State: Uttar Pradesh

Agriculture Contingency Plan for District: Raebareli

1.0 District Agriculture profile				
1.1	Agro-Climatic/ Ecological Zone			
	Agro-Ecological Sub Region(ICAR)	Central Plain Zone		
	Agro-Climatic Zone (Planning Commission)	Upper Gangetic Plain Region		
	Agro-Climatic Zone (NARP)	UP-4 Central Plain Zone		
	List all the districts falling the NARP Zone* (^ 50% area falling in the zone)	Lakhimpur, Kheri, Sitapur, Hardoi, Farrukhabad, Etawah, Kanpur, Kanpur Dehat, Unnao, Lucknow, Rae Bareilly, Fatehpur and Allahabad.		
	Geographical coordinates of district headquarters	Latitude	Latitude	Latitude (mt)
		26° 14' N	81° 16' E	
	Name and address of the concerned ZRS/ZARS/RARS/RRS/RRTTS	-		
	Mention the KVK located in the district with address	Krishi Vigyan Kendra Dariyapur Raibraily		
	Name and address of the nearest Agromet Field Unit(AMFU,IMD)for agro advisories in the Zone	CSA Kanpur		

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)	825.1	49	3rd week of June	4th week of September
	Post monsoon (Oct-Dec)	43.5	10		
	Winter (Jan-March)	43.8	-	-	-
	Pre monsoon (Apr-May)	15.2	-	-	-
	Annual	927.6	59		

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 in (,000 ha)	323.236	268.071	4.002	39.402	2.805	13.952	11.661	8.956	38.721	19.249

1.4	Major Soils	Area(‘000 ha)	Percent(%) of total
	Deep loamy soil	107.2	40 %
	Deep, silty soils,	160.8	60 %

1.5	Agricultural land use	Area(‘000 hac)	Cropping intensity (%)
	Net sown area	184.5	155.09%
	Area sown more than once	101.6	
	Gross cropped area	286.1	

1.6	Irrigation	Area(‘000 ha)		
	Net irrigation area	161.1		
	Gross irrigated area	243.2		
	Rain fed area	23.4		
	Sources of irrigation(Gross Irr. Area)	Number	Area(’000 ha)	Percentage of total irrigated area
	Canals		110.8	45.5
	Tanks		0.2	0.1
	Open wells		0	
	Bore wells (Tube wells)		132.3	54.4
	Lift irrigation schemes		NA	
	Micro-irrigation		NA	
	Other sources		0	
	Total Irrigated Area		243.2	
	Pump sets	84419		
	No. of Tractors	12411		
	Groundwater availability and use* (Data source: State/ Central Ground water Department/ Board)	No of blocks- Tehsils-	(%)area	Quality of water
	Over exploited			
	Critical			
	Semi-critical			
	Safe			
	Waste water availability and use			
	Ground water quality			
*over-exploited groundwater utilization> 100%; critical: 90-100%; semicritical:70-90%; safe:<70%				

1.7 Area under major field crops & (As per latest figures 2011-12)

1.7	**Major field crops cultivated**	Area('000 ha)							
		Kharif			Rabi			Summer	Total
		Irrigated	Rain fed	Total	Irrigated	Rain fed	Total		
	Rice	85.6	0	85.6	0	0	0	0	85.6
	Wheat	0	0	0	131.5	0.03	131.5	0	131.5
	Juar	0	6.8	6.8	-	-	-	-	6.8
	Redgram	0	5.8	5.8	-	-	-	-	5.8
	Rapeseed Mustard	-	-	-	5.9	0.2	6.1	-	6.
	Potato	-	-	-	4.2	0	4.2	-	4.2

1.7	**Major Fodder crops cultivated**	Area(ha)	Total
	Kharif	3028	3028
	Rabi	2016	2016
	Summer	811	811
	Total	5855	5855

