

**State: Uttar Pradesh**  
**Agriculture Contingency Plan for District: Kasganj**

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(mt)
		27.48N	78.42E	
	Name and address of the concerned ZRS/ZARS/RARS/RRS/RRTTS	-		
	Mention the KVK located in the district with address	Krishi Vigyan Kendra Etah		
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)	612.1	49	3rd week of june	4th week of September
	Post monsoon (Oct-Dec)	29.4	10		
	Winter (Jan-March)	39.8	5	-	-
	Pre monsoon (Apr-May)	13.6	2	-	-
	Annual	694.9	66		

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)	195.601	164.044	2.057	26.395	0.207	10.506	0.506	2.898	6.609	5.187

1.4	Major Soils (common names like red sandy loam deep soils (etc.))*	Area ('000 ha)	Percent (%) of total
	Deep, loamy soils	98.5	45%
	Deep Silty loam	52.5	24 %
	Deep fine soil	39.0	18 %
	4.Saline-alkaline	21.0	10 %

1.5	Agricultural land use	Area('000 ha)	Cropping intensity (%)
	Net sown area	141.2	149 %
	Area sown more than once	104.2	
	Gross cropped area	245.4	

1.6	Irrigation	Area('000 ha)		
	Net irrigation area	139.3		
	Gross irrigated area	207.9		
	Rain fed area	1.9		
	Sources of irrigation(Gross Irr. Area)	Number	Area('000 ha)	Percentage of total irrigated area
	Canals		22.6	10.8
	Tanks		0	
	Open wells		57.9	27.9
	Bore wells(Tube wells)		127.4	61.3
	Lift irrigation schemes		NA	
	Micro-irrigation		NA	
	Other sources		0	
	Total Irrigated Area		207.9	
	No. of Pump sets (2011-12)	1427		
No. of Tractors	NA			
Groundwater availability and use* (Data source: State/ Central Ground water Department/ Board)	No of blocks- Tehsils-	(%)area	Quality of water	
Over exploited	1			
Critical	0			
Semi-critical	0			
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	15.7	0.3	16.0	0	0	0	0	16.0	
	Wheat	0	0	0	95.8	0	95.8	0	95.8	
	Maize	28.8	1.5	30.3	-	-	-	-	30.3	
	Bajra	3.7	32.4	36.1	-	-	-	-	36.1	
	Rapeseed Mustard	-	-	-	8.1	0	8.1	-	8.1	
	Sugarcane	6.5	0.5	7.3	-	-	-	-	7.3	

**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	35.4	2243	-	-	-	-	35.4	2243	
	Wheat	-	-	315.6	3304	-	-	315.6	3304	NA
	Maize	67.4	2168	-	-	-	-	67.4	2168	NA
	Bajra	72.5	2114	-	-	-	-	72.5	2114	NA
	Rapeseed Mustard	-	-	13.8	1608	-	-	13.8	1608	NA
	Sugarcane	348.5	51374	-	-	-	-	348.5	51374	NA

1.10	Sowing window for 5 major field crops	Pearl millet	Maize	Rice	Urd	Sorghum	Pigeon Pea	Wheat	Pea	Gram	Mustard
	Kharif – Rainfed	2 <sup>nd</sup> week of July to last week of July	3 <sup>rd</sup> week of June to First week of July	-	2 <sup>nd</sup> week of July to First week of August	First week of July to 2 <sup>nd</sup> week of July	First week of July to Last week of July	-	-	-	-
	Kharif - Irrigated	-	-	3 <sup>rd</sup> week of June to Last week of July	2 <sup>nd</sup> week of July to First week of August	First week of July to 2 <sup>nd</sup> week of July	-	-	-	-	-
	Rabi –Rain fed							Last week of Oct to 2 <sup>nd</sup> week of Nov	First week of Oct to last week of Oct	First week of Oct to last week of Oct	First week of Sep to 2 <sup>nd</sup> week of Oct
	Rabi - Irrigated							2 <sup>nd</sup> week of Nov to last 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, Stemborrer , Pyrilla loos smut, Heliothis, Rust etc white grub.			

