State: UTTAR PRADESH

Agriculture Contingency Plan for District: CHANDAULI

1.0 District Agriculture profile				
1.1	**Agro-Climatic/Ecological Zone**			
	Agro Ecological Sub Region (ICAR)	Northern Plain, Hot Subhumib (Dry) Eco-Region (9.2)		
	Agro-Climatic Zone (Planning Commission)	Middle Ganetic Plain Region (IV)		
	Agro Climatic Zone (NARP)	Vidhyan Zone (UP-10)		
	List all the districts falling under the NARP Zone* (*>50% area falling in the zone)	Allahabad, Ballia , Chandauli, Ghazipur, Jaunpur , Mirzapur , Sant Ravidas Nagar , Sonbhadra , Varanasi		
	Geographic coordinates of district headquarters	Latitude	Longitude	Altitude
		25°16'N	83°16'E	70m
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Institute of Agricultural Sciences, Banaras Hindu University, Varanasi.		
	Mention the KVK located in the district with address	KVK, Bichiya Agriculture farm, Near Vikas Bhawan, Chandauli		
	Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro-advisories in the Zone	Small meteorological unit, Chandauli		

1.2	**Rainfall**	**Normal RF(mm)**	**Normal Rainy days (number)**	**Normal Onset**	**Normal Cessation**
	SW monsoon (June-Sep)	926.4	39	3rd week of June	1st week of October
	NE Monsoon(Oct-Dec)	60.6	3		
	Winter (Jan- March)	51.9	4	-	-
	Summer (Apr-May)	17.5	2	-	-
	Annual	1056.4	48	-	-

1.3	**Land use pattern of the district** (latest statistics)	Geographical area	Cultivable area	Forest area	Land under non-agricultural use	Permanent pastures	Cultivable wasteland	Land under Misc. tree crops and groves	Barren and uncultivable land	Current fallows	Other fallows
	Area (‘000 ha)	253.359	135.595	77.400	25.389	0.036	1.125	1.236	2.830	7.719	2.029

1. 4	**Major Soils**	**Area (‘000 ha)**	**Percent (%) of total**
	Loam soils	122	48.0
	Clay loam soils	54	21.0
	Clay soils	26	10.0
	Sandy loam soils	20	8 .0
	Sandy soils	18	7.0
	Rocky track	13	5.0
	Total	253	

1.5	**Agricultural land use**	Area (‘000 ha)	Cropping intensity %
	Net sown area	135.595	187.0
	Area sown more than once	117.983	
	Gross cropped area	253.578	

1.6	**Irrigation**	**Area (‘000 ha)**		
	Net irrigated area	126.530		
	Gross irrigated area	219.827		
	Rainfed area	9.065		
	Sources of Irrigation	**Number**	**Area (‘000 ha)**	**Percentage of total irrigated area**
	Canals	-	105.028	83.0
	Tanks	-	0.224	0.18
	Open wells	-	0.618	0.49
	Bore wells	-	Govt.9.839 + Pvt. 10.226 = 20.065	15.86
	Lift irrigation schemes	-	-	-
	Micro-irrigation	-	-	-
	Other sources (please specify)	-	0.595	0.47
	Total Irrigated Area	-	126.530	

	Pump sets	-		
	No. of Tractors	-		
	Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	No. of blocks –9	(%) area	Quality of water
	Over exploited			No problem of arsenic & fluoride however, low amount of salinity is reported.
	Critical			
	Semi- critical			
	Safe	Safe		
	Wastewater availability and use			
	Ground water quality			

***** Over exploited: ground water utilization > 100%, critical: 90-100%; semi-critical: 70 – 90%,; safe: < 70%.

1.7 Area under major field crops & horticulture (Specify year 2007-08)

1.7	**Major field crops cultivated**	**Area ('000 ha)**							
		Kharif			***Rabi***			**Summer**	
		Irrigated	Rainfed	Total	Irrigated	Rainfed	Total		Grand total
	Rice	114.059	0.058	114.117		-		-	114.117
	Pearl millet	0.00	4.912	4.192	-	-	-	-	4.192
	Pigeonpea	0.000	2.958	2.958	-	-	-	-	2.958
	Wheat	-	-		101.972	0.104	102.076	-	102.076
	Lentil	-	-		0.027	13.744	13.771	-	13.771
	Pea	-	-	-	0.214	2.106	2.320	-	2.320