1.8 Production and productivity of major crops (Average of last 5 years)

1.7	Major field crops cultivated	Area('000 ha)								
		Kharif		Rabi		Summer		Total		Crop residue as fodder ('000 tons)
		Production ('000 T)	Productivity (KG/HA)	Production ('000 T)	Productivity (KG/HA)	Production ('000 T)	Productivity (KG/HA)	Production ('000 T)	Productivity (KG/HA)	
	Rice	253.7	2196	-	-	-	-	253.7	2196	NA
	Wheat	-	-	424.4	2564	-	-	424.4	2564	NA
	Juar	7.1	866	-	-	-	-	7.1	866	NA
	Redgram	5.3	758	-	-	-	-	5.3	758	NA
	Rapeseed Mustard	-	-	6.4	920	-	-	6.4	920	NA
	Potato	-	-	73.1	14800	-	-	73.1	14800	NA

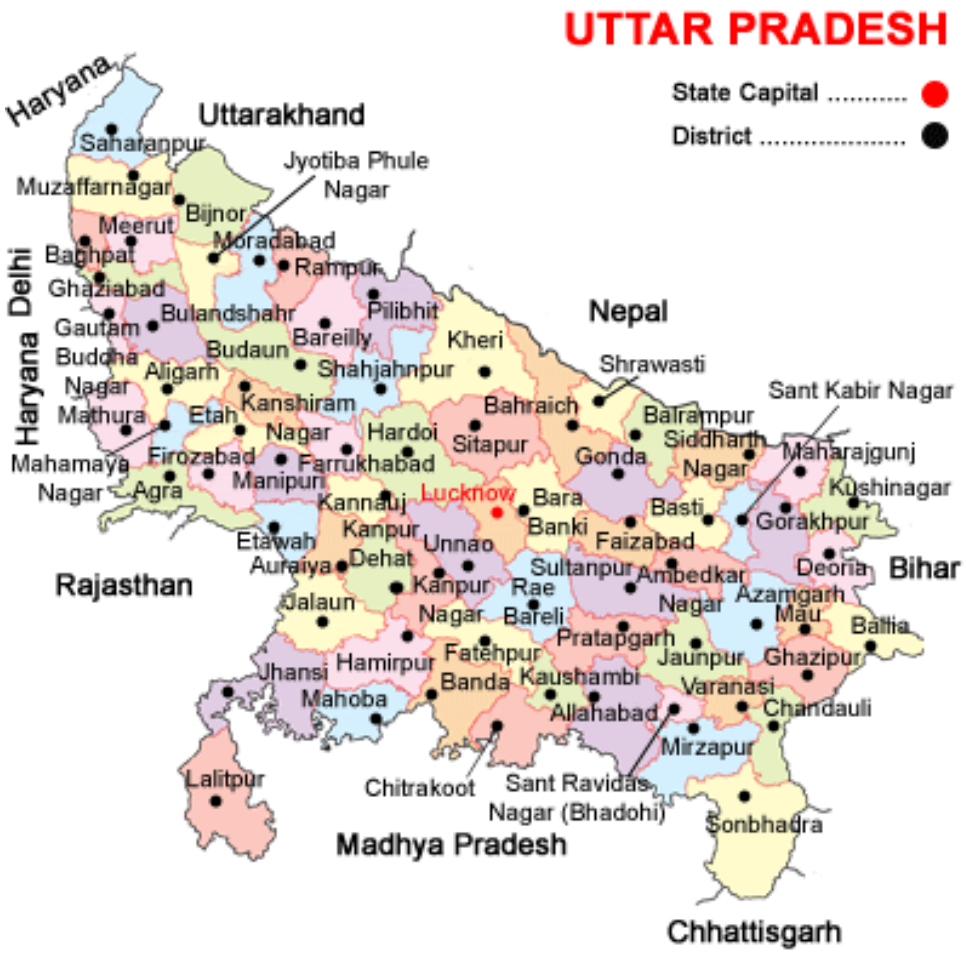
1.9 Live stock

Livestock(year 2007)	Male(000)	Female(000)	Total(000)
Non descriptive Cattle (local low yielding)	244.1	267.9	512.1
Improved cattle	0.018	0.095	0.113
Crossbred Cattle	7.466	17.234	24.700
Non descriptive Buffaloes (local low yielding)	32.238	115.947	148.185
Descript Buffaloes	29.217	149.117	178.334
Goat	125.253	208.215	333.468
Sheep			27.876
Other (Camel,Pig, Yak etc)			73.238
Commerical dairy farms (number)			0.000

