State: ARUNACHAL PRADESH

Agriculture Contingency Plan for District: WEST KAMENG

1.0 District Agriculture profile*				
1.1	**Agro-Climatic/Ecological Zone**			
	Agro Ecological Sub Region (ICAR)	16.3 Arunachal Pradesh (Subdued Eastern Himalayas), warm to hot, perhumid eco-subregion (C1A10)		
	Agro-Climatic Zone (Planning Commission)	Eastern Himalayan zone		
	Agro Climatic Zone (NARP)	Sub temperate Alpine Zone (AZ49)		
	List all the districts falling under the NARP Zone* (*>50% area falling in the zone)	West Kameng		
	Geographic coordinates of district headquarters head-quarters	**Latitude**	**Longitude**	**Altitude**
		$26^0$56’ and $28^0$01’North	$91^0$30’ and $92^0$40’ East	213-7090 m MSL
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	ICAR Research Complex for NEH Region, Basar, Arunachal Pradesh		
	Mention the KVK located in the district with full address	KVK West Kameng, Dirang (Sangti), Arunachal Pradesh- 790101		
	Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro-advisories in the Zone	ICAR Basar, West Siang District, Arunachal Pradesh Basar-791101.		

**Source: District Statistical Department, Bomdila, 2012

Indicate source of data while furnishing information at different places in the district profile

1.2	**Rainfall ***	**Normal RF(mm)**	**Normal Rainy days (number)**	**Normal Onset (specify week and month)**	**Normal Cessation (specify week and month)**
	SW monsoon (June-Sep):	1291.00	-	-	-
	NE Monsoon(Oct-Dec):	148.90	-	-	-
	Winter (Jan- February)	57.00	-	-	-
	Summer (March-May)	427.40	-	-	-
	Annual	1924.30	-	-	-

*Source: Hygromet Division, IMD, New Delhi (Data provide for the year 2013)

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)	742.2	13.49	575.3	0.88	0.85	4.02	1.06	0.65	1.12	1.64

*Source: Directorate of Economics and Statistics, Ministry of Agriculture, Govt. of. India. (Data provided for the year 2011-12)

1. 4	**Major Soils (common names like red sandy loam deep soils (etc.,)***	**Area ('000 ha)****	**Percent (%) of total geographical area**
	1. Loam to clay loam	-	-
	2. Loam to sandy loam	-	-
	3. Loam to loamy sand	-	-
	4. Loam to sandy clay loam	-	-
	5. Loam to strong clay loam	-	-
	6. Loam	-	-
	7. Silt clay loam to clay loam	-	-
		• Sandy loam, acidic soil, red soil, medium to low fertile (Source: Farming Systems of North East India, ZPD, Zone-III) • Soil pH : 4.4-7.6 (Source: ICAR, Rice Knowledge Management Portal) • Organic Carbon %: 0.23-6.0(Source: ICAR, Rice Knowledge Management Portal)	

* 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 (‘000 ha)	Cropping intensity %
	Net sown area	5.65	131.03%
	Area sown more than once	1.75	
	Gross cropped area	7.4	

*Source: Directorate of Economics and Statistics, Ministry of Agriculture, Govt. of. India. (Data provided for the year 2011-12)

1.6	**Irrigation**	Area (‘000 ha)		
	Net irrigated area	1.07		
	Gross irrigated area	-		
	Rainfed area	-		
	Sources of Irrigation	Number	Area (‘000 ha)	Percentage of total irrigated area
	Canals	107	-	-
	Tanks	-	-	-
	Open wells	-	-	-
	Bore wells	-	-	-
	Lift irrigation schemes	-	-	-
	Micro-irrigation	24	-	-
	Other sources (please specify) Ponds, river	-	-	-
	Total Irrigated Area		-	
	Pump sets	10 (Electrical)		
	No. of Tractors	06		
	Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	No. of blocks/ Tehsils	(%) area	Quality of water (specify the problem such as high levels of arsenic, fluoride, saline etc)
	Over exploited	-	-	-
	Critical	-	-	-
	Semi- critical	-	-	-
	Safe	-	-	-

	Wastewater availability and use	-	-	-
	Ground water quality	-		
*over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%				

1.6. a.	**Fertilizer and Pesticides use**	Type	Total quantity (Kg/ha)
1	Fertilizers* (per capita fertilizer consumption in kg/ha)	N:P:K	-
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 statistic

1.7 Area under major field crops & horticulture (as per latest figures) (Specify year 2012-13)

1.7	**S.No.**	**Major field crops cultivated**	**Area ('000 ha)**									
			Kharif			***Rabi***			**Pre-Kharif**			
			Irrigated	**Rainfed**	**Total**	**Irrigated**	**Rainfed**	**Total**	**Irrigated**	**Rainfed**	**Total**	**Grand total**
	1	Paddy	-	0.86	0.86	-	-	-	-	-	-	0.86
	2	Wheat	-	-	-	-	0.016	0.016	-	-	-	0.016
	3	Maize	-	283.2	283.2	-	-	-	-	-	-	283.2
	4	Millets	-	0.97	0.97	-	-	-	-	-	-	0.97

	5	Pulses	-	0.34	0.34	-	-	-	-	-	-	0.34
	6	Oilseed	-	-	-	-	0.16	0.16	-	-	-	0.16
	7	Sugarcane	-	0.30	-	-	-	-	-	0.05	0.05	0.05
	8	Potato	-	-	-	-	-	-	-	0.055	0.055	0.055

Source: Farming Systems of North East India, ZPD, Zone-III (2013-14)

	S.No.	**Horticulture crops – Fruits**	**Area ('000 ha)**		
			Total	**Irrigated**	**Rainfed**
	1	Orange	0.136	-	0.136
	2	Apple	3.430	-	3.430
	3	Kiwi	1.172	-	1.172
	4	Walnut	0.260	-	0.260
	5	Plum	0.002	-	0.002
	Others (specify)	Pears	0.040	-	0.040
		Banana	0.001	-	0.001
		Horticulture crops – Vegetables / spices	**Total**	**Irrigated**	**Rainfed**
	1	Chilli	0.001	-	0.001

	2	Ginger	0.007	-	0.007
	3	Vegetables	0.060	-	0.060
	Others (specify)	Cut flowers	0.0008	-	0.0008
		Medicinal and Aromatic crops	**Total**	**Irrigated**	**Rainfed**
	1	Large cardamom	3.451	-	3.451
	2	Black Pepper	1.028	-	1.028
	3	Other spices	9.986	-	9.986
	Others (specify)				
		Plantation crops	-	-	-
		Fodder crops	**Total**	**Irrigated**	**Rainfed**
	1	NA	NA	NA	NA
	Others (Specify)		-	-	-
		Total fodder crop area	-	-	-
		Grazing land, reserve areas etc	1.461	-	1.461
		Availability of unconventional feeds/by products eg., breweries waste, food processing, fermented feeds bamboo shoots, fish etcs	-	-	-

		Sericulture etc **Other agro enterprises (mushroom cultivation etc specify)**	-	-	-
		Others (specify)	-	-	-

Source: Department of Horticulture, West Kameng, Bomdila (2014-15)

Source: Deptt. of AH & Vety., Bomdila, West Kameng (2013)

	Livestock	**Male ('000)**	**Female ('000)**	**Total ('000)**
1.8	Indigenous cattle	-	-	23.012
	Improved / Crossbred cattle	-	-	-
	Buffaloes (local low yielding)	-	-	0.008
	Improved Buffaloes	-	-	-
	Goat	-	-	18.956
	Sheep	-	-	3.539
	Pig	-	-	6.702
	Mithun	-	-	2.988
	Yak	-	-	3.988
	Horses/Ponies	-	-	2.458
	Others (Dog)	-	-	4.039
	Commercial dairy farms (Number)	-	-	1
1.9	**Poultry**	**No. of farms**	**Total No. of birds ('000)**	
	Commercial	1	42.295 (Statistical Abstract of Arunachal Pradesh-2011)	
	Backyard	-	-	

1.10	**Fisheries** (Data source: District Statistics Office, Bomdila, 2012)						
	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**	
		225		NA		-	
	B. Culture						
			Water Spread Area (ha)		**Yield (t/ha)**	**Production ('000 tons)**	
	i) **Brackish water**		-		-	-	
	ii) **Fresh water** (Data Source: Fisheries Department)		-		-	1.41 lakh MT	
	Others		-		-	-	

1.11 Production and Productivity of major crops (2010-11)

1.11	Name of crop	**Kharif**		**Rabi**		**Pre-kharif**		**Total**		**Crop residue as fodder** ('000 tons)
		Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	
Major Field crops (Crops to be identified based on total acreage)										
Crop 1	Paddy	1.322	1384	-	-	-	-	1.322	1384	-

Crop 2	Maize	5.136	1629	-	-	-	-	5.136	1629	-
Crop 3	Millets	-	-	1.091	9800	-	-	1.091	9800	-
Crop 4	Wheat	-	-	0.871	1154	-	-	0.871	1154	-
Crop 5	Pulses	-	-	0.468	1098	-	-	0.468	1098	-
Crop 6	Potato	-	-	-	-	3.593	8000	3.593	8000	-
Others	Oilseeds	0.235	1145	-	-	-		0.235	1145	-
Major Horticultural crops (Crops to be identified based on total acreage)(Average of 3 years 2012-13, 2013-14, 2014-15)										
Crop 1	Apple	6.192	1830.20	-	-	-	-	6.192	1830.20	-
Crop 2	Kiwi	-	-	3.905	3350.07	-	-	3.905	3350.07	-
Crop 3	Walnut	-	-	1.206	4889.93	-	-	1.206	4889.93	-
Crop 4	Orange	-	-	0.818	6344.03	-	-	0.818	6344.03	-
Crop 5	Peach	0.055	2761.50	-	-	-	-	0.055	2761.50	-
Crop 6	Plum	0.056	2776.00	-	-	-	-	0.056	2776.00	-
Crop 7	Pear	-	-	0.109	2696.40	-	-	0.109	2696.40	-
Crop 8	Ginger	0.024	3364.29	-	-	-	-	0.024	3364.29	-
Crop 9	Cabbage	-	-	0.604	4116.52	-	-	0.604	4116.52	-
Crop 10	Chilli	-	-	-	-	0.072	2696.54	0.072	2696.54	-

Source: Department of Horticulture, West Kameng, Bomdila

1.12	**Sowing window for 5 major field crops** (start and end of normal sowing period)	Crop 1: Paddy	2:Maize	3: Wheat	4:Pulses (Cow pea, rajmah, Pea)	5:Oilseed (Mustard)
	Kharif- Rainfed	June-October	May-August	-	April-September	May-August
	Kharif-Irrigated	-	-	-	-	-
	Rabi- Rainfed	-	August-November	October-February	-	-
	Rabi-Irrigated	-	-	-	-	-
	Summer-irrigated	-	-	-	-	-
	Summer-rainfed	-	-	-	-	-

