

State: Uttar Pradesh

Agriculture Contingency Plan for District: Kaushambi

1.0 District Agriculture profile				
1.1	Agro-Climatic/ Ecological Zone			
	Agro-Ecological Sub Region(ICAR)		North plain zone	
	Agro-Climatic Zone (Planning Commission)			
	Agro-Climatic Zone (NARP)			
	List all the districts falling the NARP Zone* (^ 50% area falling in the zone)			
	Geographical coordinates of district headquarters			
	Latitude		Latitude	Latitude (mt)
	25° 28' N		81° 54' E	-
	Name and address of the concerned ZRS/ZARS/RARS/RRS/RRTTS			
-				
Mention the KVK located in the district with address				
Krishi Vigyan Kendra, Kaushambhi				
Name and address of the nearest Agromet Field Unit(AMFU,IMD)for agro advisories in the Zone				
Allahabad Agriculture Deemed University				

1.2	Rainfall	Normal RF (mm)	Normal Rainy Days (Number)	Normal Onset	Normal Cessation
	SW monsoon (June-sep)	865.4	49	3rd week of June	4th week of September
	Post monsoon (Oct-Dec)	51.9	10		
	Winter (Jan-March)	45.2	-	-	-
	Pre monsoon (Apr-May)	13.4	-	-	-
	Annual	975.9	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)	185.504	153.813	0.195	22.847	0.517	3.768	3.875	8.132	7.467	4.235

1.4	Major Soils (common names like red sandy loam deep soils (etc.,))*	Area ('000 ha)	Percent (%) of total
	Deep, loamy soils	-	54
	Deep, fine soils moderately saline and sodic	-	19
	Deep, sandy soils	-	18

1.5	Agricultural land use	Area('000 hac)	Cropping intensity (%)
	Net sown area	134.468	132.25 %
	Area sown more than once	43.371	
	Gross cropped area	177.839	

1.6	Irrigation	Area('000 ha)		
	Net irrigation area	97.147		
	Gross irrigated area	128.027		
	Rain fed area	37.321		
	Sources of irrigation (Gross Irr. Area)	Number	Area('000 ha)	Percentage of total irrigated area
	Canals	-	198.32	
	Tanks	-	0.035	
	Open wells	-	0	
	Bore wells (Tube wells)	-	108.160	
	Lift irrigation schemes	-	NA	
	Micro-irrigation	-	NA	
	Other sources	-	0	
	Total Irrigated Area	-	128.027	
	No. of Pump sets (2011-12)	15467		
	No of Tractors	2278		
	Groundwater availability and use* (Data source: State/ Central Ground water Department/ Board)	No of blocks-Tehsils-	(%)area	Quality of water
	Over exploited	2		
	Critical	3		
	Semi-critical	1		
	Safe			
Waste water availability and use				
Ground water quality				

*over-exploited groundwater uSesameization> 100%; critical: 90-100%; semicritical:70-90%; safe:<70%

1.7 Area under major field crops & (As per latest figures 2013-14)

1.7	Major field crops cultivated	Area('000 ha)							
		Kharif			Rabi			Summer	Total
		Irrigated	Rain fed	Total	Irrigated	Rain fed	Total		
Wheat	-	-	-	72.960	0.336	73.296	-	73.296	
Rice	41.768	3.152	44.920	-	-	-	-	44.920	
Gram	-	-	-	0.137	12.146	12.283	-	12.283	
Pearl millet	0.004	10.634	10.638	-	-	-	-	10.638	
Pigeon pea	0.009	8.975	8.984	-	-	-	-	8.984	
Sesame	0.002	1.426	1.428	-	-	-	-	1.428	

