

State: Uttar Pradesh
Agriculture Contingency Plan for District: Hathras

1.0 District Agriculture profile				
1.1	Agro-Climatic/ Ecological Zone			
	Agro-Ecological Sub Region(ICAR)	Western plain zone		
	Agro-Climatic Zone (Planning Commission)	Upper Gangetic Plain Region		
	Agro-Climatic Zone (NARP)	UP-3 South-western Semi-arid Zone		
	List all the districts falling the NARP Zone* (^ 50% area falling in the zone)	Firozabad, Alighrah, Hathras, Mathura, Mainpuri, Etah		
	Geographical coordinates of district headquarters	Latitude	Latitude	Latitude
		27.36N	78.06E	603
	Name and address of the concerned ZRS/ZARS/RARS/RRS/RRTTS	-		
	Mention the KVK located in the district with address	Krishi Vigyan Kendra At Jau-Inyatpur, Sikandara-Rau Tehsil, Distt. Mahamaya Nagar,		
Name and address of the nearest Agromet Field Unit(AMFU,IMD)for agro advisories in the Zone	SVBP University of Agriculture & Technology Meerut			

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)	579.5	49	2 nd week of June	3 rd week of September
	NE monsoon (Oct-Dec)	25.3	10	3 rd week of December	2 nd week of January
	Winter (Jan-March)	42.3	10	-	-
	Summer (Apr-May)	15.7	2	-	-
	Annual	662.8	71		

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)	180.2	155.4	1.8	19.7	1.0	1.5	0.2	2.3	2.4	2.1

1.5	Agricultural land use	Area('000 ha)	Cropping intensity (%)
	Net sown area	149.1	158.2
	Area sown more than once	86.7	
	Gross cropped area	235.8	

1.6	Irrigation	Area('000 ha)		
	Net irrigation area	149.0		
	Gross irrigated area	197.8		
	Rain fed area	0.1		
	Sources of irrigation	Number	Area('000 ha)	Percentage of total irrigated area
	Canals		18.1	9.1
	Tanks		0	
	Open wells		0	
	Bore wells		179.7	90.9
	Lift irrigation schemes			
	Micro-irrigation			
	Other sources		0	
	Total Irrigated Area		197.8	
	Pump sets			
	No. of Tractors			
	Groundwater availability and use* (Data source: State/ Central Ground water Department/ Board)	No of blocks- Tehsils-	(%)area	Quality of water
	Over exploited	3		
	Critical	1		
	Semi-critical	3		
	Safe	0		
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)							Summer	Total
		Kharif			Rabi					
		Irrigated	Rain fed	Total	Irrigated	Rain fed	Total			
	Rice	20.0	0	20.0	0	0	0	0.002	20.0	
	Wheat	0	0	0	81.6	0	81.6	0	81.6	
	Pulses	0.1	0.01	0.1	4.9	0.02	5.0	1.7	6.8	
	Oilseeds	0.1	0.02	0.1	7.7	0	7.7	0.01	7.8	
	Millets	6.7	36.7	43.4	0	0	0	0	43.4	
	Total	26.9	36.7	63.6	94.1	0.02	94.3	1.7	159.6	