S. No	**Horticultural Crops(Fruit Crop) (2009-10)**	**Total**	**Irrigated**	**Rainfed**
	Guava	0.575	-	-
	Banana	0.500	0.500	
	Mango	0.450	-	-
	Lemon	0.110	-	-
	Aonla	0.050	-	-
	Horticulture crops – Vegetables	**Total (000 ha)**	**Irrigated (000 ha)**	**Rainfed (000 ha)**
	Potato	1.010	1.010	-
	Vegetable Pea	0.500	0.500	-
	Cauliflower	0.400	0.400	-

	Tomato	0.350	0.350	-
	Onion	0.250	0.250	-
	Chili	0.220	0.220	-
	Medicinal and Aromatic crops	**Total (000 ha)**	**Irrigated (000 ha)**	**Rainfed (000 ha)**
	Plantation crops	**Total**	**Irrigated**	**Rainfed**
	Fodder crops	**Total**	**Irrigated**	**Rainfed**
	Total fodder crop area	**1.926**	**0.721**	**1.205**
	Grazing land	**0.036**	-	-
	Sericulture etc	-	-	-

1.8	**Livestock* Based On- 2003 Censuss**	**Male ('000)**	**Female ('000)**	**Male + Female (<3 Yrs) ('000)**	**Total ('000)**
	Non descriptive Cattle (local low yielding)	24.040	63.950	68.387	156.377
	Improved cattle	-	-	-	-
	Crossbred cattle	0.423	7.544	9.236	17.203
	Non descriptive Buffaloes (local low yielding)	0.862	79.419	75.761	156.042
	Descript Buffaloes	0.862	79.419	75.761	156.042
	Goat	-	-	-	86.744
	Sheep	-	-	-	23.723
	Others (Camel, Pig, Yak etc.)	-	-	-	10.350
	Commercial dairy farms (Number)	-	-	-	-

1.9	**Poultry**	**No. of farms**	**Total No. of birds ('000)**
	Commercial		184.353
	Backyard		29.032

1.10 Fisheries (Data source: Chief Planning Officer)						
A. Capture						
i) Marine (Data Source: Fisheries Department)	**No. of fishermen**	**Boats**		**Nets**		**Storage facilities (Ice plants etc.)**
		Mechanized	Non-mechanized	Mechanized (Trawl nets, Gill nets)	Non-mechanized (Shore Seines, Stake & trap nets)	

ii) Inland (Data Source: Fisheries Department)	**No. Farmer owned ponds**		**No. of Reservoirs**		**No. of village tanks**	
			11 (Govt.)+ 432 (Private)			
B. Culture						
			Water Spread Area (ha)		**Yield (t/ha)**	**Production ('000 tons)**
i) **Brackish water** (Data Source: MPEDA/ Fisheries Department)			-		-	-
ii) **Fresh water** (Data Source: Fisheries Department)			5425.4(Govt.)+463(Private)			54.934(Govt.)-Angulikao 130.5(Private)

1.11 Production and Productivity of major crops

1.11	Name of crop	**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)	
Major Field crops										
	Rice	280.547	2450	-	-	-	-	280.547	2450	
	Pearl millet	6.116	1282	-	-	-	-	6.116	1282	
	Pigeonpea	2.914	1006	-	-	-	-	2.914	1006	
	Wheat	-	-	187.262	1924	-	-	187.262	1924	
	Pea	-	-	3.1052	1323	-	-	3.1052	1323	
	Lentil	-	-	7.033	526	-	-	7.033	526	
Major Horticultural crops										
Fruit Crops										
	Mango	-	-	-	-	7.875	17500	7.875	17500	
	Guava	9.200	16000	-	-	-	-	9.200	16000	