1.14	**Include Digital maps of the district for**	Location map of district within State as Annexure I	Enclosed: Yes
		Mean annual rainfall as Annexure 2	Enclosed: Yes
		Soil map as Annexure 3	Enclosed: Yes

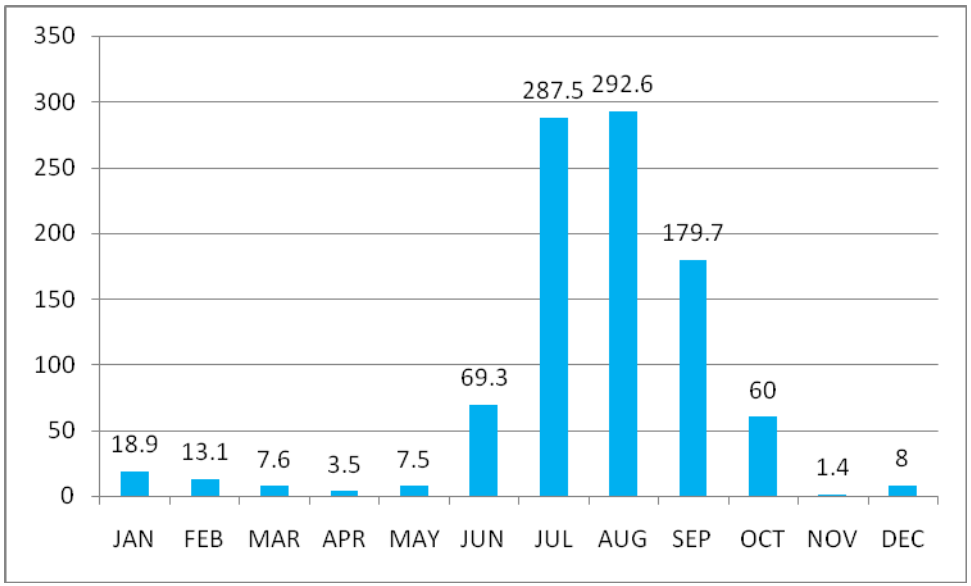
Annexure I

Location map of Raebareli district

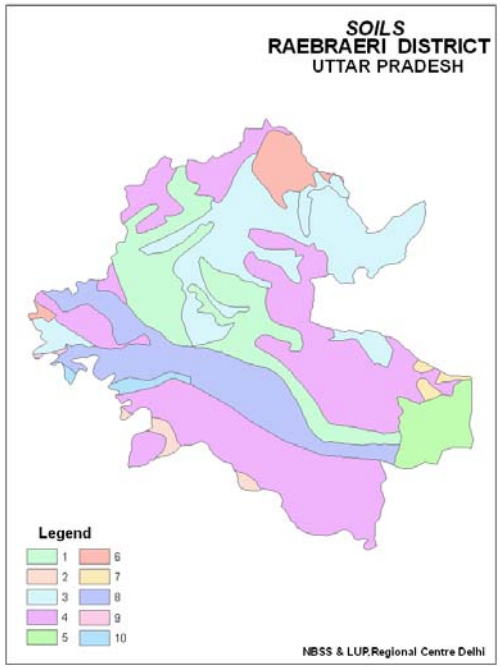


Annexure 2

Average month-wise rainfall (mm) of Raebareli District



Soil Map of Raebareli District



Alluvial plain (0-1% slope)

1. Deep, loamy soils and slightly eroded .
2. Deep, loamy soils and slightly eroded associated with silty soils .
3. Deep, fine soils and slightly eroded associated with loamy soils .
4. Deep, silty soils associated with loamy soils slightly eroded .
5. Deep, silty soils and slightly eroded.
6. Deep, silty soils and slightly eroded associated with fine soils .

Recent Alluvial Plain (1-3% slope)

7. Deep, loamy soils with moderate water logging and slight salinity associated with fine soils, slightly water logging .

Active Flood Plain (1-3% slope)

8. Deep, stratified loamy soils with but moderately flooding .
9. Deep, sandy soils with moderate flooding associated with stratified loamy soils and slight flooding .
10. Deep, stratified loamy soils, with severe flooding associated with loamy soils with moderate flooding .

