State: Uttar Pradesh

Agriculture Contingency Plan for District: Auraiya

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	Longitude	Altitude (mt)
		26.48 N	79.06 E	-
	Name and address of the concerned ZRS/ZARS/RARS/RRS/RRTTS			
	Mention the KVK located in the district with address	Krishi Vigyan Kendra, Sanjay Nagar, Near Police Station, Dibyapur Main Road, Phafund, Auraiya,		
	Name and address of the nearest Agromet Field Unit(AMFU,IMD)for agro advisories in the Zone	CSAUAT, Kanpur		

1.2	Rainfall	Normal RF (mm)	Normal Rainy Days (Number)	Normal Onset	Normal Cessation
	SW monsoon (June-sep)	669.1	45	**3nd week of June**	4rd week of September
	Post monsoon (Oct-Dec)	33.8	10		
	Winter (Jan-March)	34.7	10	-	-
	Pre (Apr-May)	14.8	2	-	-
	Annual	752.4	67	-	-

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)	206.126	172.596	4.321	20.902	1.292	7.087	1.521	7.015	11.090	7.577

1.4	Major Soils	Area(‘000 ha)	Percent(%) of total
	Deep, loamy soils and slightly eroded	48.35	28
	Deep, silty soils, slightly saline and strongly sodic	41.00	24
	Deep, loamy soils and slightly eroded associated with loamy soils with moderate salinity and sodicity	38.00	22

1.5	Agricultural land use	Area(‘000 ha)	Cropping intensity (%)
	Net sown area	145.321	134.89 %
	Area sown more than once	87.499	
	Gross cropped area	232.820	

1.6	Irrigation	Area(‘000 ha)		
	Net irrigation area	127.804		
	Gross irrigated area	190.640		
	Rain fed area	17.517		
	Sources of irrigation(Gross Irr. Area)	Number	Area(’000 ha)	Percentage of total irrigated area
	Canals	-	94.095	49.4
	Tanks	-	0.085	
	Open wells	-	0.185	0.1
	Bore wells(Tube wells)	-	96.275	50.5
	Lift irrigation schemes	-	NA	
	Micro-irrigation	-	NA	
	Other sources	-	0	
	Total Irrigated Area	-	190.640	
	No. of Pump sets (2011-12)	39584		
	No. of Tractors	3690		
	Groundwater availability and use* (Data source: State/ Central Ground water Department/ Board)	No of blocks- Tehsils-	(%)area	Quality of water
	Over exploited			
	Critical			
	Semi-critical			
	Safe			
	Waste water availability and use			
	Ground water quality			
*over-exploited groundwater utilization> 100%; critical: 90-100%; semicritical:70-90%; safe:<70%				

NA- Not applicable

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

1.7	Major field crops cultivated	Area('000 ha)							
		Kharif			Rabi			Summer	Total
		Irrigated	Rain fed	Total	Irrigated	Rain fed	Total		
	Wheat	-	-	-	102.842	0.051	102.893	-	102.893
	Rice	48.682	0	48.682	-	-	-	-	48.682
	Rapeseed Mustard	-	-	-	10.614	3.156	13.770	-	13.770
	Maize	6.929	1.774	8.703	-	-	-	-	8.703
	Pigeon pea	0.228	2.898	3.126	-	-	-	-	3.126
	Barley	-	-	-	1.963	0.344	2.307	-	2.307

	Horticulture crops -Fruits	Area ('000 ha)		
		Total	Irrigated	Rainfed
	Mango	0.022	0.022	-
	Guava	0.022	0.022	-
	Horticulture crops -	Total	Irrigated	Rainfed
	Potato	4.425	4.425	-
	Onion	0.085	0.085	-
	Pea	0.354	0.354	-