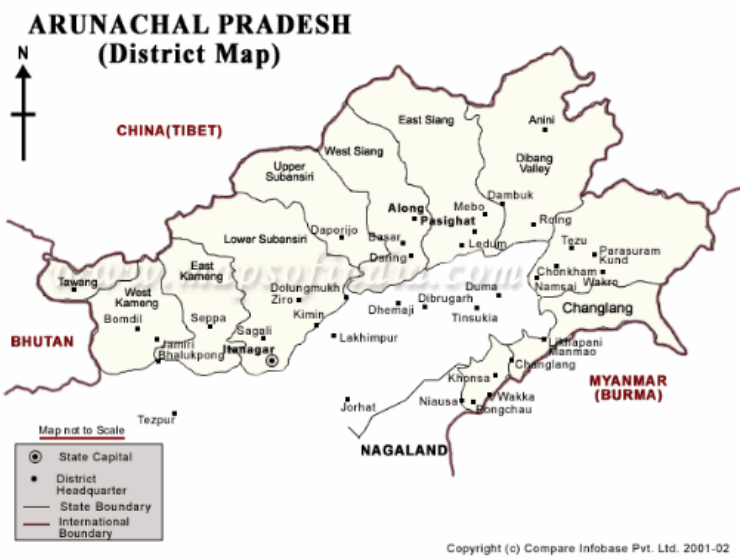
1.13	**What is the major contingency the district is prone to?** (Tick mark)	**Regular***	**Occasional**	**None**
	Drought	-	✓	-
	Flood	-	✓	-
	Cyclone	-	-	-
	Hail storm	-	-	-
	Heat wave	-	-	-
	Cold wave	-	-	-
	Frost	-	✓	-
	Sea water intrusion	-	-	-
	Snowfall	-	✓	-
	Landslides	-	✓	-
	Earthquake	-	✓	-

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

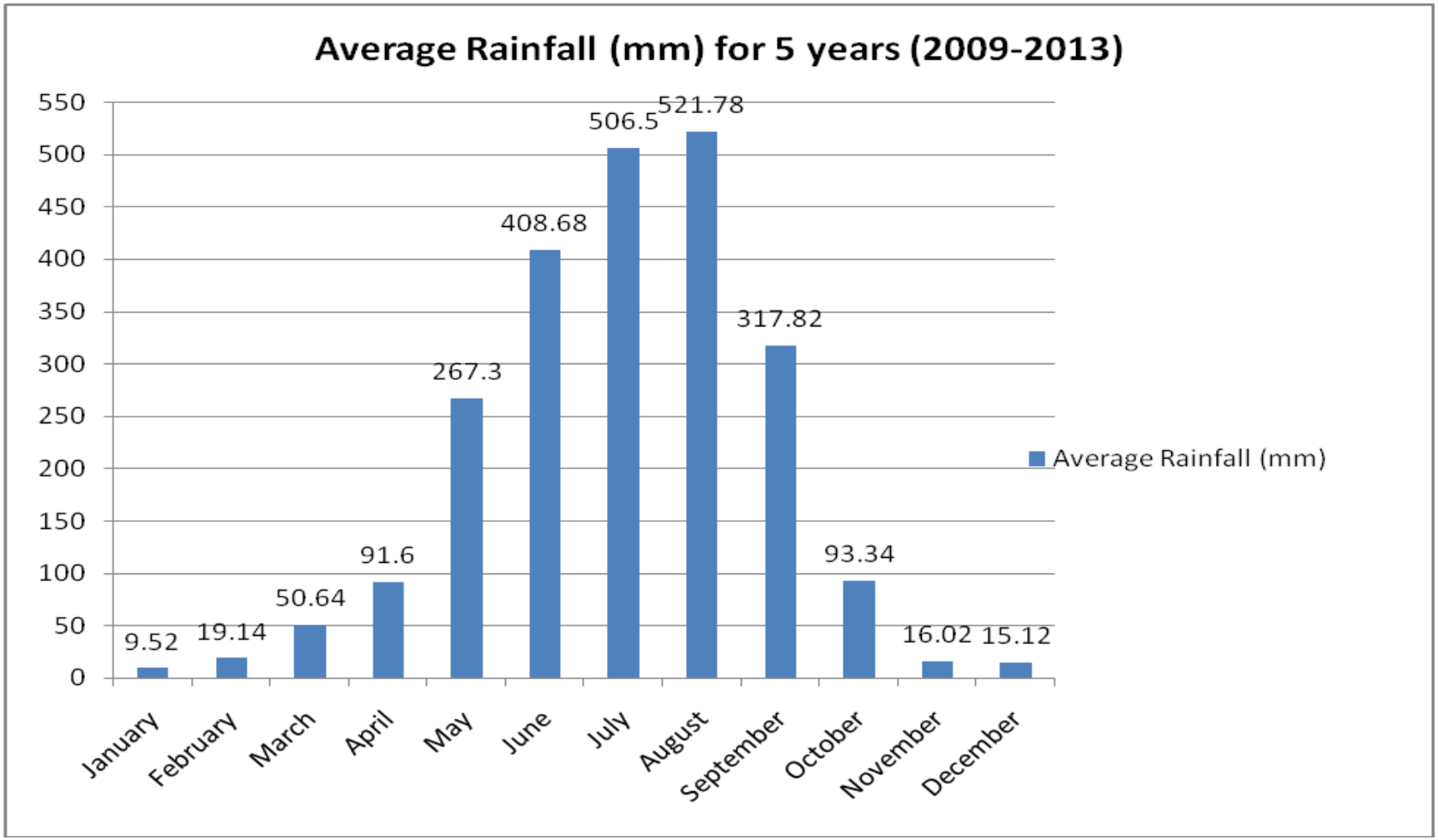
*When contingency occurs in six out of 10 years

1.14	**Include Digital maps of the district for**	Location map of district within State as Annexure I	Enclosed: Yes
		Mean annual rainfall as Annexure 2	Enclosed: Yes (For 2013)
		Soil map as Annexure 3	Enclosed: No

Annexure 1: Map of West Kameng District



Annexure – 2: MEAN ANNUAL RAINFALL OF WEST KAMENG DISTRICT



2.0 Strategies for weather related contingencies
2. Drought

2.1 Drought (Rainfed situation)

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

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 (3rd to 4th week of April)	**Moderately steep sloping hills with deep loamy soils (200-800 m MSL)**	Maize	No change ▪ Short duration varieties like RCM-1-75, RCM-1-76, All-rounder ▪ Maize + groundnut/soya bean/rajma inter cropping.	▪ Adopt mulching with locally available mulch ▪ Summer ploughing to conserve moisture ▪ Hydropriming/ seed soaking in water for 24hr and followed by shade drying before sowing. ▪ Application of FYM/organic manure before sowing.	Schemes from Line Deptt. /RKVY/ ATMA
		Millets	No change ▪ Short duration varieties of finger millet (VR-708, GPU-67)	▪ Application of FYM/organic manure before sowing. ▪ Summer ploughing to conserve moisture	
		Rajmaah	No change	▪ Application of FYM/organic manure before sowing. ▪ Summer ploughing to conserve moisture ▪ Adopt short duration varieties ▪ Maintain closer spacing ▪ Adopt intercropping with soyabean and maize	

		Vegetable crops	No change ▪ Kashi Anmol, Arka Lohit, Kashi Early, IIHR -Sel. 132	**<u>Chilli</u>** ▪ Apply well decomposed FYM 5 tones/ha or vermicompost 1 ton/ha ▪ Mulching with locally available biomass ▪ Mixed cropping of various seasonal vegetable crops. **<u>Tomato</u>** ▪ Apply well decomposed FYM 5 tones/ha or vermicompost 1 ton/ha ▪ Mulching with locally available biomass ▪ Adopt short duration varieties	
		Soybean	No change	▪ Mulching with locally available biomass ▪ Intercropping with other beans ▪ Application of organic manure before sowing.	
	Steep sloping deep loamy soils (800-1500m MSL)	Maize	No change ▪ Short duration varieties like RCM-1-75, RCM-1-76, All-rounder ▪ Maize + groundnut/soya bean/rajma inter cropping.	▪ Planting across slope ▪ Adopt mulching with locally available mulch ▪ Summer ploughing to conserve moisture ▪ Hydropriming/ seed soaking in water for 24hr and followed by shade drying before sowing. ▪ Application of FYM/organic manure before sowing.	
		Millets	No change ▪ Short duration varieties of finger millet (VR-708, GPU-67)	▪ Planting across slope ▪ Application of FYM/organic manure before sowing. ▪ Summer ploughing to conserve moisture	
		Vegetables crops	No change ▪ Kashi Anmol, Arka Lohit, Kashi Early, IIHR -Sel. 132	**<u>Chilli</u>** ▪ Apply well decomposed FYM 5 tones/ha or vermicompost 1 ton/ha ▪ Mulching with locally available biomass ▪ Mixed cropping of various seasonal vegetable crops.	

				<u>Tomato</u> ▪ Apply well decomposed FYM 5 tones/ha or vermicompost 1 ton/ha ▪ Mulching with locally available biomass ▪ Adopt short duration varieties	
		Rajmaah	No change	▪ Application of FYM/organic manure before sowing. ▪ Summer ploughing to conserve moisture ▪ Adopt short duration varieties ▪ Maintain closer spacing ▪ Adopt intercropping with soyabean and maize	
		Soybean	No change	▪ Mulching with locally available biomass ▪ Intercropping with other beans ▪ Application of organic manure before sowing.	
	Very steep sloping hills with shallow sandy loam soils (1500-3500m MSL)	Maize	No change ▪ Short duration varieties like RCM-1-75, RCM-1-76, All-rounder	▪ Planting across slope ▪ Adopt mulching with locally available mulch ▪ Summer ploughing to conserve moisture ▪ Maize + groundnut/soya bean/rajma inter cropping. ▪ Hydropriming/ seed soaking in water for 24hr and followed by shade drying before sowing. ▪ Application of FYM/organic manure before sowing.	
		Millets	▪ Short duration varieties of finger millet (VR-708, GPU-67)	▪ Planting across slope ▪ Application of FYM/organic manure before sowing. ▪ Summer ploughing to conserve moisture	

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**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	**Moderately steep sloping hills with deep loamy soils (200-800 m MSL)**	Maize	▪ Proper weed management ▪ re sowing should be done if the germination is less than 30% of optimum plant population, ▪ Gap filling to be done to maintain optimum plant stand ▪ Foliar application of 1% MOP	▪ Provide irrigation from any available sources ▪ Mulching with locally available material	Schemes from Line Deptt. /RKVY/ATMA
		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 ▪ Foliar application of 1% MOP ▪ Proper weed management	▪ Provide irrigation from any available sources ▪ Mulching with locally available material	
		Rajma	▪ Interculture operations ▪ Application of organic manure/ FYM ▪ Proper weed management	▪ Provide irrigation from any available sources ▪ Mulching with local bio-mass	
		Vegetable crops (tomato, chilli)	▪ Proper weed management ▪ Gap filling with available seedlings. ▪ Foliar application of 1% MOP	▪ Provide irrigation from any available sources ▪ Prefer Drip/sprinkler irrigation ▪ Mulching with locally available material	Protected cultivation to be promoted/ Schemes from Line Deptt. /RKVY/ATMA
		Soybean	▪ Interculture operations ▪ Application of organic manure/ FYM ▪ Proper weed management	▪ Provide irrigation from any available sources ▪ Mulching with local bio-mass	