	Lemon	1.045	9500	-	-	-	-	1.045	9500	
	Amla	0.725	14500	-	-	-	-	0.725	14500	
Vegetable Crop										
	Potato	-	-	20.200	20000	-	-	20.200	20000	
	Vegetable Pea	-	-	7.500	15000	-	-	7.500	15000	
	Cauliflower	-	-	6.200	15500	-	-	6.200	15500	
	Tomato	-	-	8.750	25000	-	-	8.750	25000	
	Onion	-	-	4.500	18000	-	-	4.500	18000	
	Chilli	-	-	2.640	12000	-	-	2.640	12000	

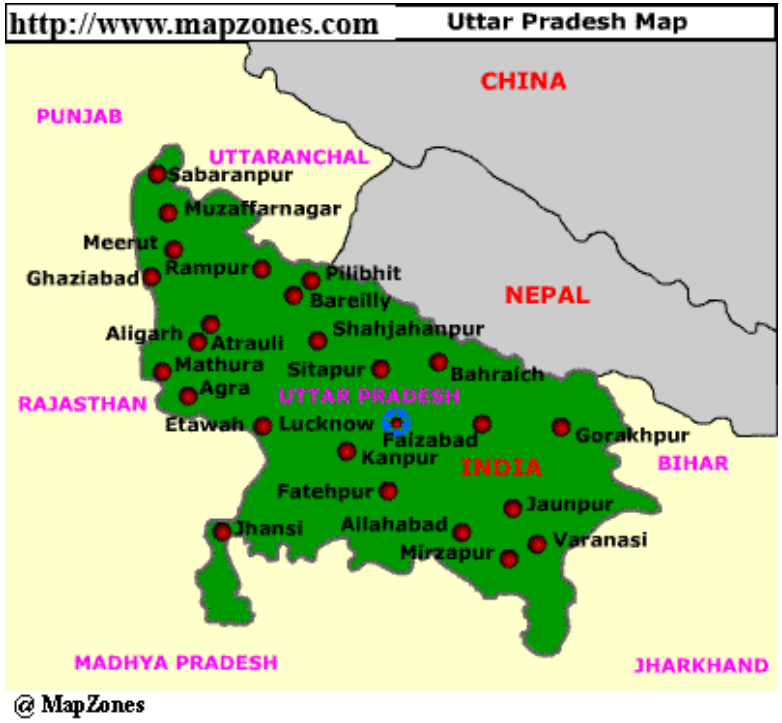
1.12	**Sowing window for 5 major field crops**	**Rice**	**Pigeon pea**	**Wheat**	**Lentil**	**Pea**
	Kharif- Rainfed	4th week of June to 1st week of July	4th week of June to 1st week of July	-	-	-
	Kharif-Irrigated	June (nursery)	-	-	-	-
	Rabi- Rainfed	-	-	2nd week of October to 2nd week of November	2nd week of October to 4th week of October	2nd week of October to 4th week of October
	Rabi-Irrigated	-	-	2nd week of October to 2nd week of November	2nd week of October to 2nd week of November	2nd week of October to 4th week of October

1.13	**What is the major contingency the district is prone to?** (Tick mark)	**Regular**	**Occasional**	**None**
	Drought	✓		
	Flood		✓	
	Cyclone			√
	Hail storm		✓	
	Heat wave		✓	
	Cold wave		✓	
	Frost		✓	
	Sea water intrusion			√