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

1.7	Major Fodder crops cultivated	Area(ha)	Total
	Kharif	1889	1889
	Rabi	753	753
	Summer	94	94
	Total	2736	2736

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	130.769	2852	-	-	-	-	130.769	2852	NA
	Maize	18.940	2117	-	-	-	-	18.940	2117	NA
	Wheat	-	-	349.213	3439	-	-	349.213	3439	NA
	Rapeseed Mustard	-	-	21.195	1478	-	-	21.195	1478	NA
	Barley	-	-	6.215	2665	-	-	6.215	2665	NA
	Pigeon pea	4.647	1245	-	-	-	-	4.647	1245	NA

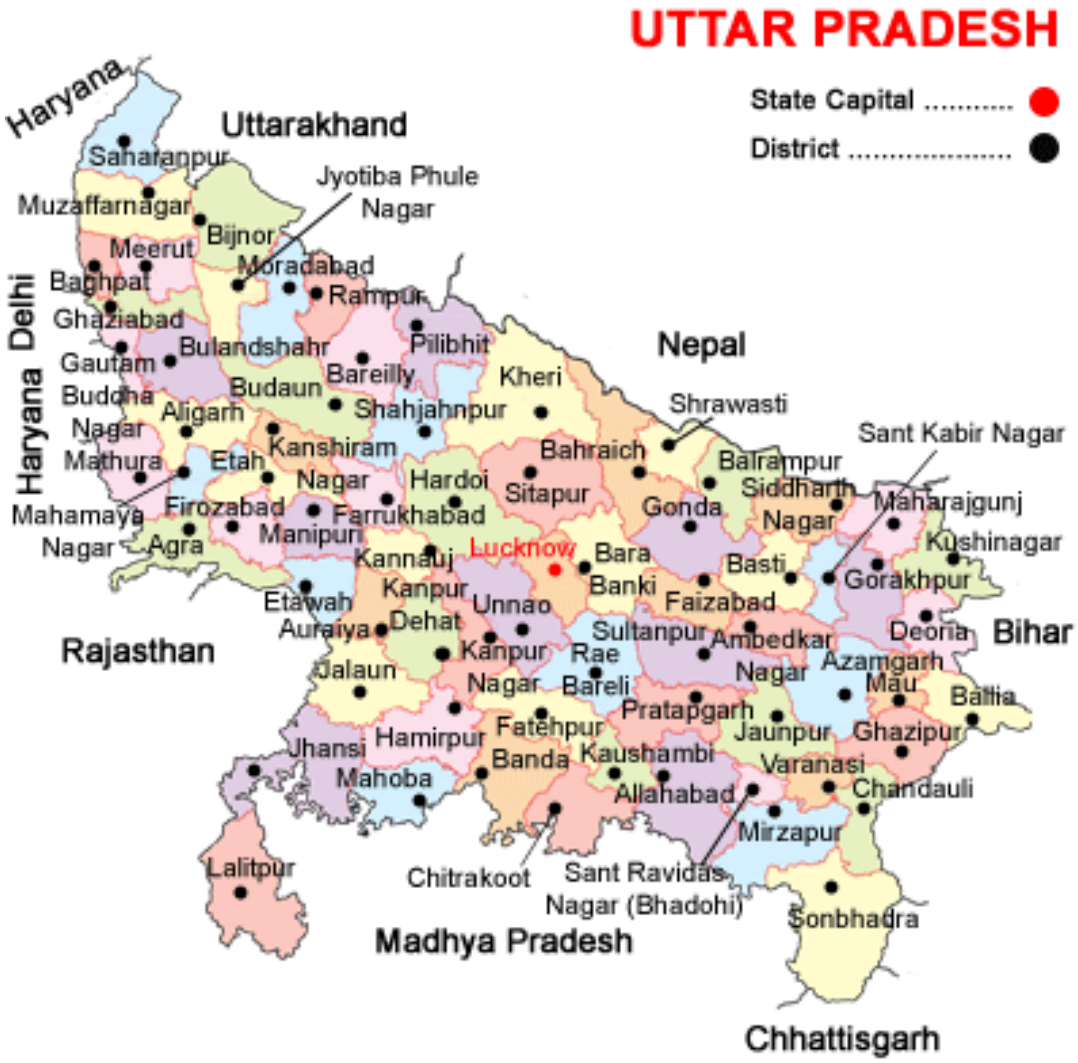
1.9	Livestock(year 2007)	Male(000)	Female(000)	Total(000)
	Non descriptive Cattle (local low yielding)	36.477	56.330	92.807
	Improved cattle	0.009	0.022	0.031
	Crossbred Cattle	1.844	5.415	7.259
	Non descriptive Buffaloes (local low yielding)	23.871	91.455	115.326
	Descript Buffaloes	27.790	106.419	134.209
	Goat	88.157	109.101	197.258
	Sheep			7.922
	Other (Camel,Pig, Yak etc)			15.627
	Commerical dairy farms (number)			0.000