	Steep sloping deep loamy soils (800-1500m MSL)	Maize	▪ Proper weed management ▪ re sowing should be done if the germination is less than 30% of optimum plant population, ▪ Gap filling to be done to maintain optimum plant stand ▪ Foliar application of 1% MOP	▪ Provide irrigation from any available sources ▪ Mulching with locally available material	Schemes from Line Deptt. /RKVY/ATMA
		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 ▪ Foliar application of 1% MOP ▪ Proper weed management	▪ Provide irrigation from any available sources ▪ Mulching with locally available material	
		Vegetables	▪ Proper weed management ▪ Gap filling with available seedlings. ▪ Foliar application of 1% MOP	▪ Provide irrigation from any available sources ▪ Prefer Drip/sprinkler irrigation ▪ Mulching with locally available material	Protected cultivation to be promoted/ Schemes from Line Deptt. /RKVY/ATMA
		Rajma	▪ Interculture operations ▪ Application of organic manure/ FYM ▪ Proper weed management	▪ Provide irrigation from any available sources ▪ Mulching with local bio-mass	
		Soybean	▪ Interculture operations ▪ Application of organic manure/ FYM ▪ Proper weed management	▪ Provide irrigation from any available sources ▪ Mulching with local bio-mass	
	Very steep sloping hills with shallow sandy loam soils (1500-3500m MSL)	Maize	▪ Proper weed management ▪ re sowing should be done if the germination is less than 30% of optimum plant population, ▪ Gap filling to be done to maintain optimum plant stand ▪ Foliar application of 1% MOP	▪ Provide irrigation from any available sources ▪ Mulching with locally available material	Schemes from Line Deptt. /RKVY/ATMA

		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 ▪ Foliar application of 1% MOP ▪ Proper weed management	▪ Provide irrigation from any available sources ▪ Mulching with locally available material	

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 measures**	**Remarks on Implementation**
Vegetative stage	**Moderately steep sloping hills with deep loamy soils (200-800 m MSL)**	Maize	▪ Weeding ▪ Thinning of more sensitive intercrop ▪ Intercultural operations ▪ Foliar application of 1% MOP	▪ Provide irrigation from the available sources ▪ Mulching with locally available material	Schemes from Line Deptt. /RKVY/ATMA
		Millet (fingermillet)	▪ Weeding ▪ Interculture ▪ Foliar application of 1% MOP	▪ Provide irrigation from the available sources ▪ Mulching of locally available material	
		Vegetable crops (Tomato, chilli)	▪ Proper rouging ▪ Intercultural operations ▪ IPM measures	▪ Provide irrigation from the available sources ▪ Prefer Drip/sprinkler irrigation	Protected cultivation to be promoted/ Schemes from Line Deptt. /RKVY/ATMA
		Rajma	▪ Interculture operations ▪ Application of organic manure/ FYM ▪ Proper weed management	▪ Provide irrigation from any available sources ▪ Mulching with local bio-mass	
		Soybean	▪ Interculture operations	▪ Provide irrigation from any	

			▪ Application of organic manure/ FYM ▪ Proper weed management	available sources ▪ Mulching with local bio-mass	
	Steep sloping deep loamy soils (800-1500m MSL)	Maize	▪ Weeding ▪ Interculture ▪ Foliar application of 1% MOP	▪ Provide irrigation from the available sources ▪ Mulching of locally available material	
		Millet	▪ Weeding ▪ Interculture ▪ Foliar application of 1% MOP	▪ Provide irrigation from the available sources ▪ Mulching of locally available material	
		Vegetable(tomato, chilli)	▪ Proper rouging ▪ Intercultural operations ▪ IPM measures	▪ Provide irrigation from the available sources ▪ Prefer Drip/sprinkler irrigation	Protected cultivation to be promoted/ Schemes from Line Deptt. /RKVY/ATMA
		Rajma	▪ Interculture operations ▪ Application of organic manure/ FYM ▪ Proper weed management	▪ Provide irrigation from any available sources ▪ Mulching with local bio-mass	
		Soybean	▪ Interculture operations ▪ Application of organic manure/ FYM ▪ Proper weed management	▪ Provide irrigation from any available sources ▪ Mulching with local bio-mass	
	Very steep sloping hills with shallow sandy loam soils (1500-3500m MSL)	Maize	▪ Weeding ▪ Interculture ▪ Foliar application of 1% MOP	▪ Provide irrigation from available sources ▪ Mulching of locally available material	Schemes from Line Deptt. /RKVY/ATMA
		Millet	▪ Weeding ▪ Interculture operations ▪ Foliar application of 1% MOP	▪ Provide irrigation from available sources ▪ Mulching of locally available material	

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 measures**	**Remarks on Implementation**
Reproductive stage	**Moderately steep sloping hills with deep loamy soils (200-800 m MSL)**	Maize	▪ Weeding ▪ Intercultural operations ▪ Foliar application of 1% MOP	▪ Provide irrigation from available sources ▪ Mulching of locally available material	Line departments schemes/ATMA/RKVY
		Millet (fingermillet)	▪ Ratooning ▪ Weeding ▪ Intercultural operations ▪ Foliar application of 1% MOP	▪ Provide irrigation from available sources ▪ Mulching of locally available material	
		Vegetable crops (Tomato, chilli)	▪ Proper rouging ▪ Intercultural operations ▪ IPM measures	▪ Provide irrigation from the available sources ▪ Prefer Drip/sprinkler irrigation	Protected cultivation should be promoted
		Rajma	▪ Interculture operations ▪ Proper weed management ▪ IPM measures	▪ Provide irrigation from any available sources ▪ Mulching with local bio-mass	
		Soybean	▪ Interculture operations ▪ Proper weed management ▪ IPM measures	▪ Provide irrigation from any available sources ▪ Mulching with local bio-mass	
	Steep sloping deep loamy soils (800-1500m MSL)	Maize	▪ Weeding ▪ Intercultural operations ▪ Foliar application of 1% MOP	▪ Provide irrigation from available sources ▪ Mulching of locally available material	Line departments schemes/ATMA/RKVY
		Millet (fingermillet)	▪ Ratooning ▪ Weeding	▪ Provide irrigation from available sources	

			▪ Intercultural operations ▪ Foliar application of 1% MOP	▪ Mulching of locally available material	
		Vegetable crops (Tomato, chilli)	▪ Proper rouging ▪ Intercultural operations ▪ IPM measures	▪ Provide irrigation from available sources ▪ Prefer Drip/sprinkler irrigation	Protected cultivation should be promoted
		Rajma	▪ Interculture operations ▪ Proper weed management ▪ IPM measures	▪ Provide irrigation from any available sources ▪ Mulching with local bio-mass	
		Soyabean	▪ Interculture operations ▪ Proper weed management ▪ IPM measures	▪ Provide irrigation from any available sources ▪ Mulching with local bio-mass	
	Very steep sloping hills with shallow sandy loam soils (1500-3500m MSL)	Maize	▪ Weeding ▪ Intercultural operations ▪ Foliar application of 1% MOP	▪ Provide irrigation from available sources ▪ Mulching of locally available material	Line departments schemes/ATMA/RKVY
		Millet	▪ Ratooning ▪ Weeding ▪ Intercultural operations ▪ Foliar application of 1% MOP	▪ Provide irrigation from available sources ▪ Mulching of locally available material	

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**
	Moderately steep sloping hills with deep loamy soils (200-800 m MSL)	Maize	▪ Harvesting at physiological maturity for fodder purpose ▪ Re-sowing for fodder purpose	▪ Planning of Pulses like pea, oilseeds like toria, and winter grains like wheat and buckwheat, cole crops	Schemes from Line Deptt./RKVY/ATMA
		Fingermillet	▪ Harvest at physiological maturity.	▪ Planning for zero tillage cultivation of pea, toria etc. ▪ Preparation for cole crops	
		Rajma	▪ Harvest at physiological maturity.	▪ Planning for early planting of cole crops (cabbage, cauliflower)	
		Vegetables(tomato, chilli)	▪ Harvest at physiological maturity.	▪ Planning for early planting of cole crops (cabbage, cauliflower)	
		Soyabean	▪ Harvest at physiological maturity.	▪ Planning for early planting of cole crops (cabbage, cauliflower)	
	Steep sloping deep loamy soils (800-1500m MSL)	Maize	▪ Harvesting at physiological maturity for fodder purpose ▪ Re-sowing for fodder purpose	▪ Planning of Pulses like pea, oilseeds like toria, and winter grains like wheat and buckwheat, cole crops	Schemes from Line Deptt./RKVY/ATMA
		Fingermillet	▪ Harvest at physiological maturity.	▪ Planning for zero tillage cultivation of pea, toria etc. ▪ Preparation for cole crops	
		Rajma	▪ Harvest at physiological maturity.	▪ Planning for early planting of cole crops (cabbage, cauliflower)	
		Vegetables(tomato, chilli)	▪ Harvest at physiological maturity.	▪ Planning for early planting of cole crops (cabbage, cauliflower)	
		Soyabean	▪ Harvest at physiological maturity.	▪ Planning for early planting of cole crops (cabbage, cauliflower)	
	Very steep sloping hills with shallow sandy loam	Maize	▪ Harvesting at physiological maturity for fodder purpose ▪ Re-sowing for fodder purpose	▪ Planning of Pulses like pea, oilseeds like toria, and winter grains like wheat and buckwheat, cole crops	Schemes from Line Deptt./RKVY/ATMA

	soils (1500-3500m MSL)	Millet	▪ Harvest at physiological maturity.	▪ Planning for zero tillage cultivation of pea, toria etc. ▪ Preparation for cole crops	

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**	**Normal Crop / Cropping system**	**Change in crop /cropping system including variety**	**Agronomic measures**	**Remarks on Implementation**
Delay by 2 weeks (3rd week of June)	**Moderately steep sloping hills with deep loamy soils (200-800 m MSL)**	Paddy	No change ▪ Adopt short duration varieties (CAU-R1,TTB-404,TTB-303, Disang, Luit)	▪ Closer spacing of 15X15cm and 4-5 seedlings per hill ▪ Apply well decomposed organic manure/FYM for early seedling ▪ Incorporation of green manures ▪ Weeding at 15 and 35 DAT ▪ Proper nursery management	Schemes from Line Deptt./RKVY/ATMA
		Maize	No change ▪ Adopt short duration varieties (DA-61A, RCM-75, RCM-76, Allrounder)	▪ Apply well decomposed organic manure/FYM for early seedling	
	Steep sloping deep loamy soils (800-1500m MSL)	Paddy	No change ▪ Adopt short duration	▪ Closer spacing of 15X15cm and 4-5 seedlings per hill ▪ Weeding at 15 and 35 DAT	Schemes from Line Deptt./RKVY/ATMA

			varieties (Megha Rice 1 and Megha Rice-2)	▪ Apply well decomposed organic manure/FYM for early seedling ▪ Incorporation of green manures ▪ Proper nursery management	
		Maize	No change ▪ Adopt short duration varieties (DA-61A, RCM-75, RCM-76, Allrounder)	▪ Apply well decomposed organic manure/FYM for early seedling	
	Very steep sloping hills with shallow sandy loam soils (1500-3500m MSL)	Maize	No change ▪ Adopt short duration varieties (DA-61A, RCM-75, RCM-76, Allrounder)	▪ Apply well decomposed organic manure/FYM for early seedling	

Normal onset of monsoon

Condition			**Suggested Contingency measures**		
Early season drought **(Normal onset)**	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	**Moderately steep sloping hills with deep loamy soils (200-800 m MSL)**	Paddy (Transplanted)	▪ Gap filling ▪ Weeding to be done ▪ Foliar application of 1% MOP ▪ Apply well decomposed organic manure/FYM for early seedling ▪ Timely IPM measures for brown spots, thrips	▪ Provide irrigation from any available sources	Schemes from Line Deptt./RKVY/ATMA