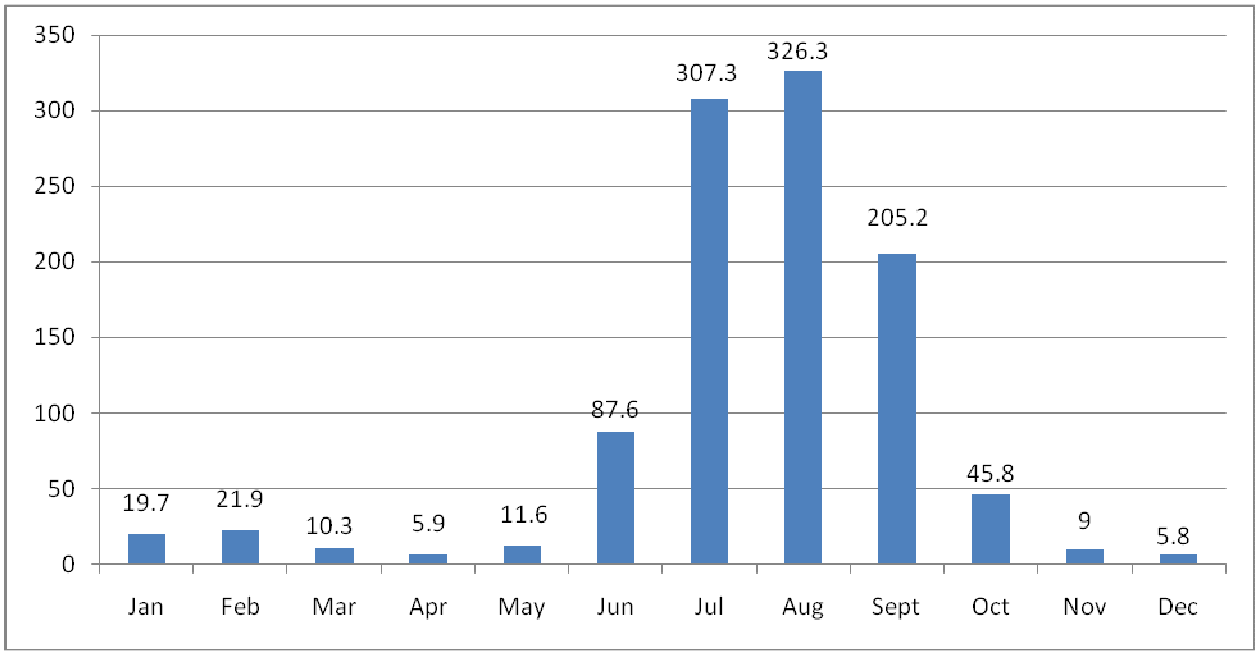
	Pests and disease outbreak	✓		
	Fog	✓		

1.14	**Include Digital maps of the district for**	Location map of district within State as Annexure 1	Enclosed: Yes
		Mean annual rainfall as Annexure II	Enclosed: Yes
		Soil map as Annexure III	Enclosed: Yes

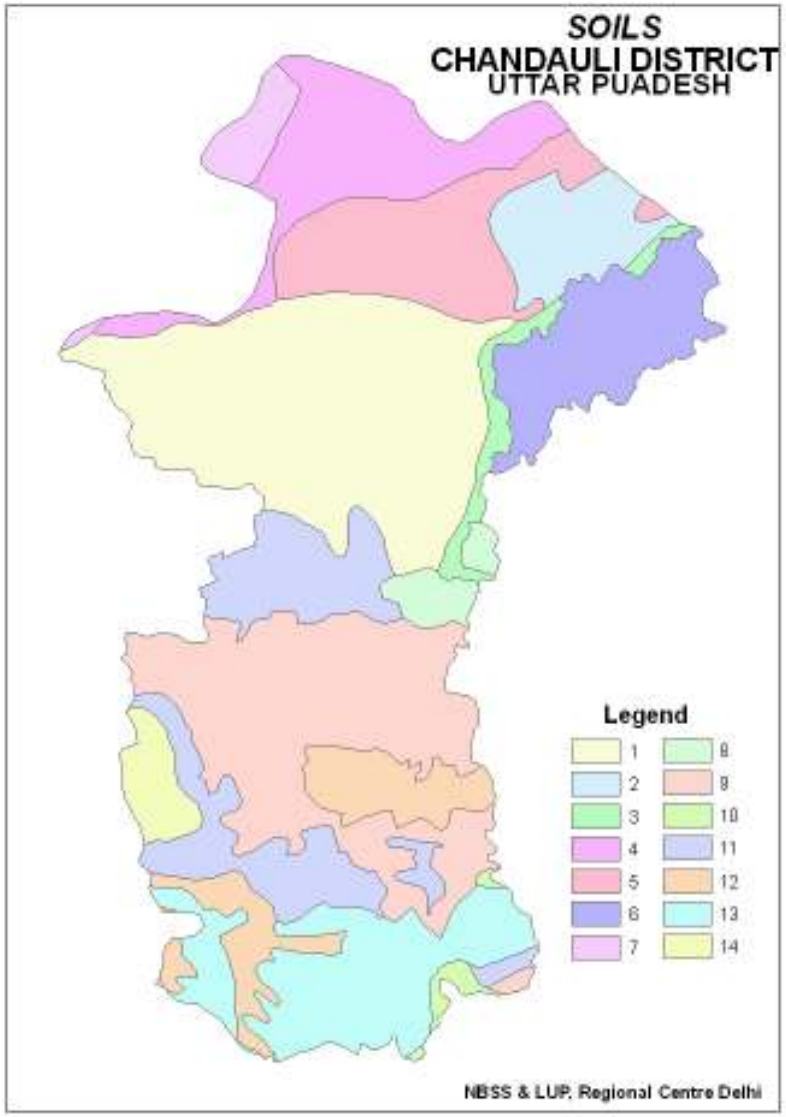
Annexure-1: Location map of Chandauli district within State