1.10	**Normal sowing window for 5 major field crops**	**Rice**	**Pigeon Pea**	**Maize**	**Pearl millet**	**Urd**	**Sorghum**	**Wheat**	**Pea**	**Gram**	**Mustard**
	Kharif – Rainfed	-	First week of July to Last week of July	3rd week of June to First week of July	2nd week of July to last week of July	2nd week of July to First week of August	First week of July to 2nd week of July	-	-	-	-
	Kharif - Irrigated	3rd week of June to Last week of July	-	-	-	2nd week of July to First week of August	First week of July to 2nd week of July	-	-	-	-
	Rabi –Rain fed							Last week of Oct to 2nd 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 2nd week of Oct
	Rabi - Irrigated							2nd 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.	-	✓	-

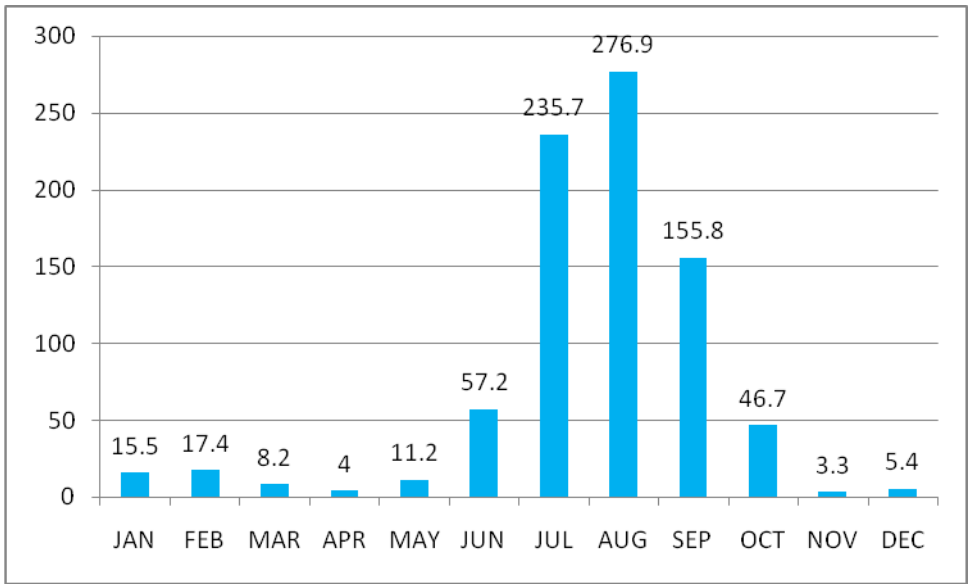
Annexure I

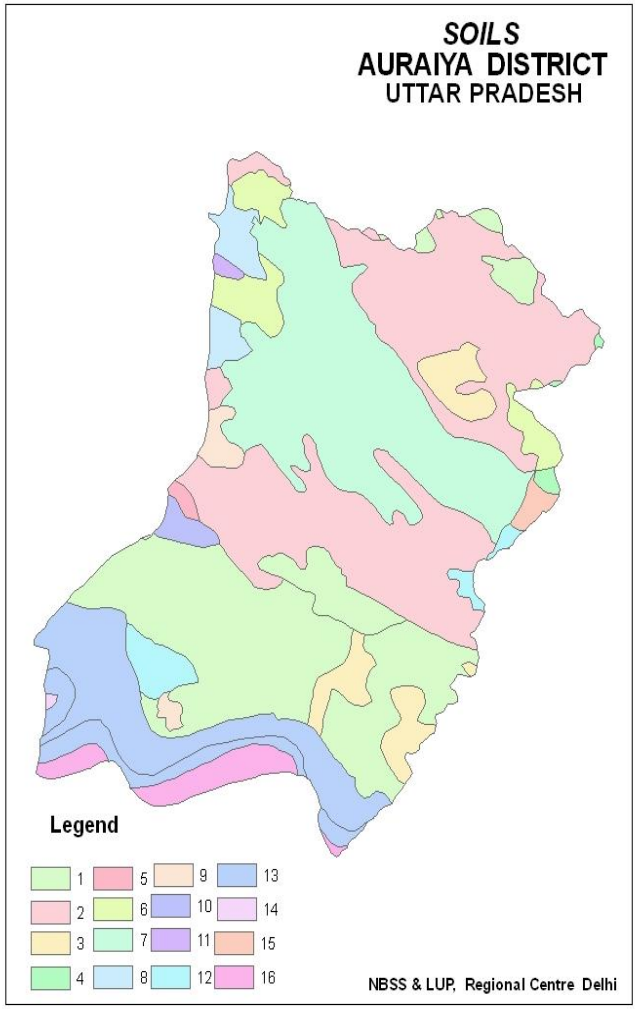
Location map of Agra district



Annexure 2

Average Month-wise rainfall (mm) in Auraiya District





SOILS OF AURAIYA DISTRICT (U.P.)

Alluvial plain (0-1% slope)

1. Deep, loamy soils and slightly eroded
2. Deep, silty soils, slightly saline and strongly sodic associated with loamy soils
3. Deep, loamy soils and slightly eroded associated with silty soils
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, silty soils with moderately salinity and sodicity associated with loamy soils with moderate salinity and sodicity and water logging
7. Deep, loamy soils and slightly eroded associated with loamy soils with moderate salinity and sodicity and moderate water logging.
8. Deep, silty soils and slightly saline/ sodic
9. Deep, loamy soils, slight salinity and moderately sodicity associated with silty soils slightly eroded
10. Deep, silty soils with moderate salinity/sodicity associated with loamy soils slightly eroded
11. Deep, silty soils and slightly eroded