		Maize	▪ Gap filling ▪ Weeding ▪ Foliar application of 1% MOP and 2% urea ▪ Application of organic manure, wherever possible	▪ Provide irrigation from any available sources	
	Steep sloping deep loamy soils (800-1500m MSL)	Paddy (Transplanted)	▪ Weeding ▪ Foliar application of 1% and 2% urea ▪ Application of organic manure, wherever possible ▪ Timely plant protection of measures for brown spot, thrips	▪ Provide irrigation from available sources	Schemes from Line Deptt. /RKVY/ATMA
		Maize	▪ Gap filling ▪ Weeding ▪ Foliar application of 1% MOP and 2% urea ▪ Application of organic manure/FYM wherever possible	▪ Provide irrigation from any available sources	
	Very steep sloping hills with shallow sandy loam soils (1500-3500m MSL)	Maize	▪ Gap filling ▪ Weeding ▪ Foliar application of 1% MOP and 2% urea ▪ Application of organic manure, wherever possible	▪ Provide irrigation from any available sources	

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 measures**	**Remarks on Implementation**
Vegetative stage	**Moderately steep sloping**	WRC/TRC	▪ Weeding ▪ Foliar application of 1% MOP	▪ Provide irrigation from available sources	Schemes from Line Deptt.

	hills with deep loamy soils (200-800 m MSL)	(Paddy)	and 2% urea ▪ Timely plant protection of measures for brown spot, thrips		/RKVY/ATMA
		Maize	▪ Weeding ▪ Foliar application of 1% MOP and 2% urea	▪ Provide irrigation from available sources	
	Steep sloping deep loamy soils (800-1500m MSL)	WRC/TRC (Paddy)	▪ Weeding ▪ Foliar application of 1% MOP and 2% urea ▪ Timely plant protection of measures for brown spot, thrips	▪ Provide irrigation from available sources	Schemes from Line Deptt. /RKVY/ATMA
		Maize	▪ Weeding ▪ Foliar application of 1% MOP	▪ Provide irrigation from available sources	

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 measures**	**Remarks on Implementation**
Reproductive stage	**Moderately steep sloping hills with deep loamy soils (200-800 m MSL)**	WRC/TRC (Paddy)	▪ Foliar application of 1% MOP ▪ Timely plant protection of measures for gundhi bug	▪ Provide irrigation from available sources	Schemes from Line Deptt. /RKVY/ATMA
		Maize	▪ Foliar application of 1% MOP	▪ Provide irrigation from available sources	
	Steep sloping deep loamy soils (800-1500m MSL)	WRC/TRC (Paddy)	▪ Foliar application of 1% MOP ▪ Timely plant protection of measures for gundhi bug	▪ Provide irrigation from available sources	Schemes from Line Deptt. /RKVY/ATMA
		Maize	▪ Foliar application of 1% MOP	▪ Provide irrigation from available sources	

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**
	Moderately steep sloping hills with deep loamy soils (200-800 m MSL)	WRC/TRC (Paddy)	▪ Harvest at physiological maturity.	▪ Planning for zero tillage cultivation of pea, toria etc. ▪ Preparation for cole crops	Schemes from Line Deptt./RKVY/ATMA
		Maize	▪ Harvest at physiological maturity.	▪ Planning for zero tillage cultivation of pea, toria etc. ▪ Preparation for cole crops	
	Steep sloping deep loamy soils (800-1500m MSL)	WRC/TRC (Paddy)	▪ Harvest at physiological maturity.	▪ Planning for zero tillage cultivation of pea, toria etc. ▪ Preparation for cole crops	Schemes from Line Deptt./RKVY/ATMA
		Maize	▪ Harvest at physiological maturity.	▪ Planning for zero tillage cultivation of pea, toria etc. ▪ Preparation for cole crops	

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

2.2 **Unusual rains (untimely, unseasonal etc) (for both rainfed and irrigation situation)**

Condition	**Suggested contingency measure**			
Continuous high rainfall in a short span leading to water logging	**Vegetative stage**	**Flowering stage**	**Crop maturity stage**	**Post harvest**
paddy	Drainage of excess water from the field	Immediate provision of drainage system	▪ Drain out excess water ▪ Harvest at physiological maturity	▪ Shifting to a safer place ▪ Dry in shade and in well ventilated space
Maize	Provide drainage	Provide drainage	▪ Drain out excess water ▪ Harvest at physiological maturity	▪ Shifting to a safer place ▪ Dry in shade and in well ventilated space
Milllet	Drainage of excess water	Immediate provision of drainage system	▪ Drain out excess water ▪ Harvest at physiological maturity	Proper drying
Horticulture				
Orange	▪ Provide proper drainage ▪ In steep slopes, prepare half moon terraces to prevent soil erosion and leaching loss ▪ If there is physical damage, pruning of damage branches and application of Bordeaux paste should be done to prevent secondary infection. ▪ Proper nutrient management to be followed.	▪ .Provide proper drainage ▪ Foliar application of micronutrient/multiplex @ 0.2% should be done to prevent flower drop ▪ Control aphids and mealy bugs etc	▪ If there is physical damage, pruning of damage branches and application of Bordeaux paste should be done to prevent secondary infection ▪ Harvesting can be delayed upto 60-75 days by spraying pre-harvest chemical i.e. 2-4D at 20ppm + GA at 10ppm + 0.2% Kcl on maturing fruits. ▪ Harvesting can be delayed. In citrus even after full maturity, the fruits can be left on the tree for 2-3 weeks without deterioration which facilitates prolong harvesting. ▪ While picking, the stem end should be cut close to the fruit without damaging the rind. Hence avoiding	▪ Fruits are to be stored in well aerated farm shed or house to avoid loses. ▪ Storing at 8 – 10 0 C with 85 – 90 % RH is preferred.

			fungal infection. ▪ Collect the good fruits and store them. Damaged fallen fruits to be disposed off	
Apple	▪ Provide proper drainage ▪ In steep slopes, prepare half moon terraces to prevent soil erosion and leaching loss ▪ If there is physical damage, pruning of damage branches and application of Bordeaux paste should be done to prevent secondary infection ▪ Nutrient management to be done	▪ Provide proper drainage ▪ Half moon terraces to be done to prevent nutrient loss ▪ Pruning of damaged brances and application of Bordeaux Paste to be done ▪ Nutrient management along with foliar application micronutrient to be done	▪ Spray 2,4,5-T @ 20ppm or 2,4,5-TCPA @ 15ppm to inhibit fruit drop ▪ Collect the good fruits and store them. Damaged fallen fruits to be separated and disposed off ▪ Necessary to maintain adequate drainage	▪ Stored the fruits for 4-8 months at -1.1 to 0°C and 85-90 % RH. ▪ Spray growth regulators Like Alar @ 1000 ppm to improve storability
Pineapple	. ▪ Make trenches/furrows in between ridges to facilitate drainage of excess water ▪ Remove the excess suckers to maintain the quality of plant ▪ Nutrient management to be followed	▪ Application of Ethephon 2mg in 100-140mg,Bentoniteor NAA @ 25ppm or 2, 4-D @5-10 ppm should be applied for uniform flower induction.	▪ Provide proper drainage ▪ Spraying of insecticides and fungicide ▪ Fruits can be protected with locally available material to protect the mature fruit from unusual rains	▪ Store fruits in well aerated farm shed or house to avoid loses. ▪ Pineapples can be stored at a temperature of 7.5-12°C and RH 70-90% for 4 weeks.
Kiwifruit	▪ Provide proper drainage ▪ In steep slopes, prepare half moon terraces to prevent soil erosion and leaching loss ▪ If there is physical damage, pruning of damage branches and application of Bordeaux paste should be done to prevent secondary infection ▪ Nutrient management to be done	▪ Provide proper drainage ▪ Half moon terraces to be done to prevent nutrient loss ▪ Pruning of damaged branches and application of Bordeaux Paste to be done ▪ Nutrient management along with foliar application micronutrient to be done	▪ Heavy pruning should not done as the fruit will be affected by rain ▪ Drain out excess water	▪ Stored the fruits at 0 to 4°C and 80-90 % RH. ▪ Spray growth regulators Like Alar @ 1000 ppm to improve storability
Banana	▪ Provide proper drainage ▪ Nutrient management to be done ▪ Propping or staking should be done ▪ Spraying of insecticides and fungicide	▪ Provide proper drainage ▪ Nutrient management to be done along with application of micronutrient ▪ Propping or staking should be done ▪ Spraying of insecticides and fungicide	▪ Provide proper drainage ▪ Nutrient management to be done ▪ Propping to be done ▪ Bagging to be done to protect the bunch from unusual rains. ▪ Denavelling to be done to improve the bunch weight (removal of male bud)	▪ Store the fruits/ bunch in well aerated farm shed or house to avoid loses. ▪ Storing at 10 – 12^{o} C with 70 – 80 % RH

Large cardamom	▪ It grows luxuriantly in moist and humid climate. So continuous rain is not a problem during its vegetative growth. ▪ Provide adequate drainage ▪ Spraying of insecticides and fungicide	▪ Rain during flowering is detrimental. So water logging should be avoided. ▪ Proper drainage system should be followed. ▪ Shade regulation may be taken up providing 50-60% shade.	▪ Harvesting can be delayed ▪ Proper drainage system should be followed.	▪ Collect and dry the produce in fuel kiln overnight at 50°-60°C or in drier for 14-18 hours at 45°-50°C
Ginger	▪ Provide proper drainage channels to avoid stagnation of water ▪ Earthing up to be done at proper soil moisture level ▪ Nutrient management to be followed ▪ Field bunding to prevent entry of water from surrounding areas. ▪ Spraying of insecticides and fungicide	▪ Provision of drainage to remove excess water. ▪ Earthing up should be followed by manuring. ▪ Field bunding to prevent entry of water from surrounding areas.	▪ Dry weather before harvesting is necessary. So harvesting can be delayed.	▪ Shifting of the produce to a drier place. ▪ Drying to remove excess moisture of produce.
Turmeric	▪ Provide proper drainage channels to avoid stagnation of water ▪ Earthing up to be done at proper soil moisture level ▪ Nutrient management to be followed ▪ Field bunding to prevent entry of water from surrounding areas. ▪ Spraying of insecticides and fungicide	▪ Provision of drainage to remove excess water. ▪ Earthing up should be followed by manuring. ▪ Field bunding to prevent entry of water from surrounding areas.	▪ Dry weather before harvesting is necessary. So harvesting can be delayed.	▪ Shifting of the produce to a drier place. ▪ Drying to remove excess moisture of produce.
Vegetables (cucurbits)	▪ Provision of drainage to remove excess water. ▪ Earthing up to be done at proper soil moisture condition followed by manuring ▪ Field bunding to prevent entry of water from surrounding areas. ▪ Staking should be properly followed. Rainy season crops can be trained on a bower made of bamboos and sticks.	▪ Spray maleic hydrazine (MH) and 2, 4-5 tri-iodobenzoic acid (TIBA) @ 50ppm for Sex expression. Boron @ 3ppm and calcium @ 20ppm is also effective. ▪ Provision of drainage to remove excess water. ▪ Earthing up followed by manuring ▪ Field bunding to prevent entry	▪ Fruits to be harvested immediately without causing injury to fruits ▪ Remove all damaged fruit ▪ Take up appropriate plant protection measures	▪ The fruits can be stored for 2-3 weeks at 15-20°C and RH 75% in a well-ventilated chamber