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

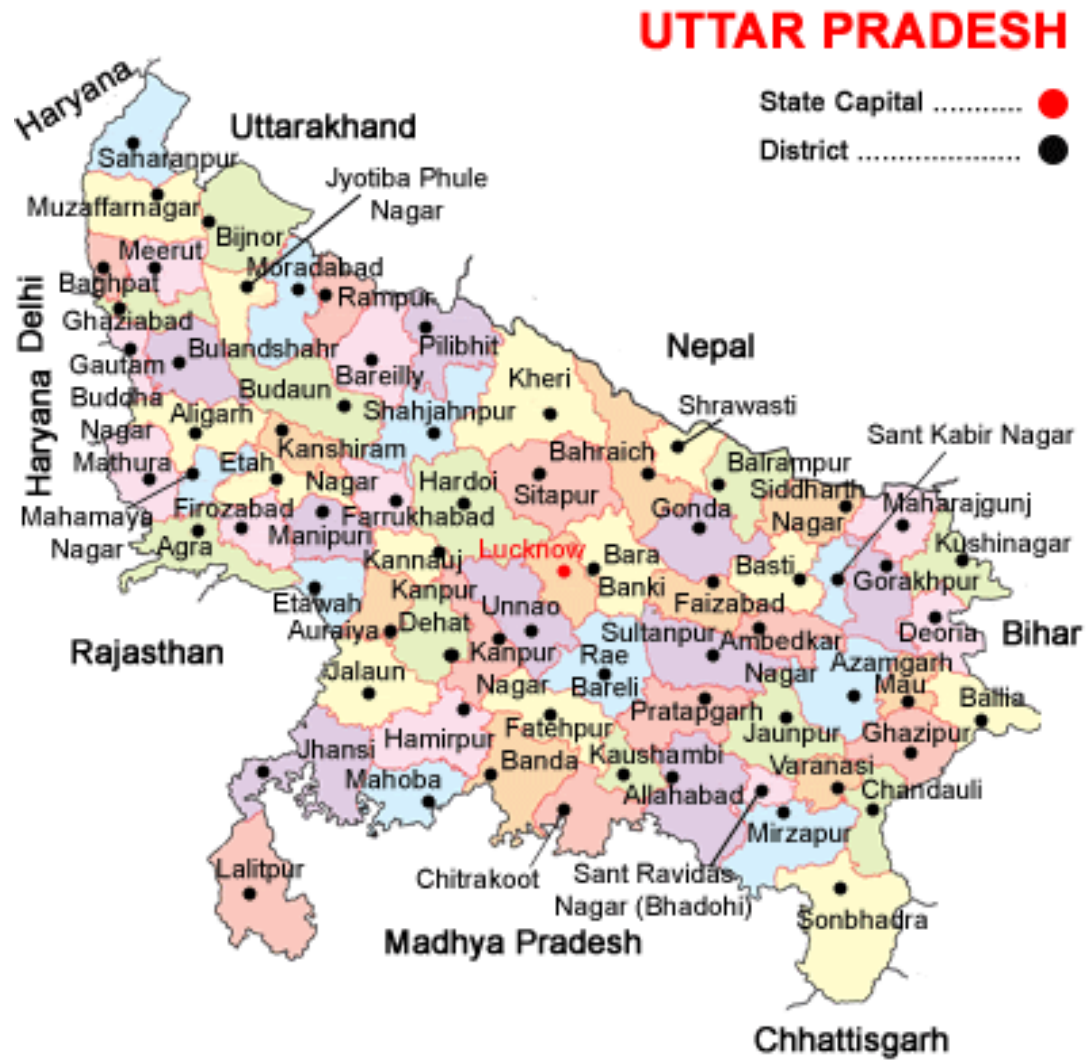
1.8	Major field crops cultivated	Area('000 ha)							Crop residue as fodder ('000 tons)	
		Kharif		Rabi		Summer		Total		
		Production ('000 T)	Productivity (KG/HA)	Production ('000 T)	Productivity (KG/HA)	Production ('000 T)	Productivity (KG/HA)	Production ('000 T)		Productivity (KG/HA)
	Rice	40.3	2067	0	0	0.001	1750	40.258	2067	-
	Wheat	0	0	264.5	3121	0	0	264.538	3121	-
	Pulses	0.1	613	3.9	816	1.012	738	5.088	794	-
	Oilseeds	0.02	201	10.3	1244	0.045	1401	10.393	1232	-
	Millets	76.3	18.68	0	0	0	0	76.262	1868	-
	Foodgrains	127.6	1903	297534	2832	1.321	845	394.436	2488	-

1.8	Sowing window for 5 major field crops	Rice	Bajra	Til	Pegion Pea	Urd	Jowar	Moong	Wheat	Barley	Gram/Pea	Mustard
	Kharif –Rainfed	-	June-July	July	May	-	-	-	-	-	-	-
	Kharif - Irrigated	July	-	-	-	July	July	July	-	-	-	-
	Rabi –Rainfed									Nov-Dec	Oct	Sep
	Rabi - Irrigated								Nov	Nov-Dec	Oct	Sep