12. Deep, silty soils and slightly eroded associated with fine soils

Ravinous land (3-5% slope)

13. Deep, loamy soils and severely eroded
14. Deep, loamy soils, very severely eroded associated with silty soils, very severely eroded

Gentle to very gentle sloping lands with monad nocks

15. Deep, loamy soils and slightly eroded associated with sandy soils, slightly eroded

Ravinous Land (5-10% slope)

16. Deep, fine smectitic soils and are moderately eroded associated with fine soils moderately eroded

Source: NBSSLUP, Regional Centre, New Delhi

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 / Cropping system**	**Change in crop / cropping system including variety**	**Agronomic measures**	**Remarks on Implementation**
Delay by 2 weeks (July 1st week)	Deep, loamy soils / Deep, silty soils,	Pearl millet **Composite-** ICMB-155, WCC-75,ICTP-8203 and Raj-171 **Hybrid-** Pusa-23 & 322 and ICMH-451	No change	Prefer sowing with ferti-cum-seed drill Thinning, Inter culture/	Prefer disease free certified seed from a reliable source
		Maize **Composite-** Naveen, Azad uttam, Pragati,Gaurav and KH-510 **Hybrid-** Ganga-11, Sartaj , HQPM-5 and Prakash, JH-3459	No change	Prefer sowing with ferti-cum-seed drill Adopt ridge and furrow system	
		Pigeon pea **(** **(Late)** Bahar, Amar,Azad, Narendra-1, Pusa-9, PDA-11	No change **Early maturing varities:** Paras, UPAS-120, T-21, Pusa-992	Prefer sowing with ferti-cum-seed drill Adopt ridge and furrow system Thinning, Inter culture/	
Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delay by 4 weeks (July 3rd week)	Deep, loamy soils / Deep, silty soils,	Pearl millet **Composite-** ICMB-155, WCC-75,ICTP-8203 and Raj-171 **Hybrid-** Pusa-23 & 322 and ICMH-451	No change	Prefer sowing with ferti-cum-seed drill Thinning, Inter culture/	Prefer disease free certified seed from SDC/SAUs