		of water from surrounding areas. ▪ Take up proper plant protection measures		
Heavy rainfall with high speed winds in a short span				
Horticulture				
Orange	▪ Earthing up of young plants to avoid uprooting due to wind. ▪ Provide proper drainage facilities. ▪ Staking to avoid falling off of plants ▪ In steep slopes, prepare half moon terraces to prevent soil erosion and leaching loss ▪ Pruning of damage branches and application of Bordeaux paste should be done to prevent secondary infection ▪ Proper nutrient management to be followed	▪ Wind break around the orchard to protect crop from wind damage ▪ Provide proper drainage ▪ Nutrient management to be followed along with foliar spray of micronutrient ▪ Pruning of damage branches and application of Bordeaux paste should be done to prevent secondary infection	▪ Propping heavy bearing tree and weak tree by bamboo pole. ▪ Harvesting can be delayed upto 60-75 days by spraying pre-harvest chemical i.e. 2-4D at 20ppm + GA at 10ppm + 0.2% Kcl on maturing fruits. ▪ Pruning of damage branches and application of Bordeaux paste should be done to prevent secondary infection	▪ Fruits are to be stored in well aerated farm shed or house to avoid loses. ▪ Pack the fruit in perforated polythene bag, boxes, crates, etc. and store at temperature of 10-11^{o}C & 92 % RH.
Apple	▪ Earthing up of young plants to avoid uprooting due to wind. ▪ Provide proper drainage facilities. ▪ Staking to be done to avoid falling off of plants. ▪ In steep slopes, prepare half moon terraces to prevent soil erosion and leaching loss ▪ Pruning of damage branches and application of Bordeaux paste should be done to prevent secondary infection ▪ Proper nutrient management to be followed	▪ Provision of drainage to remove excess water. ▪ Wind break around the orchard ▪ Maintain the half moon terraces to avoid soil nutrient loss ▪ Proper nutrient management to be followed along with foliar application of micronutrient ▪ Prune out all damage branches with appropriate plant protection measures	▪ Harvest ripe fruits ▪ Propping heavy bearing tree and weak tree by bamboo pole. ▪ Use of plant bio-regulators to delay ripening with Daminozide or Alar @ 1000ppm sprayed before 60 days before harvest.	▪ Store fruits for 4-8 months at -1.1 to 0°C and 85-90 % RH.
Pineapple	▪ Earthing up plants for better development and anchorage. ▪ Make trenches/furrows in between ridges to facilitate drainage of excess water.	▪ Earthing up to prevent uprooting. ▪ Provide proper drainage ▪ Nutrient management to be	▪ Fruits can be protected with locally available material to protect the mature fruit from unusual rains	▪ .Store fruits in well aerated farm shed or house to avoid loses. ▪ Pineapples can be stored

	▪ Nutrient management to be followed	followed ▪ Spray NAA @ 25ppm or 2, 4-D @ 5-10 ppm should be applied for uniform flower induction.	▪ Spraying of insecticides and fungicide ▪ Earthing up plants for better development and anchorage. ▪ Make trenches/furrows in between ridges to facilitate drainage of excess water	at a temperature of 7.5-12°C and RH 70-90% for 4 weeks.
Kiwifruit	▪ Provide proper drainage ▪ Support the plant using T-Bar system ▪ In steep slopes, prepare half moon terraces to prevent soil erosion and leaching loss ▪ If there is physical damage, pruning of damage branches and application of Bordeaux paste should be done to prevent secondary infection ▪ Nutrient management to be done	▪ Provide proper drainage ▪ Half moon terraces to be done to prevent nutrient loss ▪ Pruning of damaged branches and application of Bordeaux Paste to be done ▪ Nutrient management along with foliar application micronutrient to be done	▪ Heavy pruning should not done as the fruit will be affected by rain ▪ Drain out excess water ▪ Maintain the plant using T-Bar trellis supporting system ▪ Nutrient management along with foliar application micronutrient to be done	▪ Stored the fruits at 0 to 4°C and 80-90 % RH. ▪ Spray growth regulators Like Alar @ 1000 ppm to improve storability
Banana	▪ Provide proper drainage ▪ Nutrient management to be done ▪ Propping or staking should be done ▪ Spraying of insecticides and fungicide ▪	▪ Provide proper drainage ▪ Nutrient management to be done along with application of micronutrient ▪ Propping or staking should be done ▪ Spraying of insecticides and fungicide ▪	▪ Provide proper drainage ▪ Nutrient management to be done ▪ Propping to be done ▪ Bagging to be done to protect the bunch from unusual rains. ▪ Denavelling to be done to improve the bunch weight (removal of male bud)	▪ Store the fruits/ bunch in well aerated farm shed or house to avoid loses. ▪ Storing at 10 – 12^{o} C with 70 – 80 % RH
Large cardamom	▪ For newly planted crops, staking should be provided. ▪ Provide adequate drainage ▪ Spraying of insecticides and fungicid ▪ Follow proper nutrient management ▪ Earthing up to be done	▪ Proper drainage system should be followed. ▪ Follow proper nutrient management ▪ Earthing up to prevent uprooting.	▪ Harvest at physiological maturity stage or can be delayed ▪ Proper drainage system should be followed	▪ Collect the harvest and dry the produce in fuel kiln overnight at 50°-60°C or in drier for 14-18 hours at 45°-50°C
Ginger	▪ Provide proper drainage channels to avoid stagnation of water ▪ Earthing up to be done at proper soil moisture level	▪ Provision of drainage to remove excess water. ▪ Earthing up should be followed by manuring.	▪ Harvest at physiological maturity stage.	▪ Shifting of the produce to a drier place. ▪ Drying to remove excess moisture of produce

	▪ Nutrient management to be followed ▪ Field bunding to prevent entry of water from surrounding areas. ▪ Spraying of insecticides and fungicide	▪ Field bunding to prevent entry of water from surrounding areas.		(moisture level 10%)
Turmeric	▪ Provide proper drainage channels to avoid stagnation of water ▪ Earthing up to be done at proper soil moisture level ▪ Nutrient management to be followed ▪ Field bunding to prevent entry of water from surrounding areas. ▪ Spraying of insecticides and fungicide	▪ Provision of drainage to remove excess water. ▪ Earthing up should be followed by manuring. ▪ Field bunding to prevent entry of water from surrounding areas.	▪ Dry weather before harvesting is necessary. So harvesting can be delayed.	▪ Shifting of the produce to a drier place. ▪ Drying to remove excess moisture of produce.
Vegetables (cucurbits)	▪ Provision of drainage to remove excess water. ▪ Earthing up to be followed ▪ Ensure proper staking of crop wherever required ▪ Field bunding to prevent entry of water from surrounding areas.	▪ Spray maleic Hydrazide @ 50ppm aqueous solution at 2 and 4 leaf stages to stimulate vine growth, giving more female flowers. ▪ Provision of drainage to remove excess water. ▪ Wind break around the orchard to protect crop from wind damage ▪ Earthing up and propping to prevent uprooting. ▪ Field bunding to prevent entry of water from surrounding areas.	▪ Fruits to be harvested immediately without causing injury to fruits ▪ Remove all damaged fruit ▪ Take up appropriate plant protection measures	▪ The fruits can be stored for 2-3 weeks at 15-20°C and RH 75% in a well-ventilated chamber.
Outbreak of pests and diseases due to unseasonal rains : NA				
Paddy (Blast)	▪ Use trap crops for prediction of disease. ▪ Removal and destruction of weed hosts in the field bunds and channels	▪ Spraying of Mancozeb @ 2g/lt or spraying of Carbendazim @ 1 g/lt.	▪ Drain out excess water to avoid flooded conditions.	▪ Sun drying to prevent spoliage and sprouting of the harvested grains.
Paddy (Brown Spot)	-Do-	-Do-	-Do-	-Do-
Paddy (Bacterial leaf blight)	▪ Destruction of weed hosts.	▪ Spraying of streptomycin and tetracycline.	▪ Drain out excess water to avoid flooded conditions.	-Do-
Paddy (Yellow Stem	▪ Collection and destruction of egg masses.	▪ Spraying of Chloropyriphos 20	▪ Harvesting at the right stage.	-Do-

Borer)		EC @ 0.02 %.		
Paddy (Gall Midge)	▪ Removal of alternate host plants including weeds and grasses and destruction of infected plants.	▪ Providing proper drainage system.	▪ Harvesting at the right stage.	-Do-
Maize (Stalk rot)	▪ Removal of accumulated water around the stalks by proper drainage.	▪ Rouging of affected plant and its destruction.	▪ Spraying of streptocycline @ 0.020 %.	▪ Sun drying of the harvested cob to prevent spoilage.
Horticulture				
Orange (Citrus Leaf miner)	▪ Spraying of Fenvalerate and Cypermethrin for controlling leaf minor.	▪ Spraying of Fenvalerate and Cypermethrin for controlling leaf minor.	▪ Harvesting at the right stage and proper handling of the produce.	▪ Store in cool place in crates, boxes etc
Orange (Citrus butterfly)	▪ Hand picking of caterpillars and pupae in the nursery.	▪ Spraying of Neem formulation to control citrus butterly.	Do	▪ Store in cool place in crates, boxes etc
Orange (Powdery mildew in citrus)	▪ Spraying of wettablesulpher and carbendizim to control powdery mildews.	▪ Spraying of wettablesulpher, bavistin (0.1 %) and calixin (0.1 %).	▪ Spraying of wettablesulpher and carbendizim to control powdery mildews.	▪ Store in cool place in crates, boxes etc.
Tomato	▪ Removal of accumulated water by proper drainage. ▪ Destroy the heavily infested/infected plant parts.	▪ Spraying of Sulfex @ 2 g/lt of water.	▪ Harvesting at the right stage and proper handling.	▪ Store in cool/dry place packed in crates, boxes etc.
Brinjal	▪ Removal of accumulated water by proper drainage. ▪ Destroy the heavily infested/infected plant parts.	▪ Spraying of Sulfex @ 2 g/lt of water. ▪ Soil dranching with captan/Tiram @ 2/lt of water	▪ Harvesting at the right stage and proper handling of the produce.	▪ Store in cool/dry place packed in crates, boxes etc.
Cabbage	▪ Removal of accumulated water by proper drainage. ▪ Destroy the badly infested/infected plant parts.	▪ Spraying of Sulfex @ 2 g/lt of water. ▪ Soil dranching with captan/Tiram. @ 2/lt of water ▪ Streptocycline spray	▪ Harvesting at the right stage and proper handling of the produce.	▪ Store in cool/dry place
Cucurbits	▪ Manual collection & destruction of eggs/grubs/larvae.	▪ Spraying of carbaryl against leaf eating caterpillars, Metalaxyl against Powdery mildew, Carbendazim against leaf spot & blight	▪ Spraying of Malathion against fruit fly.	▪ Store in cool/dry place
Large Cardamom	▪ Proper drainage. ▪ Uprooting and destruction of Chirke and	▪ Removal of affected plant from the field.	▪ Harvesting at the right stage and proper handling of the produce.	▪ Quick drying of harvested capsule.