## 2.0 Strategies for weather related contingencies

### 2.1 Drought

#### 2.1.1 Rain fed situation

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming situation	Normal Crop	Change in crop / cropping system including variety	Agronomic measures	Remarks on Implementation
Delay by 2 weeks (1 <sup>st</sup> week of July)	Deep, loamy soils	Sorghum: <b>Composite-</b> Varsha, CSV-13, CSV-15,SPB-1388 and Vijeta <b>Hybrid-</b> CSH-9, 16,14,18,13 and CSH-23	No change	Prefer medium maturing varieties, Thinning, Interculture,	Prefer disease free certified seed from a reliable source Like SDC/ SAUs
		Pearl millet,- <b>Composite-</b> ICMB-155, WCC-75,ICTP-8203 and Raj-171 <b>Hybrid-</b> Pusa-23 & 322 and ICMH-451	No change	Prefer medium maturing varieties, Thinning, Interculture,	
		Pigeon Pea Narendra arhar-1, Narendra arhar-2, Azad,	No Change	Ridge Planting Thinning, Inter-culture,	
		Urd- Uttara, Azad-2, Azad-3, Pant-U-35, Pant U-40	No change	Manual weeding, Line sowing	
		Maize: <b>Composite-</b> Naveen, Azad uttam, Pragati,Gaurav and KH-510 <b>Hybrid-</b> Ganga-11, HQPM-5 and Prakash, JH-3459	No change	Prefer medium maturing varieties, Thinning, <i>Inter-culture</i> , Mulching	Linked with SDC/ SAUs
Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming situation	Normal Crop	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delay by 4 weeks (July 3 <sup>rd</sup> week)	Deep, loamy soils	Sorghum: <b>Composite-</b> Varsha, CSV-13, CSV-15,SPB-1388 and Vijeta <b>Hybrid-</b> CSH-9, 16,14,18,13 and CSH-23	No change	Adopt 10-15% more seed Prefer medium maturing varieties, <i>Inter-culture</i> , Spray of 2% MOP	Prefer disease free certified seed from a reliable source Like SDC/ SAUs
		Pearl millet,-	No change	Adopt 10-15% more	

		<b>Composite-</b> ICMB-155, WCC-75, ICTP-8203 and Raj-171 <b>Hybrid-</b> Pusa-23 & 322 and ICMH-451		seed Prefer medium maturing varieties, <i>Inter-culture</i> , Spray of 2% MOP	
		Pigeon Pea – Narendra arhar-1, Narendra arhar-2, Azad,	No change	Adopt 10-15% more seed Prefer medium maturing varieties, <i>Inter-culture</i> , Mulching Spray of 2% MOP	
		Urd- Uttara, Azad-2, Azad-3, Pant-U-35, Pant U-40	No change	Use 10-15% more seed Use medium maturing varieties, <i>Inter-culture</i> , Mulching Spray of 2% MOP	
		Maize: <b>Composite-</b> Naveen, Azad uttam, Pragati, Gaurav and KH-510 <b>Hybrid-</b> Ganga-11, HQPM-5 and Prakash, JH-3459	Replace with Pearl millet or Sorghum or Urd	Use 10-15% more seed Use medium maturing varieties, <i>Inter-culture</i> , Mulching Spray of 2% MOP	

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming situation	Normal Crop	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delay by 6 weeks (Aug. 1 <sup>st</sup> week)	Deep, loamy soils	Sorghum: <b>Composite-</b> Varsha, CSV-13, CSV-15, SPB-1388 and Vijeta <b>Hybrid-</b> CSH-9, 16, 14, 18, 13 and CSH-23	Replace with Pearl millet or Urd	Use 10-15% more seed Use medium maturing varieties, <i>Inter-culture</i> , Mulching Spray of 2% MOP	Linked with SDC/ SAUs
		Pearl millet: <b>Composite-</b> ICMB-155, WCC-75, ICTP-8203 and Raj-171 <b>Hybrid-</b> Pusa-23 & 322 and ICMH-451	No change	Use 10-15% more seed Use medium maturing varieties, <i>Inter-culture</i> , Mulching Spray of 2% MOP	Linked with SDC/ SAUs
		Pigeon Pea – Narendra arhar-1, Narendra arhar-2, Azad,	Replace with Pearl millet or Urd	Use 10-15% more seed Use medium maturing varieties, <i>Inter-culture</i> ,	Linked with SDC/ SAUs