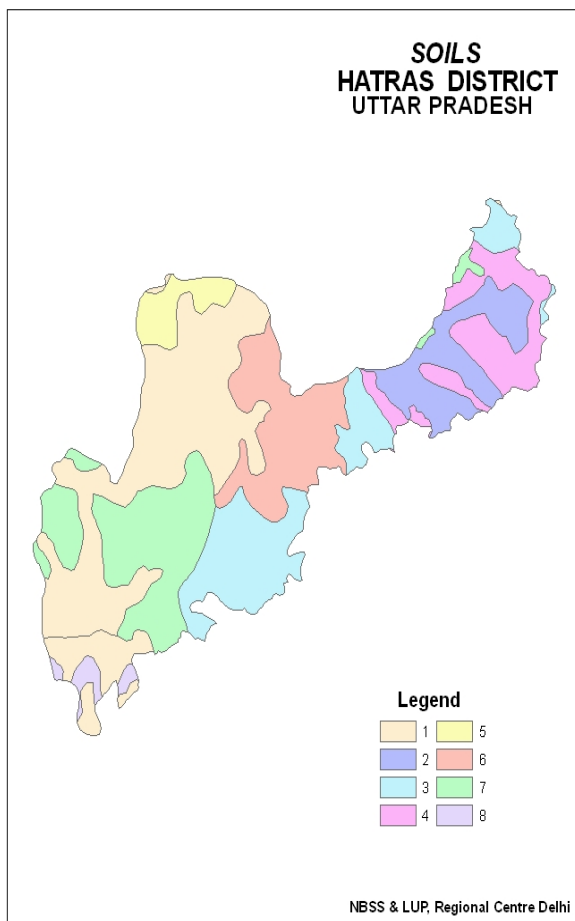
1.9	What is the major contingency the district is prone to?	Regular	Occasional	None
	Drought	√		
	Flood			√
	Cyclone			√
	Hail storm			√
	Heat wave		√	
	Cold wave		-	√
	Frost	√	-	
	Sea water intrusion	-	-	√
	Sheath Blight, Stemborer , Pyrilla loose smut, Heliothis, Rust etc white grub.	-	-	√

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

Annexure I
Location map of Hathras district



Soil map of Hathras district



Alluvial plain (0-1% slope)

1. Deep, loamy soils and slightly eroded
2. Deep, fine soils moderately saline and sodic associated with loamy soils, slightly eroded
3. Deep, fine soils and slightly eroded associated with loamy soils slightly saline and moderately sodic
4. Deep, silty soils with moderate salinity and sodicity associated with loamy soils with moderate salinity and sodicity and water logging
5. Deep, silty soils and slightly eroded associated with loamy soils slightly saline and slightly sodic
6. Deep, loamy soils, moderate salinity and sodicity associated with loamy soils with moderate salinity and strong sodicity
7. Deep, silty soils and slightly eroded associated with fine soils

Ravinous land (3-5% slope)

8. Deep, loamy soils and severely eroded

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 systems	Change in crops/ Cropping systems	Agronomic measures	Remark on implementation
Delay by 2 weeks 4 th week of June	Sandy loam soil Sandy soil	Rice, Bajra, jowar	Bajra- ICTP-8203, JBV-2, Pusa-23 and 86M86 Jowar-CSV-13, SCV-15	Short duration varieties Conservation of soil moisture, Use multi crop planter	
Delay by 4 weeks 4 nd week of July	loam soil	Til, Urd, Moong	Til- Pragti, Shekhar, T-78, Urd- Pant-40, Pant-35, IPM94-1 KU-91 Moong- PDM-139,K-851, Vaibhav	Conservation of soil moisture, Mixed farming, Use multi crop planter	
Delay by 6 weeks 4 th week of July	Sandy loam soil Sandy soil Clam loam soil	Til, Urd, Moong	Til- Pragti, Shekhar, T-78, Urd- Pant-40, Pant-35, IPM94-1 KU-91 Moong- PDM-139,K-851	Mixed farming, Use multi crop planter	
Delay by 8 weeks 2nd week of August		Toria	Toria- PT-303, PT-507, Bhawani, T-9	Use multi crop planter	