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

1.8	Major field crops cultivated	Area('000 ha)								
		Kharif		Rabi		Summer		Total		Crop residue as fodder ('000 tons)
		Production ('000 t)	Productivity (Kg/ha)	Production ('000t)	Productivity (Kg/ha)	Production ('000 t)	Productivity (Kg/ha)	Production ('000t)	Productivity (Kg/ha)	
Rice	86.656	2004	-	-	-	-	86.656	2004	NA	
Wheat	-	-	179.704	2538	-	-	179.704	2538	NA	
Pearl millet	13.438	1222	-	-	-	-	13.438	1222	NA	
Gram	-	-	15.120	1151	-	-	15.120	1151	NA	
Pigeon pea	9.388	942	-	-	-	-	9.388	9.42	NA	
Sesame	0.383	224	-	-	-	-	0.383	224	NA	

1.8	Major Fodder crops cultivated	Area(ha)	Total
	Kharif	1438	1438
	Rabi	266	266
	Summer	219	219
	Total	1923	1923

1.9	Livestock(year 2007)	Male(000)	Female(000)	Total (000)
	Non descriptive Cattle (local low yielding)	63.419	71.504	134.923
	Improved cattle	0.002	0.013	0.015
	Crossbred Cattle	4.943	6.542	11.485
	Non descriptive Buffaloes (local low yielding)	16.441	65.458	81.899
	Descript Buffaloes	25.333	100.104	125.437
	Goat	46.027	79.715	125.742
	Sheep			28.911
	Other (Camel,Pig, Yak etc)			38.536
	Commerical dairy farms (number)			0.000

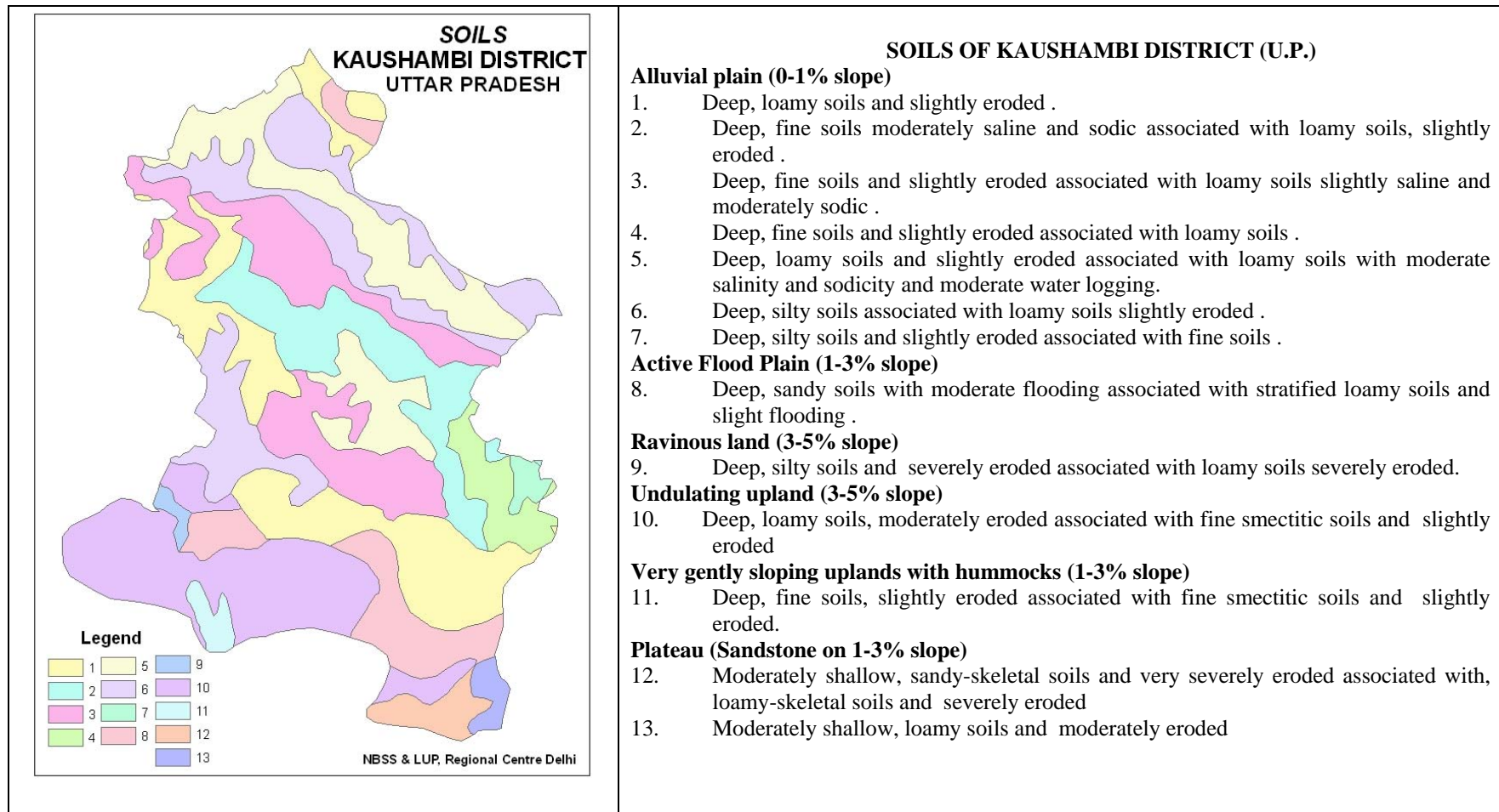
1.10	Sowing window for 5 major field crops	Pearl millet	Maize	Rice	Urd	Sorghum	Moong	Wheat	Pea	Gram	Mustard
	Kharif –Rainfed	2 nd week of July to last week of July	2 nd week of June to First week of July	-	2 nd week of July to First week of August	First week of July to 2 nd week of July	First week of July to 2 nd week of July	-	-	-	-
	Kharif - Irrigated	-	-	3rd week of June to	2 nd week of July to First	First week of July to 2 nd week of July	-	-	-	-	-