2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop / Cropping system**	**Change in crop / cropping system including variety**	**Agronomic measures**	**Remarks on Implementation**
Delay by 2 weeks (1 week of July)	Deep loamy soils	Rice	No change Narendra 97, Narendra 118, Narendra 80, NDR 359,	Direct seeded rice,	
		Pigeonpea(UPAS 120)	Long duration varieties like Narendra Arhar 1, Narendra Arhar 2, Azad, Amar,Malvi 13, Malvi 6 Intercropping of pigeonpea+ Black gram (Azad Urd,Uttara,Narendra Urd 1, PU31, PU 19)	Raised bed planting Intercropping of pigeonpea (interrow spacing of 75 cm)- cm) +Black gram with row ratio of 1:2	
Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delay by 4 weeks (3 rd week of July)	Deep loamy soils	Rice	Sesame(Shekhar,Pragathi) Urdbean(Azad Urd,Uttara,Narendra Urd 1, PU31, PU 19)	Line sowing of sesame and Black gram	
		Pigeonpea (UPAS 120)	Long duration varieties like Narendra Arhar 1, Narendra Arhar 2, Azad, Amar,Malvi 13, Malvi 6 Intercropping of pigeonpea+ Black gram (Azad Urd,Uttara,Narendra Urd 1, PU31, PU 19)	Raised bed planting Intercropping of pigeonpea(interrow spacing of 75 cm)- cm) + Black gram with row ratio of 1:2	

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delay by 6 weeks (1 st week of August)	Deep loamy soils	Rice	Sesame(Shekhar,Pragathi) Black gram (Azad Urd,Uttara,Narendra Urd 1, PU31, PU 19)	Line sowing of sesame and Black gram	
		Pigeonpea (UPAS 120)	Long duration varieties like Narendra Arhar 1, Narendra Arhar 2, Azad, Amar,Malvi 13, Malvi 6 Intercropping of pigeonpea+ Black gram (Azad Urd,Uttara,Narendra Urd 1, PU31, PU 19)	Raised bed planting In sole pigeonpea, 20% higher seed rate) Intercropping of pigeonpea(interrow spacing of 75 cm)- cm) + Black gram with row ratio of 1:2	

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delay by 8 weeks (3^{rd} week of August)	Deep loamy soils	Rice		Conserve moisture	
		Pigeonpea(UPAS 120)		Conserve moisture	

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.	Deep loamy soils	Rice	Life saving irrigation if available Weed control	Mulching with locally available material/weeds	
		Pigeonpea(UPAS 120)	Weed control Gap filling/thinning		

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**
At vegetative stage	Deep loamy soils	Rice	Life saving irrigation if available Weed control	Foliar spray with 1% MoP Mulching with locally available material/weeds	
		Pigeon pea(UPAS 120)	Weed control Thinning to maintain optimum population	Mulching with locally available material/weeds	

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**
	Deep loamy soils	Rice	Life saving irrigation if available Harvest at physiological maturity	-	
		Pigeonpea(UPAS 120)	Harvest at physiological maturity	-	

2.1.2 Drought - Irrigated situation

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delayed release of water in canals due to low rainfall	Deep loamy soils	Paddy	Transplanting with 3 to 4 seedlings/hill	Drum seeding SRI method Irrigation at critical stages Reduce spacing plant to plant i.e.20x 15 cm	
		Groundnut	No change	Weed control and interculture before pegging	

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Limited release of water in canals due to low rainfall	Deep loamy soils	Paddy	Transplanting with 3 to 4	Drum seeding SRI method Irrigation at critical stages Reduce spacing plant to plant i.e.20x 15 cm	
		Groundnut	No change	Weed control and interculture before	

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
				pegging	

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Non release of water in canals under delayed onset of monsoon in catchment	Deep loamy soils	Paddy	Transplanting with tube well irrigation 3 to 4 seedlings/hill	Drum seeding SRI method Irrigation at critical stages Reduce spacing plant to plant i.e.20x 15 cm	
		Groundnut	No change	Weed control and interculture before pegging	