	Foorkey infected cardamom plants.			
Ginger (Soft rot)	▪ Removal of accumulated water in the field by proper drainage.	▪ Removal and destruction of affected plants.	▪ Spraying with Blitox – 50 (3 g/lt) or Dithane – Z-78 (2.5 g / lt).	▪ Store in cool/dry place

2.3 Floods

Condition	**Suggested contingency measure**			
Transient water logging/ partial inundation	**Seedling / nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Rice	▪ Drainage of the Nursery bed. ▪ Re -sowing if not possible	▪ Drainage of excess water. ▪ Gap filling In partially damaged field by redistributing the tillers. ▪ 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 and use of recharged soil profile for growing pulses	▪ Drainage of excess water. If flood comes during reproductive stage, emphasis should be given on forthcoming rabi crops. ▪ Utilization of residual soil moisture and use of recharged soil profile for growing pulses
Horticulture/Plantation crops				
Banana	▪ Provide proper drainage ▪ Nutrient management to be done ▪ Propping or staking should be done ▪ Spraying of insecticides and fungicide	▪ Provide proper drainage ▪ Nutrient management to be done ▪ Propping or staking should be done ▪ Spraying of insecticides and fungicide	▪ Provide proper drainage ▪ Nutrient management to be done ▪ Propping to be done	▪ Store the fruits/ bunch in well aerated farm shed or house to avoid loses. ▪ Storing at 10 – 12^{o} C with 70 – 80 % RH
Ginger	▪ Provide proper drainage channels to avoid stagnation of water ▪ Earthing up to be done at proper soil moisture level ▪ Nutrient management to be followed ▪ Field bunding to prevent entry of water from surrounding areas.	▪ Provision of drainage to remove excess water. ▪ Earthing up should be followed by manuring. ▪ Field bunding to prevent entry of water from surrounding areas. ▪ Application of fungicide and insecticides	▪ Harvest at physiological maturity stage or can delay harvesting	▪ Shifting of the produce to drier place.

	▪ Spraying of insecticides and fungicide			
Turmeric	▪ Provide proper drainage channels to avoid stagnation of water ▪ Earthing up to be done at proper soil moisture level ▪ Nutrient management to be followed ▪ Field bunding to prevent entry of water from surrounding areas. ▪ Spraying of insecticides and fungicide	▪ Provision of drainage to remove excess water. ▪ Earthing up should be followed by manuring. ▪ Field bunding to prevent entry of water from surrounding areas. ▪ Application of fungicide and insecticides	▪ Harvest at physiological maturity stage or can delay harvesting	▪ Shifting of the produce to drier place
Vegetables (cucurbits)	▪ Proper drainage of the nursery bed, If not possible go for re–sowing. ▪ Raised bed method should be followed in the nursery. ▪ Earthing up to be followed ▪ Ensure proper staking of crop wherever required ▪ Field bunding to prevent entry of water from surrounding areas.	▪ Proper drainage of the nursery bed, If not possible go for re–sowing. ▪ Earthing up to be followed ▪ Ensure proper staking of crop wherever required ▪ Field bunding to prevent entry of water from surrounding areas. ▪ Follow appropriate nutrient management practices	▪ Drainage of excess water. If flood comes during reproductive stage, emphasis should be given on forthcoming rabi crops ▪ 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.	Shifting of the produce to drier place and store fruits in a well-ventilated chamber
Continuous submergence for more than 2 days[2]				
Crop1	NA	NA	NA	NA
Horticulture / Plantation crops				
Crop1 (specify)	NA	NA	NA	NA
Sea water intrusion[3]				
Crop1	NA	NA	NA	NA

2.4 Extreme events: Heat wave / Cold wave/Frost/ Hailstorm /Cyclone: Not Applicable

Extreme event type	**Suggested contingency measure[r]**			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Horticulture				
Heat Wave[p]				
Orange	NA	NA	NA	NA
Apple	NA	NA	NA	NA
Pineapple	NA	NA	NA	NA
Kiwifruit	NA	NA	NA	NA
Banana	NA	NA	NA	NA
Large Cardamom	NA	NA	NA	NA
Ginger	NA	NA	NA	NA
Turmeric	NA	NA	NA	NA
Horticulture				
Cold wave[q]				
Orange	NA	NA	NA	NA
Apple	NA	NA	NA	NA
Pineapple	NA	NA	NA	NA
Kiwifruit	NA	NA	NA	NA
Banana	▪ Protect the plant by construction of wind brakes made of shade net. ▪ Maintain the seedling in polyhouse	▪ Protect the plant by construction of wind brakes made of shade net	▪ Protect the plant by construction of wind brakes made of shade net ▪ Protect the bunch by bagging with polyethylene bag or jute bag	NA
Large Cardamom	NA	NA	NA	NA
Ginger	NA	NA	NA	NA
Turmeric	NA	NA	NA	NA
Horticulture				
Frost				
Orange	NA	NA	NA	NA
Apple	NA	NA	NA	NA

Pineapple	NA	NA	NA	NA
Kiwifruit	NA	NA	NA	NA
Banana	▪ Protect the plant by construction of wind brakes made of shade net. ▪ Maintain the seedling in polyhouse	▪ Protect the plant by construction of wind brakes made of shade net	▪ Protect the plant by construction of wind brakes made of shade net ▪ Protect the bunch by bagging with polyethylene bag or jute bag	NA
Large Cardamom	NA	NA	NA	NA
Ginger	NA	NA	NA	NA
Turmeric	NA	NA	NA	NA
Horticulture				
Hailstorm				
Orange	▪ Nursery raising under polyhouse.	▪ Pruning of damage branches and application of Bordeaux paste should be done to prevent secondary infection ▪ Nutrient management to be followed along with foliar spray of micronutrient	▪ Pruning of damage branches and application of Bordeaux paste should be done to prevent secondary infection ▪ Nutrient management to be followed along with foliar spray of micronutrient	▪ Harvest ripe fruit
Apple	▪ Nursery raising under polyhouse.	▪ Pruning of damage branches and application of Bordeaux paste should be done to prevent secondary infection ▪ Nutrient management to be followed along with foliar spray of micronutrient	▪ Pruning of damage branches and application of Bordeaux paste should be done to prevent secondary infection ▪ Nutrient management to be followed along with foliar spray of micronutrient	▪ Harvest ripe fruit
Pineapple	NA	▪ Shade regulation may be followed	NA	▪ Harvest and value addition
Kiwifruit	▪ Nursery raising under polyhouse	▪ Nutrient management to be followed along with foliar spray of micronutrient	▪ Nutrient management to be followed along with foliar spray of micronutrient	▪ Harvest ripe fruits
Banana	▪ Nursery raising under polyhouse	▪ Follow nutrient management	▪ Bagging the fruit bunch with polyethylene bag or	▪ Harvest the mature bunch

			jute bag	
Large Cardamom	▪ Nursery raising under polyhouse.	▪ Shade regulation may be followed by planting trees providing 50-60% shade. Ultis cum large cardamom plantation is highly recommended	NA	NA
Ginger	▪ Nursery raising under polyhouse.	▪ Shade regulation may be followed	NA	NA
Turmeric	▪	▪		
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.
Horticulture				
Cyclone	NA	NA	NA	NA
Orange	NA	NA	NA	NA
Apple	NA	NA	NA	NA
Pineapple	NA	NA	NA	NA
Kiwifruit	NA	NA	NA	NA
Banana	NA	NA	NA	NA
Large Cardamom	NA	NA	NA	NA
Ginger	NA	NA	NA	NA
Turmeric	NA	NA	NA	NA
Sand deposition or heavy siltation				
Specify crop /horticulture/plantation	NA	NA	NA	NA

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	▪ Advance early warning system through Agromet advisories. ▪ 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 ▪ Improvement of the poor quality roughages (urea treatment, soaking, poultry litter(> 37%). ▪ 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 fodder plot and cultivation of leguminous fodders to meet the demand of green fodders
Drinking water	▪ Construction of water harvesting structures. ▪ Harvesting rain water & water from natural source ▪ Developing watershed areas.	▪ Use of stored water from water harvesting structure. ▪ Fetching water from watershed areas and natural stream/river. ▪ Avail subsidy water supply through tankers from sate or central Govt.	▪ Submitting a memorandum to sate or central Govt. regarding amount of water shortfall during drought and action to be initiate accordingly. ▪ Construction of permanent water harvesting structure with a planning to fulfill the water requirement during drought.
Health and disease management	▪ Ensure livestock insurance ▪ Deworming to reduce worm load ▪ Stocking of veterinary medicines, vitamin and mineral supplements. ▪ Training of paravets and identifying key man in each village to combat the situation if arise. ▪ Regular radio/TV telecast to follow the instruction of Do & Don'ts from experts. ▪ Providing available communication and transportation facilities in every dispensary / clinic for consultations. ▪ Proper ventilation system of Housing	▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ Supplementary feeding of vitamin and mineral to improve general body health.	▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ selective culling of disease animal ▪ Submitting a memorandum to sate or central Govt. regarding the loss of animal due to Drought and remedies to be taken accordingly for future. ▪ Mini vaccine unit could be establish for covering a perimeter 30-50 km.

	to reduce heat stress.		
Floods			
Feed and fodder availability	▪ Advance early warning system through Agromet advisories. ▪ Awareness on fodder cultivation & identification of locally available, natural fodder of the 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. ▪ Installation of feed block machines and creating feed/fodder block banks to be used in emergency.	▪ Avoid feeding of damp feeds and fodders ▪ Storage of feeds and fodder in high raised platform. ▪ Use of unconventional feed/fodders resources (water hyacinth) ▪ Shifting of livestock to high raised areas. ▪ Use of feed additives to improve digestibility. ▪ Provision of UMB etc. ▪ Use of stored Hay and Silage	▪ Submitting a reports, damage caused by flood to feed and standing 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. ▪ Avail the benefits of schemes under flood, from state or central for feeds and fodder.
Drinking water	▪ Storage of safe drinking water in community tanks / water harvesting structures which is not prone to seepage of flood water. ▪ Installation of large sized sand filters with charcoal. ▪ Tying up with PHED Deptt. of neighboring district to supply water at needy time. ▪ Creating awareness amongst public how to conserve water and judiciously use in flood situation.	▪ Chlorination of the drinking water and use of sand filter ▪ Incorporation of aquatic plants in feeds as a supplementary source of water ▪ If possible supply of fresh drinking water from nearby district.	▪ Cleaning of water storage tanks, canals and drainage system. ▪ Cleaning and disinfection of water source with suitable water purifying agent, available in the area as per the recommended dose. ▪ Relief for damaged tanks and community pipe line for reconstruction. ▪ Avoid shallow source of water
Health and disease management	▪ Ensure livestock insurance ▪ Deworming to reduce worm load ▪ Vaccination of FMD, BQ and HS. ▪ Stocking of veterinary medicines, vitamin and mineral supplements. ▪ Training of paravets and identifying key man in each village to combat the situation if arise. ▪ Regular radio/TV telecast to follow the instruction of Do & Don'ts from experts.	▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ Supplementary feeding of vitamin and mineral to improve general body health.	▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ Immediate attention to the ailing animals. ▪ Sanitization of the shed and surrounding areas. ▪ selective culling of animal ▪ Submitting a memorandum to state or central Govt. regarding the loss of animal due to flood and remedies to be taken accordingly for future.