				Last week of July	week of August						
	Rabi –Rainfed							First week of Nov to 3rd week of Dec	First week of Oct to first week of Nov	First week of Oct to first week of Nov	First week of Sep to 2nd week of Oct
	Rabi - Irrigated							2nd week of Nov to 2th week of Dec	-	-	-

1.11	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.	-	-	

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

1.14 Soil Map



Source: NBSSLUP, Regional Centre, NewDelhi

2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation

Condition	Major Farming situation ^a	Normal Crop	Suggested Contingency measures		
			Change in crop / cropping system ^c including variety	Agronomic measures ^d	Remarks on Implementation
Early season drought (delayed onset)	Deep loamy soils	Sorghum	Varsha,CSV-13, CSV-15, Bundela, Hybrid CSH16, CSH 9, 13,14,18,23	Seed Treatment	Prefer certified seeds rom reliable source
		Pearl millet	No change ICMB155, WCC75,NDFB-3, Pusa322, Pusa 23, ICMH 451	Seed Treatment	
		Pigeon pea	Prefer long duration varieties like Narendra Arhar 1, Narendra Arhar 2, Azad, Amar,Malvi 13, Malvi 6 Intercropping of pigeon pea+ Perl millet (WCC75,NDFB-3, Pusa322, Pusa 23, ICMH 451)	Raised bed planting In sole pigeon pea, 20% higher seed rate) Intercropping of pigeon pea(interrow spacing of 75 cm)- cm) + Perl millet (with row ratio of 1:2	

Condition	Major Farming situation ^a	Normal Crop	Suggested Contingency measures		
			Change in crop/cropping system ^c	Agronomic measures ^d	Remarks on Implementation
Early season drought (delayed onset)	Deep loamy soils	Sorghum	Varsha,CSV-13, CSV-15, Bundela, Hybrid CSH16, CSH 9, 13,14,18,23	Seed Treatment Interculture	Prefer certified seeds rom reliable source
		Perl millet	No change ICMB155, WCC75,NDFB-3, Pusa322, Pusa 23, ICMH 451	Seed Treatment Interculture	
		Pigeon pea Deep, sandy soils	Long duration varieties like Narendra Arhar 1, Narendra Arhar 2, Azad, Amar,Malvi 13, Malvi 6	Raised bed planting In sole pigeonpea, 20%	