		Maize **Composite-** Naveen, Azad uttam, Pragati,Gaurav and KH-510 **Hybrid-** Ganga-11, Sartaj , HQPM-5 and Prakash, JH-3459	No change	Prefer sowing with ferti-cum-seed drill Adopt ridge and furrow system Thinning, Inter culture/	
		Pigeon pea **(Early)** UPAS-120, T-21, Pusa-992 **(Late)** Bahar, Amar,Azad, Narendra-1, Pusa-9, PDA-11	No change	Prefer sowing with ferti-cum-seed drill Adopt ridge and furrow system Thinning, Inter culture	

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delay by 6 weeks (Aug. 1st week)	Deep, loamy soils / Deep, silty soils,	Pearl millet **Composite-** ICMB-155, WCC-75,ICTP-8203 and Raj-171 **Hybrid-** Pusa-23 & 322 and ICMH-451	No change	Use early maturing varieties, Thinning, Inter-culture, Mulching	Prefer disease free certified seed from SDC/SAUs
		Maize: **Composite-** Naveen, Azad uttam, Pragati,Gaurav and KH-510 **Hybrid-** Ganga-11, Sartaj , HQPM-5 and Prakash, JH-3459	Replace by Bajra	Prefer early maturing varieties, Thinning, Inter-culture, Mulching	
		Pigeon pea **(Early)** UPAS-120, T-21, Pusa-992 **(Late)** Bahar, Amar,Azad, Narendra-1, Pusa-9, PDA-11	Replace by Bajra	Prefer medium maturing varieties, Thinning, Inter-culture, Mulching	

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delay by 8 weeks (Aug. 3rd week)	Deep, loamy soils / Deep, silty soils,	Pearl millet **Composite-** ICMB-155, WCC-75,ICTP-8203 and Raj-171 **Hybrid-** Pusa-23 & 322 and ICMH-451	Fallow	Moisture conservation and preparation of fields for rabi crop	
		Maize: **Composite-** Naveen, Azad uttam, Pragati,Gaurav and KH-510 **Hybrid-** Ganga-11, Sartaj , HQPM-5 and Prakash, JH-3459	Fallow	Moisture conservation and preparation of fields for rabi crop	
		Pigeon pea **(Early)** Paras, UPAS-120, T-21, Pusa-992 **(Late)** Bahar, Amar,Azad, Narendra-1, Pusa-9, PDA-11	Fallow	Moisture conservation and preparation of fields for rabi crop	

Condition			**Suggested Contingency measures**		
Early season drought **(Normal onset)**	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	Deep, loamy soils / Deep, silty soils,	Pearl millet **Composite-** ICMB-155, WCC-75,ICTP-8203 and Raj-171 **Hybrid-** Pusa-23 & 322 and ICMH-451	Re-sowing if plant population less than 70% Light irrigation if available	Thinning and gap filling in the existing crop. Inter-culture	
		Maize **Composite-** Naveen, Azad uttam, Pragati,Gaurav and	Re-sowing if plant population less than 70% Light irrigation if available	Thinning and gap filling in the existing crop.	