				Mulching Spray of 2% MOP	
		Urd- Uttara, Azad-2, Azad-3, Pant-U-35, Pant U-40	No change	Use 10-15% more seed Use medium maturing varieties, <i>Inter-culture</i> , Mulching Spray of 2% MOP	Linked with SDC/ SAUs
<b>Condition</b>			<b>Suggested Contingency measures</b>		
<b>Early season drought (delayed onset)</b>	<b>Major Farming situation</b>	<b>Normal Crop/cropping system</b>	<b>Change in crop/cropping system</b>	<b>Agronomic measures</b>	<b>Remarks on Implementation</b>
<b>Delay by 8 weeks (Aug. 3<sup>rd</sup> week)</b>	Deep, loamy soils	Pearl millet: <b>Composite-</b> ICMB-155, WCC-75, ICTP-8203 and Raj-171 <b>Hybrid-</b> Pusa-23 & 322 and ICMH-451	Keep fallow and conserve moisture	Moisture conservation and preparation for rabi sowing	-
		Urd- Uttara, Azad-2, Azad-3, Pant-U-35, Pant U-40	Keep fallow and conserve moisture	Moisture conservation and preparation for rabi sowing	-

<b>Condition</b>			<b>Suggested Contingency measures</b>		
Early season drought ( <b>Normal onset</b> )	<b>Major Farming situation</b>	<b>Normal Crop/cropping system</b>	<b>Crop management</b>	<b>Soil nutrient &amp; moisture conservation measures</b>	<b>Remarks on Implementation</b>
<b>Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.</b>	Deep loamy soils	Sorghum: <b>Composite-</b> Varsha, CSV-13, CSV-15, SPB-1388 and Vijeta <b>Hybrid-</b> CSH-9, 16, 14, 18, 13 and CSH-23	Life saving irrigation Re sowing if plant population less than 70%	, Manual weeding	
		Pearl millet: <b>Composite-</b> ICMB-155, WCC-75, ICTP-8203 and Raj-171 <b>Hybrid-</b> Pusa-23 & 322 and ICMH-451	Life saving irrigation Re sowing if plant population less than 70%	Manual weeding	
		Pigeon Pea – Narendra arhar-1, Narendra arhar-2, Azad,	Life saving irrigation Re sowing if plant population less than 70%	Mulching , Manual weeding	
		Urd- Uttara, Azad-2, Azad-3, Pant-U-	Life saving irrigation Re sowing if plant population	Manual weeding	

		35, Pant U-40	less than 70%		
		Maize <b>Composite-</b> Naveen, Azad uttam, Pragati,Gaurav and KH-510 <b>Hybrid-</b> Ganga-11, HQPM-5 and Prakash, JH-3459	Life saving irrigation Re sowing if plant population less than 70%	Mulching , Manual weeding	

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)					
At vegetative stage	Deep loamy soils	Sorghum : <b>Composite-</b> Varsha, CSV-13, CSV-15,SPB-1388 and Vijeta <b>Hybrid-</b> CSH-9, 16,14,18,13 and CSH-23	Life saving irrigation if available	Spray of 2% MOP.	
		Pearl mille <b>Composite-</b> ICMB-155, WCC-75,ICTP-8203 and Raj-171 <b>Hybrid-</b> Pusa-23 & 322 and ICMH-451	Life saving irrigation if available	Spray of 2% MOP.	
		Pigeon Pea – Narendra arhar-1, Narendra arhar-2, Azad,	Life saving irrigation if available	Spray of 2% MOP.	
		Urd- Uttara, Azad-2, Azad-3, Pant-U-35, Pant U-40	Life saving irrigation if available	Spray of 2%MOP.	