			Intercropping of pigeonpea+Jwar (Versa,CSV-13, CSV-15, Bundela, Hybrid CSH16, CSH 9, 13,14,18,23)	higher seed rate) Intercropping of pigeonpea(interrow spacing of 75 cm)- cm) +Jwar with row ratio of 1:2	
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Condition	Major Farming situation ^a	Normal Crop	Suggested Contingency measures		
Early season drought (delayed onset)			Change in crop/cropping system ^c	Agronomic measures ^d	Remarks on Implementation ^e
Delay by 6 weeks (1st week of August)	Deep loamy soils	Sorghum	Varhsa,CSV-13, CSV-15, Bundela, Hybrid CSH16, CSH 9, 13,14,18,23	Seed Treatment	Prefer certified seeds rom reliable source
		Perl millet	No change ICMB155, WCC75,NDFB-3, Pusa322, Pusa 23, ICMH 451	Seed Treatment	
		Pigeon pea Deep, sandy soils	Long duration varieties like Narendra Arhar 1, Narendra Arhar 2, Azad, Amar,Malvi 13, Malvi 6 Intercropping of pigeonpea+ Jwar (Versa,CSV-13, CSV-15, Bundela, Hybrid CSH16, CSH 9, 13,14,18,23))	Raised bed planting In sole pigeonpea, 20% higher seed rate) Intercropping of pigeonpea(interrow spacing of 75 cm)- cm) +Jwar with row ratio of 1:2	

Condition	Major Farming situation ^a	Normal Crop	Suggested Contingency measures		
			Change in crop/cropping system ^c	Agronomic measures ^d	Remarks on Implementation ^e
Early season drought (delayed onset)	Deep loamy soils	Pearl millet	Fallow Followed by Toria/ Mustard	Conserve moisture	
Delay by 8 weeks (3 rd week of August)		Sorghum	Fallow Followed by Toria/ Mustard	Conserve moisture	
		Pigeon pea	Leep as fallow	Conserve moisture	

Condition	Major Farming situation ^a	Normal Crop	Suggested Contingency measures		
			Crop management ^c	Soil nutrient & moisture conservation measues ^d	Remarks on Implementation
Early season drought (Normal onset)	Deep loamy soils	Pearl millet	Weed Management	-	-
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.		Sorghum	Weed Management	-	-
		Pigeon pea	Weed control Gap filling/thinning	-	-

Condition	Major Farming situation ^a	Normal Crop	Suggested Contingency measures		
			Crop management ^c	Soil nutrient & moisture conservation measues ^d	Remarks on Implementation
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	Deep loamy soils	Perl millet	Weed Management	Interculture	
At vegetative stage		Sorghum	Weed Management	Interculture	

		Pigeon pea	Weed control Thinning to maintain optimum population	Mulching with locally available material/weeds	
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Condition	Major Farming situation ^a	Normal Crop	Suggested Contingency measures		
			Crop management ^c	Rabi Crop planning ^d	Remarks on Implementation ^e
Terminal drought (Early withdrawal of monsoon)	Deep loamy soils	Pearl millet	Weed Management	-	-
		Sorghum	Weed Management		-
		Pigeon pea	Harvest at physiological maturity	-	-

2.1.2 Drought - Irrigated situation

Condition	Major Farming situation ^f	Normal Crop	Suggested Contingency measures		
			Change in crop	Agronomic measures ⁱ	Remarks on Implementation ^j
Delayed release of water in canals due to low rainfall	Deep loamy soils	Paddy Narendra 97, Narendra 118, Narendra 80, NDR 359,	Transplanting with 3 to 4 seedlings/hill	<ul style="list-style-type: none"> • Drum seeding • SRI method • Irrigation at critical stages • Reduce spacing plant to plant i.e.20x 15 cm 	