		KH-510 **Hybrid--** Ganga-11, Sartaj , HQPM-5 and Prakash, JH-3459		Mulching, Inter-culture	
		Pigeon pea **(Early)** Paras, UPAS-120, T-21, Pusa-992 **(Late)** Bahar, Amar,Azad, Narendra-1, Pusa-9, PDA-11	Resowing if plant population less than 70% Light irrigation if available	Thinning and gap filling in the existing crop. Mulching, Inter-culture	

Condition			**Suggested Contingency measures**		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**
At vegetative stage	Deep, loamy soils / Deep, silty soils,	Pearl millet: **Composite-** ICMB-155, WCC-75,ICTP-8203 and Raj-171 **Hybrid-** Pusa-23 & 322 and ICMH-451	Light irrigation if available	Thinning, Inter-culture,	
		Maize: **Composite-** Naveen, Azad uttam, Pragati,Gaurav and KH-510 **Hybrid-** Ganga-11, Sartaj , HQPM-5 and Prakash, JH-3459	Light irrigation if available	Thinning, Inter-culture, Mulching	
		Pigeon pea **(Early)** Paras, UPAS-120, T-21, Pusa-992 **(Late)** Bahar, Amar,Azad, Narendra-1, Pusa-9, PDA-11	Light irrigation if available	Thinning and gap filling in the existing crop. Mulching, Inter-culture	

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**
At flowering/ fruiting stage	Deep, loamy soils / Deep, silty soils,	Pearl millet: **Composite-** ICMB-155, WCC-75,ICTP-8203 and Raj-171 **Hybrid-** Pusa-23 & 322 and ICMH-451	Light irrigation, if available	Spray 2% solution of Urea and MOP Mulching	
		Maize: **Composite-** Naveen, Azad uttam, Pragati,Gaurav and KH-510 **Hybrid-** Ganga-11, Sartaj , HQPM-5 and Prakash, JH-3459	Light irrigation, if available	Spray 2% solution of Urea , and MOP Mulching	
		Pigeon pea **(Early)** Paras, UPAS-120, T-21, Pusa-992 **(Late)** Bahar, Amar,Azad, Narendra-1, Pusa-9, PDA-11	Light irrigation, i available	Mulching	

Condition			**Suggested Contingency measures**		
Terminal drought (Early withdrawal of monsoon)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Rabi Crop planning**	**Remarks on Implementation**
	Deep, loamy soils / Deep, silty soils,	Pearl millet: **Composite-** ICMB-155, WCC-75,ICTP-8203 and Raj-171 **Hybrid-** Pusa-23 & 322 and ICMH-451	In case of severe drought, harvest for fodder	Moisture conservation and prepare field for rabi crops	
		Maize **:Composite-** Naveen, Azad uttam, Pragati,Gaurav and KH-510 **Hybrid-** Ganga-11, Sartaj , HQPM-5 and Prakash, JH-3459	In case of severe drought, harvest for fodder and harvest for green cobs.	Moisture conservation and prepare field for rabi crops	
		Pigeon pea **(Early)** Paras, UPAS-120, T-21, Pusa-992 **(Late)** Bahar, Amar,Azad, Narendra-1, Pusa-9, PDA-11	Supplemental irrigation, If available	Moisture conservation and prepare field for rabi crop s	

2.1.2 Drought - Irrigated situation

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delayed release of water in canals due to low rainfall	Deep, loamy soils / Deep, silty soils,	Paddy: (Transplanted) **Rain-fed ;** Govind, Narendra-118,97 , Ashwani, **Irrigated (**Early) Saket-4, Ratna, Pant-12, Narendra-80, 2026 **Irrigated (**Medium) Sarjoo-52, Pant-4, Narendra-359, 2026,2064 **Irrigated (**Late)- Type-3, PB-1, Kashturi, Narendra lalmati and Malvya sugandh	Direct seeded Paddy /Drum seeding/SRI Use short duration varieties (Saket-4, Ratna, Pant-12, Narendra-80, 2026) Transplant 2-3 seed ling/hil Ensure application of MOP	Limited irrigation, weed management	

