal it is considered as cold wave

[r] Indicate appropriate crop/soil management measures depending upon the crop and its stage for alleviating the specified stress.

2.5 Contingent strategies for Livestock, Poultry & Fisheries

2.5.1 Livestock

	Suggested contingency measures		
	Before the event[s]	**During the event**	**After the event**
Drought			
Feed and fodder availability	▪ Awareness on fodder cultivation & identification of locally available, natural fodder of area. ▪ Excess fodder may be stored as hay/silage or converted into feed block in the flush season, for lean period. ▪ Stacking of paddy straws.	▪ Use of unconventional feed/fodders resources. ▪ Grazing in the peri peri of forest areas. ▪ Feeding according to body weight requirement ▪ Improving the poor quality roughages (urea treatment, soaking, etc). ▪ Use of feed additives to improve digestibility. ▪ use of stored Hay and Silage	▪ Avail the benefits of schemes under drought, from state or central for feeds and fodder. ▪ Supplementary feeding of livestock to regain the general physiological imbalanced. ▪ Proper irrigation of folder plot and cultivation of leguminous fodders to meet the demand of green fodders
Floods			
Feed and fodder availability	▪ Awareness on fodder cultivation & identification of locally available, natural fodder of area. ▪ Excess fodder may be stored as hay/silage or converted into feed block in the flush season, for lean period. ▪ Stacking of paddy straws.	▪ Storage of feeds and fodder in high raised platform. ▪ Use of unconventional feed/fodders resources. ▪ Avoid feeding of damp feeds and fodders. ▪ Shifting of livestock to high raised areas. ▪ Use of feed additives to improve	▪ Avail the benefits of schemes under flood, from state or central for feeds and fodder. ▪ Submitting a reports, damage caused by flood to feed and standing fodder ▪ Supplementary feeding of

	▪ Installation of feed block machines and creating feed/fodder block banks to be used in emergency.	digestibility. ▪ Use of stored Hay and Silage	livestock to regain the general physiological imbalanced. ▪ Proper irrigation of folder plot and cultivation of leguminous fodders to meet the demand of green fodders.
Earthquake / Landslides			
Cyclone			
Heat wave and cold wave			
Snowfall			

[s] based on forewarning wherever available

2.5.2 Poultry

	Suggested contingency measures			Convergence/linka ongoing program
	Before the event[a]	**During the event**	**After the event**	
Drought				
Shortage of feed ingredients	▪ Awareness on maize, pea and oil seed cultivation for use of poultry feed ▪ Procurement of feed ingredients in bulk. ▪ Installation of feed mixing plant	▪ Use of stored feed ▪ Use of feeds from the local resources	▪ Availing insurance for the crop loss. ▪ Availing subsidiary schemes from line deptt.	Schemes from Line Deptt./RKVY/ATMA
Floods				
Shortage of feed ingredients	▪ Awareness on maze, pea and oil seed cultivation for use of poultry feed ▪ Procurement of feed ingredients in bulk and store in raise floor. ▪ Installation of feed mixing plant	▪ Use of stored feed ▪ Use of feeds from the local resources .	▪ Availing insurance for the crop loss. ▪ Availing subsidiary schemes from line deptt.	

Cyclone				
Earthquake, Landslides etc				

[a] based on forewarning wherever available

2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event[a]	**During the event**	**After the ev**
1) Drought			
A. Capture	NA		
Marine			
Inland			
(i) Shallow water depth due to insufficient rains/inflow			
(ii) Changes in water quality			
(iii) Any other			
B. Aquaculture			
(i) Shallow water in ponds due to insufficient rains/inflow	Arrangement of additional source of water	Digging trenches in mud tank Aeration Harvesting of fish	Crop insurance
(ii) Impact of salt load build up in ponds / change in water quality			
(iii) Any other			
2) Floods			
A. Capture			
Marine	NA		
Inland			
(i) Loss of stock	Errection of pond dykes	Early harvest	Crop insurance
(ii) Changes in water quality	Errection of pond dykes	Water exchange Lime application and aeration	Harvest of fish water, ex
(iii) Health and diseases	Proper stocking, feeding and water quality management	Water exchange	Separation of diseased s

		feed management, Chemo thera peutic drugs usage.	Harvest of diseased sto Crop insurance.
B. Aquaculture			
(i) Inundation with flood water			
(ii) Water contamination and changes in water quality	Errection of pond dykes	Lime application Water exchange Transfer of fish stock	Early harvest Crop insurance
(iii) Health and diseases	Errection of pond dykes	Early harvest	Crop insurance
(iv) Loss of stock and inputs (feed, chemicals etc)	Errection of pond dykes	Transfer to safe place	Insurance claim
(v) Infrastructure damage (pumps, aerators, huts etc)	Construction of infrastructure in non flood prove area		
(vi) Any other			
3. Cyclone / Tsunami			
A. Capture			
Marine			
Inland			
B. Aquaculture			
(i) Overflow / flooding of ponds			
(ii) Changes in water quality (fresh water / brackish water ratio)			
(iii) Health and diseases			
(iv) Loss of stock and inputs (feed, chemicals etc)			
(v) Infrastructure damage (pumps, aerators, shelters/huts etc)			
(vi) Any other			
4. Heat wave and cold wave			
A. Capture			
Marine			
Inland			
B. Aquaculture			
(i) Changes in pond environment (water quality)	Arrangements for water cooler and heater	Water replenishment Installation of water cooler and heaters	Early harvest Crop insurance
(ii) Health and Disease management			
(iii) Any other			

[a] based on forewarning wherever available