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Lack of inflows into tanks due to insufficient /delayed onset of monsoon					
		Not applicable			

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Insufficient groundwater recharge due to low rainfall	Deep loamy soils-tube well irrigated	Paddy	Transplanting with tube well irrigation 3 to 4 seedlings/hill	Drum seeding SRI method Irrigation at critical stages Reduce spacing plant to	

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
				plant i.e.20x 15 cm	
		Groundnut	No change	Weed control and interculture before pegging	

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

Condition	Suggested contingency measure			
Continuous high rainfall in a short span leading to water logging	**Vegetative stage**	**Flowering stage**	**Crop maturity stage**	**Post harvest**
Heavy rainfall with high speed winds in a short span	Not applicable			
Horticulture	Not applicable			
Outbreak of pests and diseases due to unseasonal rains	Not applicable			

2.3 Floods- Not applicable

Condition	Suggested contingency measure			
Transient water logging/ partial inundation[1]	**Seedling / nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Continuous submergence for more than 2 days	Not applicable			
Sea water intrusion	Not applicable			

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

Extreme event type	Suggested contingency measure[r]			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Heat Wave	Not applicable			
Cold wave	Not applicable			
Frost	Not applicable			

Hailstorm	Not applicable
Cyclone	Not applicable

2.5 Contingent strategies for Livestock, Poultry & Fisheries

2.5.1 Livestock

	Suggested contingency measures		
	Before the event	**During the event**	**After the event**
Drought			
Feed and Fodder availability	Top dressing of N in 2-3 split doses @ 20-25 kg N/ha in common property resources (CPRs) or private property resources (PPRs) like waste and degraded lands with the monsoon pattern for higher biomass production Promote cultivation of short duration fodder crops of sorghum/bajra/maize suitable to the district Sowing of fodder crops like *Stylo* and *Cenchrus* on bunds so as to provide fodder and strengthening of bunds Avoid burning of paddy straw and storing as dry fodder for future use Proper drying, bailing and densification of harvested dry fodder for transport to the needy villages Complete feed preparation using red gram stalks may be exploited Preserving maize fodder as silage for future use Establishment of silvi-pastoral system in CPRs with *Stylosanthus hamata* and *Cenchrus ciliaris* as grass with *Leucaena leucocephala* as tree	Harvest and use biomass of dried up crops (Rice, ground nut, urdbean etc) material as fodder. Harvest the tree fodder (Neem, Subabul, Acasia, Pipal etc) and unconventional feeds resources available and use as fodder for livestock (LS). Available feed and fodder should be cut from CPRs and stall fed in order to reduce the energy requirements of the animals In case of mild drought, the available dry fodder may be enriched with urea and molasses and the productive livestock should be supplemented with vitamin & minerals mixture. The available silage may be used as green fodder supplement for high yielders and pregnant animals In case of severe drought, UMMB, hay, concentrates and vitamin & mineral mixture should be transported to the needy areas from the reserves at the district level initially and latter stages from the near by districts. All the hay should be enriched with 2% Urea molasses	Green and concentrates supplementation should be provided to all the animals. Short duration fodder crops of should be sown in unsown and crop failed areas where no further routine crop sowing is not possible Promote cultivation of fodder crops during Rabi season

	component Creation of permanent fodder, feed and fodder seed banks in all drought prone villages	solution or 1% common salt solution and fed to LS Herd should be split and supplementation should be given only to the highly productive and breeding animals Provision of emergency grazing/feeding (Cow-calf camps or other special arrangements to protect high productive & breeding stock) Available kitchen waste should be mixed with dry fodder while feeding Arrangements should be made for mobilization of small ruminants across the districts where no drought exits with subsidized road/rail transportation and temporary shelter provision for the shepherds Unproductive livestock should to be culled during severe drought Create transportation and marketing facilities for the culled and unproductive animals (10000-20000 animals) in case of severe drought Subsidized loans (5-10 crores) should be provided to the livestock keepers for purchase of supplements, concentrate feed ingredients etc., in case of severe drought	
Cyclone & Floods	**NA**		
Heat & Cold wave	In villages which are chronically prone to heat waves the following permanent measures are suggested i) Plantation of trees like Neem, Pipal, Subabul around the shed	Allow the animals preferably early in the morning or late in the evening for grazing during heat waves Allow for grazing between 10AM to 3PM during cold waves	Green and concentrates supplementation should be provided to all the animals. Allow the animals for grazing (normal timings)