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 / Deep, silty soils,	Paddy: (Transplanted) **Rain-fed ;** Govind, Narendra-118,97 , Ashwani, **Irrigated (**Early) Saket-4, Ratna, Pant-12, Narendra-80, 2026 **Irrigated (**Medium) Sarjoo-52, Pant-4, Narendra-359, 2026,2064 **Irrigated (**Late)- Type-3, PB-1, Kashturi, Narendra lalmati and Malvya sugandh	• Direct seeded Rice/Drum seeding • SRI • Use short duration varieties (Saket-4, Ratna, Pant-12, Narendra-80, 2026) • Transplant 2-3 seed ling/hill • Ensure application of MOP	Limited irrigation, weed management	

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Non release of water in canals under delayed onset of monsoon in catchment	Deep, loamy soils / Deep, silty soils,	Cropping system 1:Paddy (Transplanted) **Rain-fed ;** Govind, Narendra-118,97 , Ashwani, **Irrigated (**Early) Saket-4, Ratna, Pant-12, Narendra-80, 2026 **Irrigated (**Medium) Sarjoo-52, Pant-4, Narendra-359, 2026,2064 **Irrigated (**Late)- Type-3, PB-1, Kashturi, Narendra lalmati and Malvya sugandh	Replace by Jowar/ bajra and Pigeon Pea	Ridge planting Increase 10-15 % seed Manual weeding Application of MOP	

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

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Insufficient groundwater recharge due to low rainfall	Deep, loamy soils / Deep, silty soils,	Paddy: (Transplanted) **Rain-fed ;** Govind, Narendra-118,97 , Ashwani, **Irrigated (**Early) Saket-4, Ratna, Pant-12, Narendra-80, 2026 **Irrigated (**Medium) Sarjoo-	Replace by sorghum/pearl millet and Pigeon Pea	• Ridge planting • Increase 10-15 % seed rate • Manual weeding • Application of MOP	

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
		52, Pant-4, Narendra-359, 2026,2064 **Irrigated (**Late)- Type-3, PB-1, Kashturi, Narendra lalmati and Malvya sugandh			

2.2 Unusual rains (untimely, un seasonal etc)

Condition	**Suggested contingency measure**			
Continuous high rainfall in a short span leading to water logging	**Vegetative stage**	**Flowering stage**	**Crop maturity stage**	**Post harvest**
Paddy	Bunding around the field	Bunding around the field	Drain out excess water	
Pearl millet	Drain out excess water from the fields			Hift the produce to safer place
Maize				
Pigeon pea				
Urdbean				
Horticulture				
Heavy rainfall with high speed winds in a short span[2]	Not applicable			
Outbreak of pests and diseases due to un seasonal rains	Adopt need based and recommended plant protection mjeasures			
Paddy	Spray of Chloropyriphos 2.5 lt./ ha.for termite and For stemborer (Cartap @25 kg/ hac)	Dusting of Methyl parathion @15 kg/ha. for Gandhi Bug and Chlorothalonil @2ml/lt of water for false smut.	-	-
Maize	Spray of Chloropyriphos 2.5 lt./ ha. 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./ ha. 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./ ha. for early shoot borar	Spray of Mancozeb(0.2%) for rust.		
Pigeon pea	Spray of Chloropyriphos 2.5 lt./ ha. for termite	Spray of Chloropyriphos 2.5 lt./ ha Or Monocrtophos @1.25lt/hac for control podborar	-	-