Condition			Suggested contingency measures		
Early season drought (Normal onset)	Major farming situation	Normal crop/ Cropping systems	Crop management	Soil nutrient & moisture conservation measures	Remark on implementation
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/ op stand	Irrigated upland	Rice, Black gram, Green gram	1-Thining , weeding and gap filing in existing crop. 2- Re sowing 3- Selection/nursery sowing of short duration rice	Inter cultivation, Conservation of soil moisture, Thining weeding Mulching.	
	Irrigated lowland	Rice jowar, Bajra Pigeon Pea			
	Un Irrigated upland	Til, Urd, Moong, Pigeon pea			
	Un Irrigated lowland	Til, Urd, Moong Pigeon pea			
Mid season drought (Long dry spell consecutive 2 weeks rainless(.2.5mm period)					
At vegetative stage	Irrigated upland	Rice, Black gram, Green gram	1-Thining , weeding and gap filing in existing crop.	Inter cultivation, Conservation of soil moisture, Thining weeding	
	Irrigated lowland	Rice jowar, Bajra			

		Pigeon Pea	2- Re sowing 3- Selection/nursery sowing of short duration rice	Mulching.	
	Un Irrigated upland	Til, Urd, Moong, Pigeon pea			
	Un Irrigated lowland	Til, Urd, Moong Pigeon pea			
At flowering / fruiting stage	Irrigated upland	Rice, Black gram, Green gram	1-Thining , weeding and in existing crop. 2- Life saving irrigation.	Thining weeding Mulching. Urea spray Conservation of soil moisture	
	Irrigated lowland	Rice jowar, Bajra Pigeon Pea			
	Un Irrigated upland	Til, Urd, Moong, Pigeon pea			
	Un Irrigated lowland	Til, Urd, Moong Pigeon pea			
		Normal crop/ Cropping systems	Crop management	Rabi Crop planning	Remark on implementation
Thermal drought (Early withdrawal of monsoon)	Irrigated upland	Rice, Black gram, Green gram	Life saving irrigation, Picking/ harvesting of pods/ear, Harvest at physiological maturity stage,	Toriamustard, Pea,	
	Irrigated lowland	Rice jowar, Bajra Pigeon Pea			
	Un Irrigated upland	Til, Urd, Moong, Pigeon pea			
	Un Irrigated lowland	Til, Urd, Moong Pigeon pea			

2.1.2 Drought –Irrigated situation

Condition			Suggested contingency measures		
Early season drought (delayed onset)	Major farming situation	Normal crop/ Cropping systems	Change in crops/ Cropping systems	Agronomic measures	Remark on implementation
Delayed release of water in canals due to low rainfall	Upland soils	Rice-Wheat	Short duration Rice Varieties-Wheat	Light irrigation with tube well water, Follow alternate wetting and drying schedule of irrigation in rice, Alternate Furrow irrigation,	Adequate supply of electricity/ diesel should be ensured by Govt. Agencies. Use solar power Irrigation .
		Jowar/Bajra - Pea	No change		
		Black gram/green gram-	No change		
	Lowland soils	Rice-Wheat	Short duration Rice Varieties-Wheat		
		Kharif pulses-Wheat	No change		