Annexure -II: Mean Monthly Rainfall (mm)



Annexure –III



SOILS OF CHANDAULI DISTRICT (U.P.)

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, silty soils with moderately salinity and sodicity associated with loamy soils with moderate salinity and sodicity and water logging
5. Deep, silty soils and slightly eroded associated with fine soils

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

6. Deep, fine soils with moderate water logging associated with fine soils with slight salinity/moderate

Active Flood Plain (1-3% slope)

7. Deep, sandy soils with moderate flooding associated with stratified loamy soils and slight flooding

Vindhyan Ranges and Scrap Lands (Sand stone landscape)
Moderately Steep slopes (15-30% slope)

8. Shallow, loamy skeletal soils and severely eroded associated with shallow, loamy-skeletal soils and moderately eroded

Plateau (Sandstone on 1-3% slope)

9. Moderately shallow, loamy soils and moderately eroded
10. Deep, loamy soils and moderately eroded
11. Deep, loamy soils and moderately eroded associated with fine soils and moderately eroded
12. Deep, loamy soils and moderately eroded associated with moderately shallow loamy soils and moderately eroded
13. Deep, fine smectitic soils and moderately eroded associated with moderately shallow loamy soils and moderately eroded
14. Deep, fine smectitic soils and slightly eroded associated with loamy soils, slightly eroded

2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop / Cropping system**	**Change in crop / cropping system including variety**	**Agronomic measures**	**Remarks on Implementation**
Delay by 2 weeks 1st week of July	Very deep alluvial soils - Upland	**Sequence cropping :** Rice– Lentil Rice- Pea Rice – Chickpea Rice- Mustard Pearl millet- Lentil	Rice Rice short duration varieties such as NDR 97, NDR 118, Varani Deep, Shushk Samrat Under upland Condition Only	Sowing with seed cum ferti drills across the slope. Re-sowing if no proper germination. Weed management through dry land weeder & through weedicides. Surface water management	Seeds may be obtained from the university(NDUAT), NSC Seed drills under RKVY Supply of seeds through NFSM
		Inter cropping : Pigeonpea+ Pearl millet Pigeonpea+Sorghum Pigeonpea+Blackgram	Intercropping of Pigeonpea + Pearl millet and Pigeonpea + rice under upland conditions only Pigeonpea: Bahar, Narendra Arahar-1, Malviya ikas(MA6), Malviya Chamtkar (MA13) Amar, Azad	Sowing of pigeonpea + pearl millet on ridges. Wider spacing of Pigeon pea 90cm and normal spacing of pearl millet i.e. 30 cm for dwarf and 45 cm for tillering genotypes.	Ridger from U.P. agro industries.
	Rainfed medium land	**Sequence cropping:** Rice– Lentil Rice –Pea Rice- Chickpea Rice- Mustard	Early maturing rice varieties of medium height, such as IR-36,Pant Dhan -12, HUR-105, HUR-3022, Govind, Ashwini	Direct sowing in lines through Seed-cum Ferti drill as well as transplanting of rice seed lings after puddling the field. Use of seedlings from Community nursery for transplanting	Breeder seed may be obtained from the University (NDUAT) Seed drills under RKVY Supply of seeds through NFSM
		Inter cropping: Pigeonpea+ Blackgram Pigeonpea+ Sorghum	Pigeonpea+ Rice	Pigeonpea should be planted on ridges and rice should be planted in furrows.	
	Rainfed lowland	**Sequence cropping:** Rice– Lentil	Water stagnation is up to 1m depth:	Transplanting of rice seed lings should be completed	Breeder seed may be obtained from the