		Maize <b>Composite-</b> Naveen, Azad uttam, Pragati,Gaurav and KH-510 <b>Hybrid-</b> Ganga-11, HQPM-5 and Prakash, JH-3459	Life saving irrigation if available	Spray of 2%MOP.	
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Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	Major Farming situation	Normal Crop	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
At flowering/ fruiting stage	Deep loamy soils	Sorghum <b>Composite-</b> Varsha, CSV-13, CSV-15,SPB-1388 and Vijeta <b>Hybrid-</b> CSH-9, 16,14,18,13 and CSH-23	Life saving irrigation, if available	Spray 2% solution of Urea and 2%MOP.	
		Pearl millet,- <b>Composite-</b> ICMB-155, WCC-75,ICTP-8203 and Raj-171 <b>Hybrid-</b> Pusa-23 & 322 and ICMH-451	Life saving irrigation	Spray 2% solution of Urea and 2%MOP.	
		Pigeon Pea – Narendra arhar-1, Narendra arhar-2, Azad,	Life saving irrigation	Spray 2%MOP. Mulching	
		Urd- Uttara, Azad-2, Azad-3, Pant-U-35, Pant U-40	Life saving irrigation	Spray 2%MOP. Mulching	
		Maize <b>Composite-</b> Naveen, Azad uttam, Pragati,Gaurav and KH-510 <b>Hybrid-</b> Ganga-11, HQPM-5 and Prakash, JH-3459	Life saving irrigation	Spray 2% solution of Urea and 2%MOP. Mulching	

Condition	Major Farming situation	Normal Crop	Suggested Contingency measures		
			Crop management	Rabi Crop planning	Remarks on Implementation
Terminal drought (Early withdrawal of monsoon)	Deep loamy soils	Sorghum <b>Composite-</b> Varsha, CSV-13, CSV-15,SPB-1388 and Vijeta <b>Hybrid-</b> CSH-9, 16,14,18,13 and CSH-23	In case of severe drought, harvest for fodder	Prepare Field for rabi sowing	
		Pearl millet,- <b>Composite-</b> ICMB-155, WCC-75,ICTP-8203 and Raj-171 <b>Hybrid-</b> Pusa-23 & 322 and ICMH-451	In case of severe drought, harvest for fodder	Prepare Field for rabi sowing	
		Pigeon Pea – Narendra arhar-1, Narendra arhar-2, Azad,	Life saving irrigation Spray 2%MOP		
		Urd- Uttara, Azad-2, Azad-3, Pant-U-35, Pant U-40	If crop not reviving use the crop as fodder. If 75% mature than harvest.	Prepare Field for rabi sowing	

### 2.1.2 Drought - Irrigated situation

Condition	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Suggested Contingency measures	
				Agronomic measures	Remarks on Implementation
Delayed release of water in canals due to low rainfall	Deep loamy soils	Paddy: (Transplanted) Govind, Narendra-118,97 , Ashwani, (Early) Saket-4, Ratna, Pant-12, Narendra-80, 2026 (Medium) Sarjoo-52, Pant-4, Narendra-359, 2026,2064	No change	Direct seeded/ Drum seeded Paddy Prefer early maturing varieties ie. Saket-4, Ratna, Pant-12, Narendra-80, 2026 NDR-118 Transplant 3-4 seed lings / hil Wet and dry irrigation, weed management	Linked with SDC/SAU's
		Maize <b>Composite-</b> Naveen, Azad uttam, Pragati,Gaurav and KH-510	No change	Irrigate at critical stage Ridge planting	Linked with SDC/SAU's

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
		<b>Hybrid-</b> Ganga-11, HQPM-5 and Prakash, JH-3459			

