

## State: Uttar Pradesh

### Agriculture Contingency Plan for District: Lucknow

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° 55' N			80° 59' E				
	Name and address of the concerned ZRS/ZARS/RARS/RRS/RRTTS											
	Mention the KVK located in the district with address				Krishi Vigyan Kendra Lucknow							
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)		848.4				3rd week of June		3 <sup>rd</sup> week of September			
	Post monsoon (Oct-Dec)		46.1									
	Winter (Jan-March)		43.1				-		-			
	Pre monsoon (Apr-May)		21.6				-		-			
	Annual		959.2									
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)		251.6	174.8	1.2	55.0	3.1	5.5	1.9	6.8	16.2	15.4

1.4	Major Soils	Area('000 ha)	Percent(%) of total
	Deep loamy soil	64.7	37 %
	Deep, loamy with sodicity	40.2	23 %
	Deep, silty soils,	21.0	12 %
	Deep, fine soils with loamy soils	26.2	15 %
	Deep, fine soils	22.7	13 %

1.5	Agricultural land use	Area('000 ha)	Cropping intensity (%)
	Net sown area	135.7	120
	Area sown more than once	73.9	
	Gross cropped area	209.7	

1.6	Irrigation	Area('000 ha)		
	Net irrigation area	135.7		
	Gross irrigated area	73.9		
	Rain fed area	209.6		
	Sources of irrigation (Gross Irr. Area)	Number	Area('000 ha)	Percentage of total irrigated area
	Canals	-	43.5	23.2
	Tanks	-	0.1	0.1
	Open wells	-	0.02	
	Bore wells(Tube Wells)	-	143.7	76.7
	Lift irrigation schemes	-	NA	
	Micro-irrigation	-	NA	
	Other sources	-	0.003	
	Total Irrigated Area	-	187.4	
	Pump sets (2011-12)	36916		
	No. of Tractors	9662		
	Groundwater availability and use* (Data source: State/ Central Ground water Department/ Board)	No of blocks- Tehsils-	(%)area	Quality of water
	Over exploited	0		
	Critical	0		
	Semi-critical	3		
	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		
Wheat	0	0	0	83.5	0.01	83.5	0	83.5	
Rice	51.4	0.2	51.6	0	0	0	0	51.6	
Potato	-	-	-	4.	0	4.4	-	4.4	
Rapeseed Mustard	-	-	-	2.9	0.3	3.2	-	3.2	
Juar	0	2.4	2.4	-	-	-	-	2.4	
Masoor	-	-	-	0.1	2.0	2.1	-	2.1	

	<b>Horticulture crops - Fruits</b>	Area ('000 ha)		
		Total	Irrigated	Rainfed
	Mango	27.7	27.7	-
	Guava	0.2	0.2	-
	<b>Horticulture crops - Vegetables</b>	Total	Irrigated	Rainfed
	Potato	5.1	50.1	-
	Onion	0.2	0.2	-
	Pea	3.5	3.5	-

1.7	Major Fodder crops cultivated	Area(ha)	Total
	Kharif	3004	3004
	Rabi	1385	1385
	Summer	1045	1045
	Total	5434	5434

### 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 ('000 T)	Productivity (KG/HA)	Production ('000 T)	Productivity (KG/HA)	Production ('000 T)	Productivity (KG/HA)	
Rice	102.8	2015	-	-	-	-	102.8	2015	NA	
Wheat	-	-	228.1	2717	-	-	228.1	2717	NA	
Juar	2.3	818	-	-	-	-	2.3	818	NA	
Masoor	-	-	1.8	840	-	-	1.8	840	NA	
Rapeseed Mustard	-	-	2.7	882	-	-	2.7	882	NA	
Potato	-	-	96.5	20471	-	+-	96.5	20471	NA	

1.9	Livestock(year 2007)	Male(000)	Female(000)	Totat(000)
	Non descriptive Cattle (local low yielding)	116.957	132.700	249.657
	Improved cattle	0.014	0.019	0.033
	Crossbred Cattle	11.069	17.688	28.757
	Non descriptive Buffaloes (local low yielding)	23.317	77.938	101.255
	Descript Buffaloes	39.661	133.601	173.262
	Goat	71.970	95.757	167.727
	Sheep			6.974
	Other (Camel,Pig, Yak etc)			43.146
	Commerical dairy farms (number)			0.000