	▪ Providing available communication and transportation facilities in every dispensary / clinic for consultations. ▪ Construction of shelters in high raised areas.		
Cyclone	NA	NA	NA
Feed and fodder availability	▪ Advance early warning system through Agromet advisories. ▪ Proper storage of feeds and fodder in well constructed house ▪ Planting of trees as a wind break in farm 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.	▪ Avoid feeding grazing in open field ▪ Animal should be confined in well construct house. ▪ Use of feed additives to improve digestibility. ▪ Provision of UMB etc. ▪ Use of stored Hay and Silage	▪ Submitting a reports, damage caused by cyclone of standing fodder ▪ Avail the benefits of schemes under flood, from state or central for feeds and fodder.
Drinking water	▪ Advance early warning system through Agromet advisories for preparedness to combat the situation. ▪ Storage of safe drinking water in community tanks / water harvesting structures ▪ Creating awareness amongst public how to conserve water and judiciously use in flood situation. ▪ Tying up with PHED Deptt. of neighboring district to supply water at needy time.	▪ Chlorination of the drinking water and use of sand filter ▪ Provide fresh potable water	▪ Cleaning of water storage tanks, canals and drainage system. ▪ Cleaning and disinfection of water source with suitable water purifying agent, available in the area as per the recommended dose. ▪ Relief for damaged tanks and community pipe line for reconstruction. ▪ Avoid shallow source of water
Health and disease management	▪ Ensure livestock insurance ▪ Deworming to reduce worm load ▪ Stocking of veterinary medicines, vitamin and mineral supplements. ▪ Training of paravets and identifying key man in each village to combat the situation if arise. ▪ Regular radio/TV telecast to follow the instruction of Do & Don'ts from	▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ Supplementary feeding of vitamin and mineral to improve general body health. ▪ selective culling of injured animal	▪ Immediate attention to the ailing animals. ▪ selective culling of injured animal ▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ Sanitization of the shed and surrounding areas. ▪ Submitting a memorandum to state or central Govt. regarding the loss of animal due to flood and remedies to be taken accordingly for future.

	experts. ▪ Providing available communication and transportation facilities in every dispensary / clinic for consultations.		
Heat wave			
Cattle			
Shelter/environment management	▪ Advance early warning system through Agromet advisories for preparedness to combat the situation. ▪ Good shelter with well ventilation and bedding materials ▪ Construction of shelters in wind shed areas. ▪ Increase the concentrate feed amount and reduce the roughage diet. ▪ Adlib provision of potable water	▪ Confine the animal in protected shelter ▪ prevent them direct expose to heat wave ▪ reduce upto 20% of the ration ▪ provide nutretical ▪ Adlib provision of potable water ▪ Avoid movement of animal ▪ Sprinkling of water during the extreme heat to the animal ▪ Breeding should be done in morning hours.	▪ Adlib provision of potable water ▪ Analysis of the present experience and remodeling of housing structure. ▪ provide nutretical
Health and disease management	▪ Advance early warning system through Agromet advisories for preparedness to combat the situation. ▪ Ensure livestock insurance ▪ Deworming and vaccination ▪ Stocking of veterinary medicines, vitamin and mineral supplements. ▪ Training of paravets and identifying key man in each village to combat the situation if arise. ▪ Regular radio/TV telecast to follow the instruction of Do & Don'ts from experts. ▪ Providing available communication and transportation facilities in every dispensary / clinic for consultations.	▪ Life saving treatment accordingly. ▪ Supplementary feeding of vitamin and mineral to improve general body health. ▪ Oral supplementation of electrolyte and medicines	▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ Immediate attention to the ailing animals. ▪ Sanitization of the shed and surrounding areas. ▪ Selective culling of animal ▪ Submitting a memorandum to state or central Govt. regarding the loss of animal due to cold wave and remedies to be taken accordingly for future.

Mithun			
Shelter/environment management	▪ Advance early warning system through Agromet advisories for preparedness to combat the situation. ▪ Good shelter with well ventilation and bedding materials ▪ Construction of shelters in wind shed areas. ▪ Increase the concentrate feed amount and reduce the roughage diet. ▪ Adlib provision of potable water	▪ Confine the animal in protected shelter ▪ prevent them direct expose to heat wave ▪ reduce upto 20% of the ration ▪ provide nutretical ▪ Adlib provision of potable water ▪ Avoid movement of animal ▪ Sprinkling of water during the extreme heat to the animal ▪ Breeding should be done in morning hours.	▪ Adlib provision of potable water ▪ Analysis of the present experience and remodeling of housing structure. ▪ provide nutretical
Health and disease management	▪ Ensure livestock insurance ▪ Deworming to reduce worm load ▪ Stocking of veterinary medicines, vitamin and mineral supplements. ▪ Training of paravets and identifying key man in each village to combat the situation if arise. ▪ Regular radio/TV telecast to follow the instruction of Do & Don'ts from experts. ▪ Providing available communication and transportation facilities in every dispensary / clinic for consultations.	▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ Supplementary feeding of vitamin and mineral to improve general body health. ▪ selective culling of injured animal	▪ Immediate attention to the ailing animals. ▪ selective culling of injured animal ▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ Sanitization of the shed and surrounding areas. ▪ Submitting a memorandum to state or central Govt. regarding the loss of animal due to flood and remedies to be taken accordingly for future.
Goat/Sheep			
Shelter/environment management	▪ Advance early warning system through Agromet advisories for preparedness to combat the situation. ▪ Good shelter with well ventilation and bedding materials ▪ Construction of shelters in wind shed areas. ▪ Increase the concentrate feed amount and reduce the roughage diet. ▪ Adlib provision of potable water	▪ Confine the animal in protected shelter ▪ prevent them direct expose to heat wave ▪ reduce upto 20% of the ration ▪ provide nutretical ▪ Adlib provision of potable water ▪ Avoid movement of animal ▪ Sprinkling of water during the extreme heat to the animal ▪ Breeding should be done in morning hours.	▪ Adlib provision of potable water ▪ Analysis of the present experience and remodeling of housing structure. ▪ provide nutretical

Health and disease management	▪ Ensure livestock insurance ▪ Deworming to reduce worm load ▪ Stocking of veterinary medicines, vitamin and mineral supplements. ▪ Training of paravets and identifying key man in each village to combat the situation if arise. ▪ Regular radio/TV telecast to follow the instruction of Do & Don'ts from experts. ▪ Providing available communication and transportation facilities in every dispensary / clinic for consultations.	▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ Supplementary feeding of vitamin and mineral to improve general body health. ▪ selective culling of injured animal	▪ Immediate attention to the ailing animals. ▪ selective culling of injured animal ▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ Sanitization of the shed and surrounding areas. ▪ Submitting a memorandum to state or central Govt. regarding the loss of animal due to flood and remedies to be taken accordingly for future.
Pig			
Shelter/environment management	▪ Advance early warning system through Agromet advisories for preparedness to combat the situation. ▪ Good shelter with well ventilation and bedding materials ▪ Construction of shelters in wind shed areas. ▪ Increase the concentrate feed amount and reduce the roughage diet. ▪ Adlib provision of potable water	▪ Confine the animal in protected shelter ▪ prevent them direct expose to heat wave ▪ reduce upto 20% of the ration ▪ provide nutretical ▪ Adlib provision of potable water ▪ Avoid movement of animal ▪ Sprinkling of water during the extreme heat to the animal ▪ Breeding should be done in morning hours.	▪ Adlib provision of potable water ▪ Analysis of the present experience and remodeling of housing structure. ▪ provide nutretical
Health and disease management	▪ Ensure livestock insurance ▪ Deworming to reduce worm load ▪ Stocking of veterinary medicines, vitamin and mineral supplements. ▪ Training of paravets and identifying key man in each village to combat the situation if arise. ▪ Regular radio/TV telecast to follow the instruction of Do & Don'ts from experts. ▪ Providing available communication and transportation facilities in every	▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ Supplementary feeding of vitamin and mineral to improve general body health. ▪ selective culling of injured animal	▪ Immediate attention to the ailing animals. ▪ selective culling of injured animal ▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ Sanitization of the shed and surrounding areas. ▪ Submitting a memorandum to state or central Govt. regarding the loss of animal due to flood and remedies to be taken accordingly for future.

	dispensary / clinic for consultations.		
Cold wave **Cattle**			
Shelter/environment management	▪ Good shelter with well ventilation and bedding materials ▪ Construction of shelters in wind shed areas. ▪ Feed balance ration to withstand the cold wave prior to occurrence.	▪ Confine the animal in protected shelter ▪ prevent them direct expose to cold wave ▪ provide extra bedding materials ▪ feed extra ration along with mineral and vitamin supplements to withstand cold wave ▪	▪ Analysis of the present experience and remodeling of housing structure.
Health and disease management	▪ Ensure livestock insurance ▪ Deworming to reduce worm load ▪ Stocking of veterinary medicines, vitamin and mineral supplements. ▪ Training of paravets and identifying key man in each village to combat the situation if arise. ▪ Regular radio/TV telecast to follow the instruction of Do & Don'ts from experts. ▪ Providing available communication and transportation facilities in every dispensary / clinic for consultations.	▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ Supplementary feeding of vitamin and mineral to improve general body health.	▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ Immediate attention to the ailing animals. ▪ Sanitization of the shed and surrounding areas. ▪ selective culling of animal ▪ Submitting a memorandum to state or central Govt. regarding the loss of animal due to cold wave and remedies to be taken accordingly for future.
Mithun			
Shelter/environment management	▪ Good shelter with well ventilation and bedding materials ▪ Construction of shelters in wind shed areas. ▪ Feed balance ration to withstand the cold wave prior to occurrence.	▪ Confine the animal in protected shelter ▪ prevent them direct expose to cold wave ▪ provide extra bedding materials ▪ feed extra ration along with mineral and vitamin supplements to withstand cold wave ▪	▪ Analysis of the present experience and remodeling of housing structure.
Health and disease management	▪ Ensure livestock insurance ▪ Deworming to reduce worm load ▪ Stocking of veterinary medicines, vitamin and mineral supplements.	▪ 1. Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ 2. Supplementary feeding of vitamin and	▪ 1. Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ 2. Immediate attention to the ailing animals. ▪ 3. Sanitization of the shed and surrounding