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	Rice: (Transplanted) Govind, Narendra-118,97 , Ashwani, (Early) Saket-4, Ratna, Pant-12, Narendra-80, 2026 (Medium) Sarjoo-52, Pant-4, Narendra-359, 2026,2064	No change	<ul style="list-style-type: none"> <li>• Direct seeded/ Drum seeded Paddy/ SRI</li> <li>• Use early maturing varieties ie. Saket-4, Ratna, Pant-12, Narendra-80, 2026 NDR-118</li> <li>• Transplant 3-4 seed lings / hill</li> <li>• Wet and dry irrigation, weed management</li> <li>• Ensure application of MOP</li> </ul>	Prefer disease free certified seed from a reliable source
		Maize <b>Composite-</b> Naveen, Azad uttam, Pragati,Gaurav and KH-510 <b>Hybrid-</b> Ganga-11, HQPM-5 and Prakash, JH-3459	No change	<ul style="list-style-type: none"> <li>• Prefer short duration varieties</li> <li>• Irrigation at Critical stage</li> <li>• Ridge planting</li> <li>• Weed management</li> <li>• Ensure application of MOP</li> </ul>	

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			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	Rice: (Transplanted) Govind, Narendra-118,97 , Ashwani, (Early) Saket-4, Ratna, Pant-12, Narendra-80, 2026 (Medium) Sarjoo-52, Pant-4, Narendra-359, 2026,2064	Replace with Sorghum / Pearl millets/Pigeon Pea/Til	Light irrigation at critical stages Ridge planting/line sowing, 10-15% increase seed Weed management	Prefer disease free certified seed from a reliable source
		Maize <b>Composite-</b> Naveen, Azad uttam, Pragati,Gaurav and KH-510 <b>Hybrid-</b> Ganga-11, HQPM-5 and Prakash, JH-3459	Replace by Jowar/ Pearl millets/Pigeon Pea/Til	Light irrigation at critical stages Ridge planting/line sowing, 10-15% increase seed Weed management	

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			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	Rice: (Transplanted) Govind, Narendra-118,97 , Ashwani, (Early) Saket-4, Ratna, Pant-12, Narendra-80, 2026 (Medium) Sarjoo-52, Pant-4, Narendra-359, 2026,2064	Replace with Sorghum / Pearl millets/Pigeon Pea/Til	<ul style="list-style-type: none"> <li>• Light irrigation at critical stage,</li> <li>• Ridge planting/line sowing,</li> <li>• 10-15% increase seed</li> <li>• Weed management</li> </ul>	Linked with SDC/SAU's
		Maize <b>Composite</b> - Naveen, Azad uttam, Pragati,Gaurav and KH-510 <b>Hybrid</b> - Ganga-11, HQPM-5 and Prakash, JH-3459	Replace by Jowar/ Pearl millets/Pigeon Pea/Til	<ul style="list-style-type: none"> <li>• Light irrigation at critical stage,</li> <li>• Ridge planting/line sowing,</li> <li>• 10-15% increase seed</li> <li>• Weed management</li> </ul>	Linked with SDC/SAU's

**2.2 Unusual rains (untimely, un seasonal etc)** (for both Rain fed 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	Bunding around the field	Bunding around the field	Drain out excess water	Shift the produce to safer place
Maize	Drain out excess water from the fields			
Sorghum				
Pearl millet				
Pigeon pea				
Urdbean				
<b>Heavy rainfall with high</b>	Not applicable			

<b>speed winds in a short span<sup>2</sup></b>				
<b>Outbreak of pests and diseases due to unseasonal rains</b>				
Paddy	Spray of Chloropyriphos 2.5 lt./ hac for termite and For stemborer (Cartap @25 kg/ hac)	Dusting of Methyl parathion @15 kg/hac for Gandhi Bug and Chlorothalonil @2ml/lt of water for false smut.	-	
Maize	Spray of Chloropyriphos 2.5 lt./ hac for termite and For stemborer (Cartap @25 kg/ hac)	Spray of Validamycin @2.7 ml/lt. of water solution for banded leaf and sheath blight.	-	-
Sorghum	Spray of Chloropyriphos 2.5 lt./ hac for termite and For stemborer (Cartap @25 kg/ hac)	Spray of Carbandazim (0.05%)+ dithane M 45 (0.2%) for early and late leaf spots and rust.	-	-
Pearl millet	Spray of Chloropyriphos @3.50 lt./ hac for early shoot borar	Spray of Mancozeb(0.2%) for rust.		
Pigeon pea	Spray of Chloropyriphos 2.5 lt./ hac for termite	Spray of Chloropyriphos 2.5 lt./ hac Or Monocrtophos @1.25lt/hac for control podborar	-	-
Urdbean	Spray of Chloropyriphos 2.5 lt./ hac for termite	Spray of Dimethoate 1.00 lt./ hac Or imidachlorpide @250 ml/hac for control of thrips/	-	-