1.12	Sowing window for 5 major field crops	Rice	Maize/Jowar/ Bajra	Black gram	Wheat	Lentil	Mustard	Pea
	Kharif – Rainfed	3 <sup>rd</sup> week of June to last week of July	3 <sup>rd</sup> week of June to 2 <sup>nd</sup> week of July	First week of July to 2 <sup>nd</sup> week of August	-	-	-	-
	Kharif -	3 <sup>rd</sup> week of	3 <sup>rd</sup> week of	-	-	-	-	-

	Irrigated	June to last week of July	June to 2nd week of July					
	Rabi –Rainfed				-	First week of Oct to First week of Nov	2 <sup>nd</sup> week of Oct first week of Nov	2nd week of Sep to first week of Oct
	Rabi - Irrigated				3rd week of Nov to last week of Dec	-	2 <sup>nd</sup> week of Oct first week of Nov	2nd week of Sep to first week of Oct

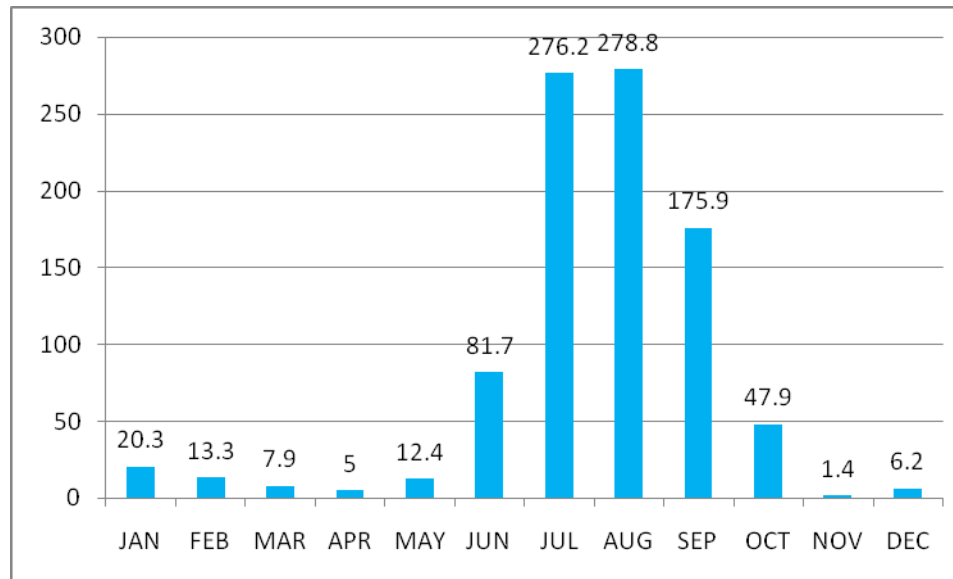
1.13	What is the major contingency the district is prone to?	Regular	Occasional	None
	Drought			√
	Flood			√
	Cyclone			√
	Hail storm		√	
	Heat wave		√	
	Cold wave		√	
	Frost			√
	Sea water intrusion			√
	Sheath Blight, Stemborer , Pyrilla loose smut, Heliothis, Rust etc white grub.			√