		Kharif pulses- Rabi Pulses	No change	drying schedule of irrigation in rice, Alternate Furrow irrigation,	
Limited release of water in canals due to low rainfall	Upland soils	Rice-Wheat	Short duration Rice Varieties-Wheat	Light irrigation with tube well water, Follow alternate wetting and drying schedule of irrigation in rice, Alternate Furrow irrigation,	Adequate supply of electricity/ diesel should be ensured by Govt. Agencies. Use solar power Irrigation .
		Kharif pulses-Wheat	No change		
		Kharif pulses- Rabi Pulses	No change		
	Lowland soils	Rice-Wheat	Short duration Rice Varieties-Wheat	Light irrigation with tube well water, Follow alternate wetting and drying schedule of irrigation in rice, Alternate Furrow irrigation,	
		Kharif pulses-Wheat	No change		
		Kharif pulses- Rabi Pulses	No change		
Non release of water in canals under delayed onset of monsoon in catchment	Upland tube well irrigated canal Sandy Loam soils	Rice	Replace rice with Jowar/Bajra	-	-
		Jowar/Bajra	No change	-	-
		Urd/Moong/Pigeon Pea-Wheat	No change	-	-
	Lowland tube well irrigated canal clay loam soils	Rice	Bajra/Blackgram/Greengram	-	-
		Jowar/Bajra	No change	-	-
		Urd/Moong/Pigeon Pea-Wheat	No change	-	-

2.2 Unusual rains –(Untimely, unseasonal etc)

Condition		Suggested contingency measures		
Continuous high rainfall in a short span leading to water logging	Vegetative stage	Flowering stage	Crop maturity stage''	Post harvest''
Til /Black gram/ Green gram/Pigeon Pea	Provide drainage	Provide drainage	Drain out excess water, Harvesting at physiological maturity stage	Shift to safer place& dispose of produce as early as possible
Black gram/ Green gram/	Provide drainage	Provide drainage	Drain out excess water, Harvesting at physiological maturity stage	Safe storage against storage pest and disease
Condition		Suggested contingency measures		
Heavy rainfall with high speed winds in a short span	Vegetative stage	Flowering stage	Crop maturity stage''	Post harvest''
Til /Black gram/ Green gram/Pigeon Pea	Provide drainage	Provide drainage	Drain out excess water, Harvesting at physiological maturity stage	Shift to safer place& dispose of produce as early as possible
Black gram/ Green gram/	Provide drainage	Provide drainage	Drain out excess water, Harvesting at physiological maturity stage	Safe storage against storage pest and disease
Rice Basmati	Provide drainage	Provide drainage	Drain out excess water, Harvesting at physiological maturity stage	Safe storage against storage pest and disease
Pigeon pea	Provide drainage, Sowing on raised bed	Provide drainage	Drain out excess water, Harvesting at physiological maturity stage	Safe storage against storage pest and disease
Condition		Suggested contingency measures		
Outbreak of pests and diseases due to unseasonal rains	Vegetative stage	Flowering stage	Crop maturity stage''	Post harvest''
Rice Basmati	Need based plant protection IPDM for Rice/ Pulses	Need based plant protection IPDM for Rice/ Pulses	Do not use strong pesticides at maturity stage	Shift to safer place & dispose of produce as early as possible
Pigeon pea				
Black gram/ Green gram/				

2.3 Floods

Condition	Suggested contingency measures			
	Seedling/Nursery stage	Vegetative stage	Reproductive stage	At harvest
Transient water logging/ partial inundation				
Rice (Basmati)	<ul style="list-style-type: none"> • Re sowing of nursery • Direct sowing of rice • Sowing of nursery on raised bed 	Provide drainage	Provide drainage	Shift to safer place & dispose of produce as early as possible
Black gram/ Green gram/	Direct sowing	Provide drainage	Provide drainage	Shift to safer place & dispose of produce as early as possible
Pigeon pea	Direct sowing	Provide drainage	Provide drainage	Shift to safer place & dispose of produce as early as possible
Sorghum	Direct sowing	Provide drainage	Provide drainage	Shift to safer place & dispose of produce as early as possible

2.4 Heat wave/ Cold wave/ frost/ Hailstorm/ Cyclone/ Fog

Condition	Suggested contingency measures			
	Seedling/Nursery stage	Vegetative stage	Reproductive stage	At harvest
Heat wave				
Rice (Basmati)	Mulching	Life saving irrigation	Light irrigation survival	Light irrigation
Black gram/ Green gram/		Light irrigation		Pod picking
Sorghum		Light irrigation		
Cold Wave	Not applicable			
Frost				
Hailstorm				