2.3 Floods : Not applicable

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

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

Extreme event type	**Suggested contingency measure[r]**			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Heat Wave				
Paddy	Drain out the ponded water if any and irrigate with fresh water	-	-	-
Horticulture				
Mango	Frequent irrigation	Frequent irrigation	Frequent irrigation	_
Guava	Frequent irrigation	Frequent irrigation	Frequent irrigation	
Cold wave				
Potato	-	Frequent irrigation & Preventive spraying of fungicide		
Horticulture				
Mango	-	Frequent irrigation		
Guava	-	Frequent irrigation		
Frost				
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**
Drought			
Feed and Fodder availability	Top dressing of N in 2-3 split doses @ 20-25 kg N/ha in common property resources (CPRs) or private property resources (PPRs) like waste and degraded lands with the monsoon pattern for higher biomass production Promote cultivation of short duration fodder crops of sorghum/bajra/maize suitable to the district Sowing of fodder crops like *Stylo* and *Cenchrus* on bunds so as to provide fodder and strengthening of bunds Avoid burning of wheat and paddy straw and storing as dry fodder for future use Proper drying, bailing and densification of harvested dry fodder for transport to the needy villages Complete feed preparation using red gram stalks may be exploited Preserving maize fodder as silage for future use Establishment of silvi-pastoral system in CPRs with *Stylosanthus hamata* and *Cenchrus ciliaris* as grass with *Leucaena*	Harvest and use biomass of dried up crops (Sorghum, Bajra, Maize, Rice, etc) material as fodder. Harvest the tree fodder (Neem, Subabul, Acasia, Pipal etc) and unconventional feeds resources available and use as fodder for livestock (LS). Available feed and fodder should be cut from CPRs and stall fed in order to reduce the energy requirements of the animals In case of mild drought, the available dry fodder may be enriched with urea and molasses and the productive livestock should be supplemented with vitamin & minerals mixture. The available silage may be used as green fodder supplement for high yielders and pregnant animals In case of severe drought, UMMB, hay, concentrates and vitamin & mineral mixture should be transported to the needy areas from the reserves at the district level initially and latter stages from the near by districts. All the hay should be enriched with 2% Urea molasses solution or 1% common salt solution and fed to LS Herd should be split and supplementation should be given only to the highly productive and breeding animals Provision of emergency grazing/feeding (Cow-calf camps or other special arrangements to protect high productive & breeding stock) Available kitchen waste should be mixed with dry fodder while feeding Arrangements should be made for mobilization of small ruminants across	Green and concentrates supplementation should be provided to all the animals. Short duration fodder crops of should be sown in unsown and crop failed areas where no further routine crop sowing is not possible Promote cultivation of fodder crops during Rabi season

	leucocephala as tree component Creation of permanent fodder, feed and fodder seed banks in all drought prone villages	the districts where no drought exits with subsidized road/rail transportation and temporary shelter provision for the shepherds Unproductive livestock should to be culled during severe drought Create transportation and marketing facilities for the culled and unproductive animals (10000-20000 animals) in case of severe drought Subsidized loans (5-10 crores) should be provided to the livestock keepers for purchase of supplements, concentrate feed ingredients etc., in case of severe drought	
Heat & Cold wave	In villages which are chronically prone to heat waves the following permanent measures are suggested i) Plantation of trees like Neem, Pipal, Subabul around the shed ii) Spreading of husk/straw/coconut leaves on the roof of the shed iii) Water sprinklers / foggers in the animal shed **iv)** Application of white reflector paint on the roof to reduce thermal radiation effect **Cold wave :** Covering all the wire meshed walls / open area with gunny bags/ polyethylene sheets with a mechanism for lifting during the day time and closing during night	Allow the animals preferably early in the morning or late in the evening for grazing during heat waves Allow for grazing between 10AM to 3PM during cold waves Feed green fodder/silage / concentrates during day time and roughages / hay during night time in case of heat waves Add 25-50 ml of edible oil in concentrates per kg and fed to the animal during cold waves Apply / sprinkle lime powder (5-10g per square feet) in the animal shed during cold waves to neutralize ammonia accumulation Put on the foggers / sprinklers during heat weaves and heaters during cold waves in case of high productive animals In severe cases, vitamin 'C' (5-10ml per litre) and electrolytes (Electral powder @ 20g per litre) should be added in water during severe heat waves.	Green and concentrates supplementation should be provided to all the animals. Allow the animals for grazing (normal timings)
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	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	Conducting mass animal health camps Conducting fertility camps Mass deworming camps

	diseases Surveillance and disease monitoring network to be established at Joint Director (Animal Husbandry) office in the district	Rescue of sick and injured animals and their treatment	
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