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

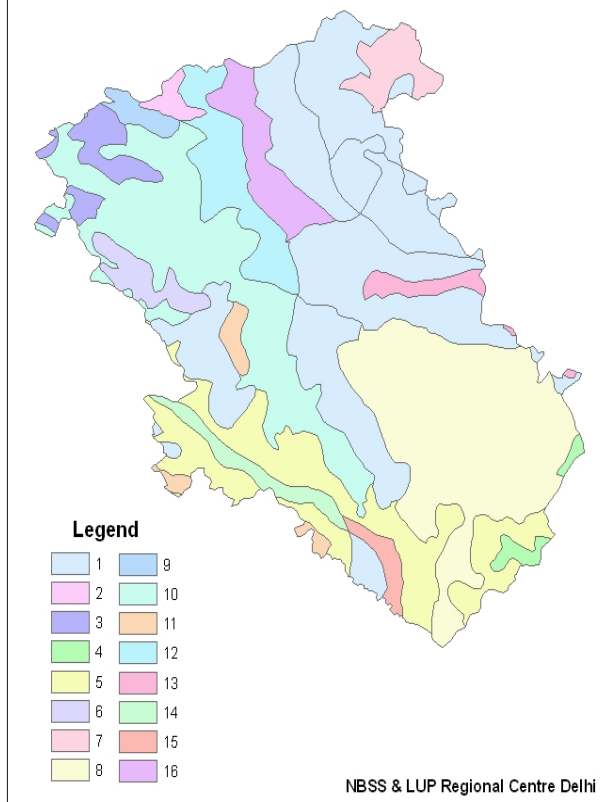
Annexure I  
Location map of Lucknow district



Annexure 2  
Mean annual rainfall (mm) of Lucknow **district**



**SOILS  
LUCKNOW DISTRICT  
UTTAR PRADESH**



**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 saline/sodic associated with loamy soils with slightly salinity/sodicity .
4. Deep, fine soils moderately saline and sodic associated with loamy soils, slightly eroded .
5. Deep, fine soils and slightly eroded associated with loamy soils slightly saline and moderately sodic .
6. Deep, fine soils and slightly eroded associated with loamy soils .
7. Deep, silty soils with moderately salinity and sodicity associated with loamy soils with moderate salinity and sodicity and water logging .
8. Deep, loamy soils and slightly eroded associated with loamy soils with moderate salinity and sodicity and moderate water logging.
9. Deep, silty soils with moderate salinity/sodicity associated with loamy soils slightly eroded .
10. Deep, loamy soils and slightly eroded associated with loamy soils slightly saline/sodic .

**Old Alluvial plain with river left out channels/Oxbows/point bars (1-3% slope)**

11. Deep, fine soils, moderately saline /sodic associated with loamy soils with moderate salinity/sodicity

**Recent Alluvial Plain (1-3% slope)**

12. Deep, silty soils, moderately saline and sodic associated with loam soils and slightly eroded

**Active Flood Plain (1-3% slope)**

13. Deep, stratified loamy soils with but moderately flooding .
14. Deep, sandy soils with moderate flooding associated with stratified loamy soils and slight flooding .
15. Deep, stratified loamy soils, with severe flooding associated with loamy soils with moderate flooding .

**Very gently sloping uplands with hummocks (1-3% slope)**

16. Deep, fine soils, slightly eroded associated with fine smectitic soils and slightly eroded.



## 2.0 Strategies for weather related contingencies

### 2.1 Drought

#### 2.1.1 Rainfed situation

Condition	Major Farming situation <sup>a</sup>	Normal Crop / Cropping system <sup>b</sup>	Suggested Contingency measures		
			Change in crop / cropping system <sup>c</sup> including variety	Agronomic measures <sup>d</sup>	Remarks on Implementation <sup>e</sup>
Early season drought (delayed onset)  Delay by 2 weeks (1 <sup>st</sup> week of July)*	Sandy Loam	Rice –Lentil/ Mustard	No change	Short duration Varieties of Paddy Weed management, DSR	To be Linked with SDC/NSC for Seed and Zero till seed cum fertidril from U.P Agro
		Black gram, Maize, Jowar and bajra	No change	Improved varieties, line showing, Earthing Weed Management	

Condition	Major Farming situation <sup>a</sup>	Normal Crop/cropping system <sup>b</sup>	Suggested Contingency measures		
			Change in crop/cropping system <sup>c</sup>	Agronomic measures <sup>d</sup>	Remarks on Implementation <sup>e</sup>
Early season drought (delayed onset)  Delay by 4 weeks (3 <sup>rd</sup> week of July)	Sandy Loam	Rice –Lentil/ Mustard	Rice replace with Urd, Jowar, Maize	Weed management, Mulching with crop residue	To be Linked with SDC/NSC for Seed and Zero till seed cum ferti drill from U.P Agro
		Black gram, Maize, Jowar and bajra	No change	Improved varieties, line showing, Earthing Weed Management	