	▪ Training of paravets and identifying key man in each village to combat the situation if arise. ▪ Regular radio/TV telecast to follow the instruction of Do & Don'ts from experts. ▪ Providing available communication and transportation facilities in every dispensary / clinic for consultations.	mineral to improve general body health.	areas. ▪ 4.selective culling of animal ▪ 5. Submitting a memorandum to state or central Govt. regarding the loss of animal due to cold wave and remedies to be taken accordingly for future.
Pig			
Shelter/environment management	▪ Good shelter with well ventilation and bedding materials ▪ Construction of shelters in wind shed areas. ▪ Feed balance ration to withstand the cold wave prior to occurrence.	▪ Confine the animal in protected shelter ▪ prevent them direct expose to cold wave ▪ provide extra bedding materials ▪ feed extra ration along with mineral and vitamin supplements to withstand cold wave ▪	▪ Analysis of the present experience and remodeling of housing structure.
Health and disease management	▪ Ensure livestock insurance ▪ Deworming to reduce worm load ▪ Stocking of veterinary medicines, vitamin and mineral supplements. ▪ Training of paravets and identifying key man in each village to combat the situation if arise. ▪ Regular radio/TV telecast to follow the instruction of Do & Don'ts from experts. ▪ Providing available communication and transportation facilities in every dispensary / clinic for consultations.	▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ Supplementary feeding of vitamin and mineral to improve general body health.	▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ Immediate attention to the ailing animals. ▪ Sanitization of the shed and surrounding areas. ▪ Selective culling of animal ▪ Submitting a memorandum to state or central Govt. regarding the loss of animal due to cold wave and remedies to be taken accordingly for future.
Goat/Sheep			
Shelter/environment management	▪ Good shelter with well ventilation and bedding materials ▪ Construction of shelters in wind shed areas. ▪ Feed balance ration to withstand the cold wave prior to occurrence.	▪ Confine the animal in protected shelter ▪ prevent them direct expose to cold wave ▪ provide extra bedding materials ▪ feed extra ration along with mineral and vitamin supplements to withstand cold wave ▪	▪ Analysis of the present experience and remodeling of housing structure.
Health and disease	▪ Ensure livestock insurance	▪ Mass awareness cum Health camp and	▪ Mass awareness cum Health camp and

management	▪ Deworming to reduce worm load ▪ Stocking of veterinary medicines, vitamin and mineral supplements. ▪ Training of paravets and identifying key man in each village to combat the situation if arise. ▪ Regular radio/TV telecast to follow the instruction of Do & Don'ts from experts. ▪ Providing available communication and transportation facilities in every dispensary / clinic for consultations.	symptomatically prompt treatment accordingly. ▪ Supplementary feeding of vitamin and mineral to improve general body health.	symptomatically prompt treatment accordingly. ▪ Immediate attention to the ailing animals. ▪ Sanitization of the shed and surrounding areas. ▪ Selective culling of animal ▪ Submitting a memorandum to state or central Govt. regarding the loss of animal due to cold wave and remedies to be taken accordingly for future.
Snowfall	▪ Ensure livestock insurance ▪ Deworming to reduce worm load ▪ Stocking of veterinary medicines, vitamin and mineral supplements. ▪ Training of paravets and identifying key man in each village to combat the situation if arise. ▪ Regular radio/TV telecast to follow the instruction of Do & Don'ts from experts. ▪ Providing available communication and transportation facilities in every dispensary / clinic for consultations.	▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ Supplementary feeding of vitamin and mineral to improve general body health.	▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ Immediate attention to the ailing animals. ▪ Sanitization of the shed and surrounding areas. ▪ selective culling of animal ▪ Submitting a memorandum to state or central Govt. regarding the loss of animal due to cold wave and remedies to be taken accordingly for future.
Earthquake	NA	NA	NA

Landslides	▪ Ensure livestock insurance ▪ Deworming to reduce worm load ▪ Stocking of veterinary medicines, vitamin and mineral supplements. ▪ Training of paravets and identifying key man in each village to combat the situation if arise. ▪ Regular radio/TV telecast to follow the instruction of Do & Don'ts from experts. ▪ Providing available communication and transportation facilities in every dispensary / clinic for consultations.	▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ Supplementary feeding of vitamin and mineral to improve general body health. ▪ immediate rescue operation ▪ Shifting of livestock to safe areas.	▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ Immediate attention to the ailing animals. ▪ Sanitization of the shed and surrounding areas. ▪ selective culling of animal ▪ Submitting a memorandum to state or central Govt. regarding the loss of animal due to landslides and remedies to be taken accordingly for future.

[s] based on forewarning wherever available

2.5.2 Poultry

	Suggested contingency measures			**Convergence/linkages with ongoing programs, if any**
	Before the event	**During the event**	**After the event**	
Drought				
Shortage of feed ingredients	▪ Awareness on maze, 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 ▪ Regular radio/TV telecast to follow the instruction of Do & Don'ts from experts.	▪ Availing insurance for the crop loss. ▪ Availing subsidiary schemes from line deptt.	Schemes from Line Deptt./RKVY/ATMA
Drinking water	▪ Construction of water harvesting structures. ▪ Harvesting rain water & water from natural source ▪ Developing watershed areas. ▪ Regular radio/TV telecast to follow the instruction of Do & Don'ts from experts.	▪ Provision of potable water ▪ Use of stored water from water harvesting structure. ▪ Fetching water from watershed areas and natural stream/river. ▪ Avail subsidy water supply through tankers from sate or central Govt.	▪ Submitting a memorandum to sate or central Govt. regarding amount of water shortfall during drought and action to be initiate accordingly. ▪ Construction of permanent water harvesting structure with a planning to fulfill the water requirement during drought.	
Health and disease management	▪ Regular deworming and vaccination against viral	▪ Mass awareness cum Health camp and symptomatically	▪ Mass awareness cum Health camp and symptomatically	

	disease. ▪ Stocking of veterinary medicines, vitamin and mineral supplements. ▪ Training of paravets and identifying key man in each village to combat the situation if arise. ▪ Providing available communication and transportation facilities in every dispensary / clinic for consultations. ▪ Proper ventilation system of Housing to reduce heat stress.	prompt treatment accordingly. ▪ Supplementary feeding of vitamin and mineral to reduce heat stress ▪ Regular radio/TV telecast to follow the instruction of Do & Don'ts from experts.	prompt treatment accordingly. ▪ selective culling of bird ▪ Submitting a memorandum to sate or central Govt. regarding the loss of poultry due to Drought and remedies to be taken accordingly for future.	
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 ▪ Regular radio/TV telecast to follow the instruction of Do & Don'ts from experts.	▪ Availing insurance for the crop loss. ▪ Availing subsidiary schemes from line deptt.	
Drinking water	▪ Storage of safe drinking water in community tanks / water harvesting structures which is not prone to seepage of flood water. ▪ Installation of large sized sand filters with charcoal. ▪ Tying up with PHED Deptt. of neighboring district to supply water at needy time. ▪ Creating awareness amongst public how to conserve water and judiciously use in flood situation.	▪ Chlorination of the drinking water and use of sand filter ▪ Supply of fresh drinking water from nearby district. ▪ Regular radio/TV telecast to follow the instruction of Do & Don'ts from experts.	▪ Cleaning of water storage tanks ▪ Relief for damaged tanks and community pipe line for reconstruction.	

Health and disease management	▪ Regular deworming and vaccination against viral disease. ▪ Stocking of veterinary medicines, vitamin and mineral supplements. ▪ Training of paravets and identifying key man in each village to combat the situation if arise. ▪ Providing available communication and transportation facilities in every dispensary / clinic for consultations. ▪ Proper ventilation system of Housing to reduce heat stress.	▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ Supplementary feeding of vitamin and mineral to reduce heat stress ▪ Regular radio/TV telecast to follow the instruction of Do & Don'ts from experts.	▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ selective culling of bird ▪ Submitting a memorandum to sate or central Govt. regarding the loss of poultry due to Drought and remedies to be taken accordingly for future.	
Cyclone				
Shortage of feed ingredients	NA	NA	NA	NA
Drinking water	NA	NA	NA	NA
Health and disease management	NA	NA	NA	NA
Heat wave				
Shelter/environment management	▪ Advance early warning system through Agromet advisories for preparedness to combat the situation. ▪ Good shelter with well ventilation and bedding materials ▪ Construction of shelters in wind shed areas. ▪ Increase the concentrate feed amount and reduce the roughage diet. ▪ Adlib provision of potable	▪ Confine the animal in protected shelter ▪ prevent them direct expose to heat wave ▪ reduce upto 20% of the ration ▪ provide nutretical ▪ Adlib provision of potable water ▪ Avoid movement of animal ▪ Misting of water during the extreme heat to the animal	▪ Adlib provision of potable water ▪ Analysis of the present experience and remodeling of housing structure. ▪ provide nutretical	

	water			
Health and disease management	▪ Ensure livestock insurance ▪ Deworming to reduce worm load ▪ Stocking of veterinary medicines, vitamin and mineral supplements. ▪ Training of paravets and identifying key man in each village to combat the situation if arise. ▪ Regular radio/TV telecast to follow the instruction of Do & Don'ts from experts. ▪ Providing available communication and transportation facilities in every dispensary / clinic for consultations.	▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ Supplementary feeding of vitamin and mineral to improve general body health. ▪ selective culling of injured animal	▪ Immediate attention to the ailing animals. ▪ selective culling of injured animal ▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ Sanitization of the shed and surrounding areas. ▪ Submitting a memorandum to state or central Govt. regarding the loss of animal due to flood and remedies to be taken accordingly for future.	
Cold wave				
Shelter/environment management	▪ Good shelter with well ventilation and bedding materials ▪ Construction of shelters in wind shed areas. ▪ Feed balance ration to withstand the cold wave prior to occurrence.	▪ Confine the bird in protected shelter ▪ prove extra light to keep them warm ▪ prevent them direct expose to cold wave ▪ provide extra bedding materials ▪ feed extra ration along with mineral and vitamin supplements to withstand cold wave ▪ Regular radio/TV telecast to follow the instruction of Do & Don'ts from experts.	Analysis of the present experience and remodeling of housing structure.	
Health and disease management	▪ Ensure livestock insurance ▪ Deworming to reduce worm load and vaccination to protect	▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly.	▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly.	

	viral disease ▪ Stocking of veterinary medicines, vitamin and mineral supplements. ▪ Training of paravets and identifying key man in each village to combat the situation if arise. ▪ Providing available communication and transportation facilities in every dispensary / clinic for consultations.	▪ Supplementary feeding of vitamin and mineral to improve general body health. ▪ Regular radio/TV telecast to follow the instruction of Do & Don'ts from experts.	▪ Immediate attention to the ailing animals. ▪ Sanitization of the shed and surrounding areas. ▪ selective culling of animal ▪ Submitting a memorandum to state or central Govt. regarding the loss of animal due to cold wave and remedies to be taken accordingly for future.	
Snowfall	▪ Ensure livestock insurance ▪ Deworming to reduce worm load and vaccination to protect against viral disease ▪ Stocking of veterinary medicines, vitamin and mineral supplements. ▪ Training of paravets and identifying key man in each village to combat the situation if arise. ▪ Providing available communication and transportation facilities in every dispensary / clinic for consultations.	▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ Supplementary feeding of vitamin and mineral to improve general body health. ▪ Regular radio/TV telecast to follow the instruction of Do & Don'ts from experts	▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ Immediate attention to the ailing animals. ▪ Sanitization of the shed and surrounding areas. ▪ selective culling of animal ▪ Submitting a memorandum to state or central Govt. regarding the loss of animal due to snow fall and remedies to be taken accordingly for future.	NA
Earthquake, Landslides etc	▪ Ensure livestock insurance ▪ Deworming to reduce worm load and vaccination to protect against viral disease ▪ Stocking of veterinary medicines, vitamin and mineral supplements. ▪ Training of paravets and	▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ Supplementary feeding of vitamin and mineral to improve general body health. ▪ immediate rescue operation ▪ Shifting of livestock to safe	▪ Mass awareness cum Health camp and symptomatically prompt treatment accordingly. ▪ Immediate attention to the ailing animals. ▪ Sanitization of the shed and surrounding areas. ▪ selective culling of animal	NA

	identifying key man in each village to combat the situation if arise. ▪ Providing available communication and transportation facilities in every dispensary / clinic for consultations.	areas. ▪ Regular radio/TV telecast to follow the instruction of Do & Don'ts from experts	▪ Submitting a memorandum to state or central Govt. regarding the loss of animal due to landslides and remedies to be taken accordingly for future.	

[a] based on forewarning wherever available