	ii) Spreading of husk/straw/coconut leaves on the roof of the shed iii) Water sprinklers / foggers in the animal shed **iv)** Application of white reflector paint on the roof to reduce thermal radiation effect **Cold wave :** Covering all the wire meshed walls / open area with gunny bags/ polyethylene sheets with a mechanism for lifting during the day time and closing during night	Feed green fodder/silage / concentrates during day time and roughages / hay during night time in case of heat waves Add 25-50 ml of edible oil in concentrates per kg and fed to the animal during cold waves Apply / sprinkle lime powder (5-10g per square feet) in the animal shed during cold waves to neutralize ammonia accumulation Put on the foggers / sprinklers during heat weaves and heaters during cold waves in case of high productive animals In severe cases, vitamin 'C' (5-10ml per litre) and electrolytes (Electral powder @ 20g per litre) should be added in water during severe heat waves.	
Health and Disease management	List out the endemic diseases (species wise) in that district and store vaccines for those diseases Timely vaccination (as per enclosed vaccination schedule) against all endemic diseases Surveillance and disease monitoring network to be established at Joint Director (Animal Husbandry) office in the district	Constitution of Rapid Action Veterinary Force Procurement of emergency medicines and medical kits Performing ring vaccination (8 km radius) in case of any outbreak Restricting movement of livestock in case of any epidemic Rescue of sick and injured animals and their treatment	Conducting mass animal health camps Conducting fertility camps Mass deworming camps
Insurance	Insurance policy for loss of production due to drought may be developed Encouraging insurance of livestock	Listing out the details of the dead animals and loss of production in high yielders	Submission for insurance claim and availing insurance benefit Purchase of new productive animals
Drinking water	Identification of water resources Rain water harvesting and create water bodies/watering points (when water is scarce use	Restrict wallowing of animals in water bodies/resources Provision of wholesome clean drinking water at	Bleach (0.1%) drinking water / water sources Provide clean drinking water

	only as drinking water for animals)	least 3 times in a day	

2.5.2 Poultry

	Suggested contingency measures		
	Before the event	**During the event**	**After the event**
Drought			
Shortage of feed ingredients	Storing of house hold grain like maize, broken rice, bajra etc, in to use as feed in case of severe drought	Supplementation only for productive birds with house hold grain Supplementation of shell grit (calcium) for laying birds Culling of weak birds	Supplementation to all survived birds
Drinking water	Rain water harvesting	Sanitation of drinking water	Give sufficient water as per the bird's requirement
Health and disease management	Culling of sick birds. Deworming and vaccination against RD and fowl pox	Mixing of Vit. A,D,E, K and B-complex including vit C in drinking water (5ml in one litre water)	Hygienic and sanitation of poultry house Disposal of dead birds by burning / burying with lime powder in pit
Floods	NA		
Cyclone	**NA**		
Heat wave and cold wave			
Heat wave			
Shelter/environmen	Provision of proper shelter with good	In severe cases, foggers/water sprinklers/wetting	Routine practices are followed

t management	ventilation	of hanged gunny bags should be arranged Don't allow for scavenging during mid day	
Health and disease management	Deworming and vaccination against RD and fowl pox	Supplementation of house hold grain Provide cool and clean drinking water with electrolytes and vit. C (5-10 ml per litre) In hot summer, add anti-stress probiotics in drinking water or feed (Reestobal etc., 10-20ml per litre)	Routine practices are followed
Cold wave			
Shelter/environment management	Provision of proper shelter Arrangement for brooding Assure supply of continuous electricity	Close all openings with polythene sheets In severe cases, arrange heaters Don't allow for scavenging during early morning and late evening	Routine practices are followed
Health and disease management	Arrangement for protection from chilled air	Supplementation of grains Antibiotics (Ampicilline/ Ampiclox etc., 10g in one litre) in drinking water to protect birds from pneumonia	Routine practices are followed