Condition	Major Farming situation <sup>a</sup>	Normal Crop/cropping system <sup>b</sup>	Suggested Contingency measures		
			Change in crop/cropping system <sup>c</sup>	Agronomic measures <sup>d</sup>	Remarks on Implementation <sup>e</sup>
Early season drought (delayed onset)	Sandy loam	Rice –Lentil/ Mustard	Rice replace with Urd, Jowar,	Weed management, Mulching with crop residue	To be Linked with SDC/NSC for Seed and Zero till seed cum ferti drill from U.P Agro
Delay by 6 weeks 1 <sup>st</sup> week of August)		Black gram, Maize, Jowar and bajra	Maize replace with Urd, Jowar & bajra as a fodder crop	Improved varieties, line showing, Weed Management	

Condition	Major Farming situation <sup>a</sup>	Normal Crop/cropping system <sup>b</sup>	Suggested Contingency measures		
			Change in crop/cropping system <sup>c</sup>	Agronomic measures <sup>d</sup>	Remarks on Implementation <sup>e</sup>
Early season drought (delayed onset)	Sandy loam	Rice –Lentil/ Mustard	Kharif fallow	Moisture conservation and preparation for Rabi crop	
Delay by 8 weeks (3 <sup>rd</sup> week of August)		Black gram, Maize, Jowar and bajra	Kharif fallow	Moisture conservation and preparation for Rabi crop	

Condition	Major Farming situation <sup>a</sup>	Normal Crop/cropping system <sup>b</sup>	Suggested Contingency measures		
			Crop management <sup>c</sup>	Soil nutrient & moisture conservation measures <sup>d</sup>	Remarks on Implementation <sup>e</sup>
Early season drought (Normal onset)	Sandy loam	Rice –Lentil/ Mustard	Rice replace with Black gram, Jowar, Maize	Life saving irrigation, Mulching	
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.		Black gram, Maize, Jowar and bajra	No change	-	

Condition			Suggested Contingency measures		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	Major Farming situation <sup>a</sup>	Normal Crop/cropping system <sup>b</sup>	Crop management <sup>c</sup>	Soil nutrient & moisture conservation measures <sup>d</sup>	Remarks on Implementation <sup>e</sup>
At vegetative stage	Sandy loam	Rice –Lentil/ Mustard	No change	Life saving irrigation, Mulching, Weed management	
		Black gram, Maize, Jowar and bajra	No change		

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	Major Farming situation <sup>a</sup>	Normal Crop/cropping system <sup>b</sup>	Crop management <sup>c</sup>	Soil nutrient & moisture conservation measures <sup>d</sup>	Remarks on Implementation <sup>e</sup>
At flowering/ fruiting stage	Sandy loam	Rice –Lentil/ Mustard	No change	1% KCL Foliar application	
		Black gram, Maize, Jowar and bajra	No change		

Condition			Suggested Contingency measures		
Terminal drought (Early withdrawal of monsoon)	Major Farming situation <sup>a</sup>	Normal Crop/cropping system <sup>b</sup>	Crop management <sup>c</sup>	Rabi Crop planning <sup>d</sup>	Remarks on Implementation <sup>e</sup>
	Sandy loam	Rice –Lentil/ Mustard	No change	Moisture conservation for Rabi crops	
		Black gram, Maize, Jowar and bajra	No change		

## 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 <sup>j</sup>
Delayed release of water in canals due to low rainfall	Sandy Loam	Paddy	Inclusion of these varieties Sarju-52, pant-12, NDR-359, CSR-36, CSR-43, NDR-97, NDR-118, Sahbhagi, Susk samrat	<ul style="list-style-type: none"> <li>• SRI</li> <li>• Provide irrigation at hair line crack stage</li> <li>• Weed control</li> </ul>	
		Black gram	Prefer varieties Azad Urd-2, Pant U-19, NDU-1, Pant-40, Utra,	<ul style="list-style-type: none"> <li>• Weed management</li> </ul>	