### 2.3 Floods: Not applicable

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

Extreme event type	Suggested contingency measure			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
<b>Heat Wave</b>				
Paddy	Drain out the ponded water if any and irrigate with fresh water	-	-	-
<b>Horticulture</b>				
Mango	Frequent irrigation	Frequent irrigation	Frequent irrigation	-
Guava	Frequent irrigation	Frequent	Frequent irrigation	

		irrigation		
<b>Cold wave</b>				
Potato	-	Frequent irrigation & Preventive spraying of fungicide	-	-
<b>Horticulture</b>				
Mango	-	Frequent irrigation	-	-
Guava	-	Frequent irrigation	-	-
<b>Frost</b>				
Potato	-	Frequent irrigation & Preventive spraying of fungicide	-	-

## 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>Drought</b>				
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</p>	<p>Harvest and use biomass of dried up crops (Sorghum, Bajra, Maize, 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</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>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 red gram stalks may be exploited</p> <p>Preserving maize fodder as silage for future use</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>supplemented with vitamin &amp; 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 &amp; 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 &amp; 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><b>Heat &amp; Cold wave</b></p>	<p>In villages which are chronically prone to heat waves the following permanent measures are suggested</p> <ol style="list-style-type: none"> <li>i) Plantation of trees like Neem, Pipal, Subabul around the shed</li> <li>ii) Spreading of</li> </ol>	<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</p>	<p>Green and concentrates supplementation should be provided to all the animals.</p> <p>Allow the animals for grazing (normal timings)</p>



	<p>husk/straw/coconut leaves on the roof of the shed</p> <p>iii) Water sprinklers / foggers in the animal shed</p> <p>iv) Application of white reflector paint on the roof to reduce thermal radiation effect</p> <p><b>Cold wave :</b> 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>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>	
<b>Health and Disease management</b>	<p>List out the endemic diseases (species wise) in that district and store vaccines for those diseases</p> <p>Timely vaccination (as per enclosed vaccination schedule) against all endemic diseases</p> <p>Surveillance and disease monitoring network to be established at Joint Director (Animal Husbandry) office in the district</p>	<p>Constitution of Rapid Action Veterinary Force</p> <p>Procurement of emergency medicines and medical kits</p> <p>Performing ring vaccination (8 km radius) in case of any outbreak</p> <p>Restricting movement of livestock in case of any epidemic</p> <p>Rescue of sick and injured animals and their treatment</p>	<p>Conducting mass animal health camps</p> <p>Conducting fertility camps</p> <p>Mass deworming camps</p>
<b>Insurance</b>	<p>Insurance policy for loss of production due to drought may be developed</p> <p>Encouraging insurance of livestock</p>	<p>Listing out the details of the dead animals and loss of production in high yielders</p>	<p>Submission for insurance claim and availing insurance benefit</p> <p>Purchase of new productive animals</p>
Drinking water	<p>Identification of water resources</p> <p>Rain water harvesting and create water bodies/watering points (when</p>	<p>Restrict wallowing of animals in water bodies/resources</p> <p>Provision of wholesome clean drinking water at least 3 times in a day</p>	<p>Bleach (0.1%) drinking water / water sources</p> <p>Provide clean drinking water</p>

	water is scarce use only as drinking water for animals)		
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**2.5.2 Poultry**

	<b>Suggested contingency measures</b>		
	<b>Before the event</b>	<b>During the event</b>	<b>After the event</b>
<b>Drought</b>			
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
<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	Routine practices are followed

		drinking water or feed (Reestobal etc., 10-20ml per litre)	
<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