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	<p>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</p> <p>Promote cultivation of short duration fodder crops of sorghum/bajra/maize suitable to the district</p> <p>Sowing of fodder crops like <i>Stylo</i> and <i>Cenchrus</i> on bunds so as to provide fodder and strengthening of bunds</p> <p>Avoid burning of paddy straw and storing as dry fodder for future use</p> <p>Proper drying, bailing and densification of harvested dry fodder for transport to the needy villages</p> <p>Complete feed preparation using red gram stalks may be exploited</p> <p>Preserving maize fodder as silage for future use</p> <p>Establishment of silvi-pastoral system in</p>	<p>Harvest and use biomass of dried up crops (Sorghum, Bajra, Maize, Rice, chick pea etc) material as fodder.</p> <p>Harvest the tree fodder (Neem, Subabul, Acasia, Pipal etc) and unconventional feeds resources available and use as fodder for livestock (LS).</p> <p>Available feed and fodder should be cut from CPRs and stall fed in order to reduce the energy requirements of the animals</p> <p>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.</p> <p>The available silage may be used as green fodder supplement for high yielders and pregnant animals</p> <p>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 solution or 1% common salt solution and fed to LS</p> <p>Herd should be split and supplementation should be given only to the highly productive and breeding animals</p>	<p>Green and concentrates supplementation should be provided to all the animals.</p> <p>Short duration fodder crops of should be sown in unsown and crop failed areas where no further routine crop sowing is not possible</p> <p>Promote cultivation of fodder crops during Rabi season</p>

	<p>CPRs with <i>Stylosanthus hamata</i> and <i>Cenchrus ciliaris</i> as grass with <i>Leucaena leucocephala</i> as tree component</p> <p>Creation of permanent fodder, feed and fodder seed banks in all drought prone villages</p>	<p>Provision of emergency grazing/feeding (Cow-calf camps or other special arrangements to protect high productive & breeding stock)</p> <p>Available kitchen waste should be mixed with dry fodder while feeding</p> <p>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</p> <p>Unproductive livestock should to be culled during severe drought</p> <p>Create transportation and marketing facilities for the culled and unproductive animals (10000-20000 animals) in case of severe drought</p> <p>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</p>	
<p>Heat & Cold wave</p>	<p>In villages which are chronically prone to heat waves the following permanent measures are suggested</p> <ul style="list-style-type: none"> i) Plantation of trees like Neem, Pipal, Subabul around the shed 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 <p>Cold wave : Covering all the wire meshed</p>	<p>Allow the animals preferably early in the morning or late in the evening for grazing during heat waves</p> <p>Allow for grazing between 10AM to 3PM during cold waves</p> <p>Feed green fodder/silage / concentrates during day time and roughages / hay during night time in case of heat waves</p> <p>Add 25-50 ml of edible oil in concentrates per kg and fed to the animal during cold waves</p> <p>Apply / sprinkle lime powder (5-10g per square feet) in the animal shed during cold waves to neutralize ammonia accumulation</p> <p>Put on the foggers / sprinklers during heat waves and</p>	<p>Green and concentrates supplementation should be provided to all the animals.</p> <p>Allow the animals for grazing (normal timings)</p>

	walls / open area with gunny bags/ polyethylene sheets with a mechanism for lifting during the day time and closing during night	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 only as drinking water for animals)	Restrict wallowing of animals in water bodies/resources Provision of wholesome clean drinking water at least 3 times in a day	Bleach (0.1%) drinking water / water sources Provide clean drinking water

2.5.2

Poultry

	Suggested contingency measures		
	Before the event ^a	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
Heat wave			
Shelter/environment management	Provision of proper shelter with good ventilation	In severe cases, foggers/water sprinklers/wetting of hanged gunny bags should be arranged Don't allow for scavenging during mid day	Routine practices are followed
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