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation <sup>j</sup>
Limited release of water in canals due to low rainfall	Sandy Loam	Paddy	No change	<ul style="list-style-type: none"> <li>• SRI</li> <li>• Provide irrigation at hair line crack stage</li> <li>• Weed control</li> </ul>	
		Black gram	No change	<ul style="list-style-type: none"> <li>• Weed management</li> </ul>	

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	Sandy Loam	Paddy	No change	Life saving irrigation	
		Black gram	No change	Life saving irrigation	
		NA			

Condition	Suggested Contingency measures			
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures
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	Tube well irrigated	NA			
		NA			
		NA			

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

Condition	Suggested contingency measure			
	Vegetative stage	Flowering stage	Crop maturity stage	Post harvest
<b>Continuous high rainfall in a short span leading to water logging</b>				
Paddy	Bunds repairing	Strengthen of Bunds	Harvest at physiological maturity stage Drain out excess water	
Urd	Drain out excess water	Drain out excess water	Harvest at physiological maturity stage Drain out excess water	
<b>Horticulture</b>				
Mango	Drain out excess water	Drain out excess water	Drain out excess water	
Guava	Drain out excess water	Drain out excess water	Drain out excess water	
Banana	Drain out excess water	Drain out excess water	Drain out excess water	

<b>Heavy rainfall with high speed winds in a short span<sup>2</sup></b>				
Paddy	Priority given to dwarf varieties and drain out excess water	Drain out excess water	Drain out excess water	
Urd	Drain out excess water	Drain out excess water	Drain out excess water	
<b>Horticulture</b>				
Mango	Provision of shelters belts and drainage	Drain out excess water	Drain out excess water	
Guava	Provision of shelters belts and drainage	Drain out excess water	Drain out excess water	
Banana	Provision of shelters belts and drainage	Drain out excess water	Drain out excess water	
<b>Outbreak of pests and diseases due to unseasonal rains</b>				
Paddy	Need based and recommended plant protection measures			
Urd				
<b>Horticulture</b>				
Mango	Need based and recommended plant protection measures			
Guava				
Banana				

### 2.3 Floods: Not applicable

Condition	Suggested contingency measure <sup>o</sup>			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Transient water logging/ partial inundation <sup>1</sup>				
Continuous submergence for more than 2 days	Not applicable			

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

Extreme event type	Suggested contingency measure <sup>r</sup>			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
<b>Heat Wave</b>				
Paddy	Drain out heated water from nursery	Application of life saving irrigation and MOP	Application of life saving irrigation and Spray of 1% MOP	
<b>Horticulture</b>				
Mango	To irrigate orchard	To irrigate orchard	To irrigate orchard	
Guava	To irrigate orchard	To irrigate orchard	To irrigate orchard	
Banana	To irrigate orchard	To irrigate orchard	To irrigate orchard	

## 2.5 Contingent strategies for Livestock, Poultry & Fisheries

### 2.5.1 Livestock

	Suggested contingency measures		
	Before the event	During the event	After the event
<b>Heat &amp; Cold wave</b>	<p>In villages which are chronically prone to heat waves the following permanent measures are suggested</p> <ul style="list-style-type: none"> <li>i) Plantation of trees like Neem, Pipal, Subabul around the shed</li> <li>ii) Spreading of husk/straw/coconut leaves on the roof of the shed</li> <li>iii) Water sprinklers / foggers in the animal shed</li> <li>iv) Application of white reflector paint on the roof to reduce thermal radiation effect</li> </ul> <p><b>Cold wave :</b> Covering all the wire meshed walls / open area with gunny bags/</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>Green and concentrates supplementation should be provided to all the animals.</p> <p>Allow the animals for grazing (normal timings)</p> <p>Bleach (0.1%) drinking water / water sources</p> <p>Provide clean drinking water</p>

	polyethylene sheets with a mechanism for lifting during the day time and closing during night	Put on the foggers / sprinklers during heat waves 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 and provision of wholesome clean drinking water at least 3 times in a day	
<b>Insurance</b>	Insurance policy for loss of production due to heat wave or cold wave 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

### 2.5.2 Poultry

	Suggested contingency measures		
	Before the event <sup>a</sup>	During the event	After the event
<b>Heat wave</b>			
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



<b>Cold wave</b>			
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