Condition	Major Farming situation ^f	Normal Crop	Suggested Contingency measures		
			Change in crop	Agronomic measures ⁱ	Remarks on Implementation ^j
Limited release of water in canals due to low rainfall	Deep loamy soils	Paddy,	Narendra 97, Narendra 118, Narendra 80, NDR 359	<ul style="list-style-type: none"> • Transplanting with 3 to 4 seedlings/hill Drum seeding • SRI method • Irrigation at critical stages • Reduce spacing plant to 	

Condition	Major Farming situation ^f	Normal Crop	Suggested Contingency measures		
			Change in crop	Agronomic measures ⁱ	Remarks on Implementation ^j
				plant i.e.20x 15 cm	
		Perl millet	No change	Weed Management	
		sorghum	No change	Weed Management	

Condition	Major Farming situation ^f	Normal Crop	Suggested Contingency measures		
			Change in crop	Agronomic measures ⁱ	Remarks on Implementation ^j
Non release of water in canals under delayed onset of monsoon in catchment	Deep loamy soils	Paddy	Narendra 97, Narendra 118, Narendra 80, NDR 359,	Transplanting with tube well irrigation 2 to 3 seedlings/hill Drum seeding SRI method Irrigation at critical stages Reduce spacing plant to plant i.e.20x 15 cm	

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

Condition	Major Farming situation ^f	Normal Crop	Change in crop/	Suggested Contingency measures	
				Agronomic measures ⁱ	Remarks on Implementation ^j
Insufficient groundwater recharge due to low rainfall	Deep loamy soils-tube well irrigated	Paddy	No change	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	

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

Condition	Suggested contingency measure			
	Vegetative stage ^k	Flowering stage ^l	Crop maturity stage	Post harvest
Continuous high rainfall in a short span leading to water logging				
Rice	Strengthen the bunds	Strengthen the bunds	Drain out excess water	Shift the harvested produce to safer place
Perl millet	Drain out excess water	Drain out excess water	Drain out excess water	Shift the harvested produce to safer place
Sorghum	Drain out excess water	Drain out excess water	Drain out excess water	Shift the harvested produce to safer place
Pigeon pea	Drainage of Excess water & drenching of COC (Copper Oxy chloride) @ 2.5g/Liter water to avoid incidence of wilt & root rot.	-	-	-
Horticulture			-	-
Guava	Provide staking to less than 3 years aged plant to avoid	Provide proper drainage to avoid water logging	-	-

	lodging			
Mango	Provide staking to less than 3 years aged plant to avoid lodging	Provide proper drainage to avoid water logging	-	-
Heavy rainfall with high speed winds in a short span²	Not applicable	-	-	-
Outbreak of pests and diseases due to unseasonal rains	Not applicable	-		-

2.3 Floods- 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^p				
Rice	Raised the nursery near lift or other irrigation sources Prepare 1-1.5 M wide raised Nursery Beds with provision of 30 cm width between the beds.	Apply light irrigation at evening	Apply light irrigation at evening	-
Horticulture				
Mango	Light & frequent irrigation	Light & frequent irrigation	Light & frequent irrigation	
Guava	Light & frequent irrigation	Light & frequent irrigation	Light & frequent irrigation	
Hailstorm	Not applicable			
Frost				
Horticulture				
Mango	Proper care of seedlings	Prune affected branches Plant protection measures	Harvest the produce	Grdae and market
Guava				
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	<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 wheat and 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</p>	<p>Harvest and use biomass of dried up crops (Sorghum, Bajra, Rice 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>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>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>red gram stalks may be exploited</p> <p>Establishment of silvi-pastoral system in 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>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>	
Heat & Cold wave	<p>In villages which are chronically prone to heat waves the following permanent measures are suggested</p> <ol 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 walls / open area with gunny bags/ polyethylene sheets with a mechanism for lifting during the day time and closing during night</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 heaters during cold waves in case of high productive animals</p> <p>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.</p>	<p>Green and concentrates supplementation should be provided to all the animals.</p> <p>Allow the animals for grazing (normal timings)</p>
Health and	List out the endemic diseases	Constitution of Rapid Action Veterinary Force	Conducting mass animal

Disease management	(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	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	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	Supplementation to all survived birds

		Culling of weak 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