		Rice –Wheat Rice- Pea Rice- Mustard	Transplanting with tall rice varieties Cross- 116, and Mahsoori Water stagnation is more than 1m: Transplanting with NDR-8002, Jalmagana, Madhukar, Jal Priya, Jal Nidhi, Bar Avarodhi	before 15th of July through community base nursery	University (NDUAT) Seed drills under RKVY Supply of seeds through NFSM

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 3rd week of July	Very deep alluvial soils - Upland	**Sequence cropping:** Rice– Lentil Rice –Pea Rice- Chickpea Rice- Mustard Pearl millet- Lentil	Rice: Very early maturing variety such as Govind, Narendra-118, Varani deep, Narenda Lal Mati, Ashwani & Sushak samrat may be sown. Where ever sowing of rice variety is not possible, Green gram & Blackgram may be a good option for these areas.	Sowing with seed cum ferti drills across the slope and re-sowing if no proper germination. Weed management through dry land weeder and also through weedicides. Thinning of population in case of Greengram, conservation furrow, inter cultivation, Surface water management	Breeder seed may be obtained from the University (NDUAT) Seed drills under RKVY Supply of seeds through NFSM
		Inter cropping: Pigeonpea+ Pearl millet Pigeonpea+Sorghum Pigeonpea+Blackgram	Intercropping of Pigeonpea + Sesame and Pigeonpea+ Pearl millet Pigeonpea***:*** Bahar, Narendra Arahar-1, Malviya Vikas(MA6) & Malviya Chamtkar (MA13) Amar, Azad Pearl millet: WCC 75, Raj 171, Pusa 23, Pusa -322 ICMH-451**)** Sesame: T-4, T-12, T-13, T-78, Shekhar, Pragati, Tarun	Wider spacing of Pigeon pea at 90 cm and normal spacing of sesame i.e. 30 cm for mono culmed and 45 cm for branched genotypes. Pearl millet at 45 cm	

	Rainfed medium land	**Sequence cropping:** Rice– Lentil Rice –Pea Rice- Chickpea Rice- Mustard	Rice: Early maturing rice varities of IR-36, Pant dhan 12, HUR-105	Direct sowing in lines through Seed cum Ferti drill as well as transplanting of rice seed lings after puddling the field. Use of seedlings from Community nursery for transplanting.	Breeder seed may be obtained from the University (NDUAT) Seed drills under RKVY Supply of seeds through NFSM
		Inter cropping: Pigeonpea+ Black gram Pigeonpea+ Sorghum	Pigeonpea+ Rice Pigeonpea: Bahar, Narendra Arahar-1, Malviya Vikas(MA6), Malviya Chamtkar (MA13) Amar, Azad	Pigeonpea should be planted on ridges and rice should be planted in furrows.	
	Rainfed low land	**Sequence cropping:** Rice– Lentil Rice –Wheat Rice- Pea Rice- Mustard	Water stagnation is up to 1m depth: Transplanting with tall rice varieties Cross- 116, and Mahsoori Water stagnation is more than 1m: Transplanting with NDR-8002, Jalmagana, Madhukar, Jal Priya, Jal Nidhi, Bar Avarodhi	Transplanting of rice seed lings should be done with the onset of the monsoon through community base nursery	Breeder seed may be obtained from the University (NDUAT) Seed drills under RKVY Supply of seeds through NFSM

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 1st week of August	Very deep alluvial soils - Upland	**Sequence cropping:** Rice– Lentil Rice –Pea Rice- Chickpea Rice- Mustard Pearl millet- Lentil	Replace Rice with Greengram and pearlmillet under upland condition only	Sowing with seed cum ferti drills across the slope, Weed management through dry land weeder, Thinning of population in case of pearl millet and greengram, conservation furrow,	Breeder seed may be obtained from the University (NDUAT) Seed drills under RKVY Supply of seeds through NFSM

				Intercultivation.	
		Inter cropping: Pigeonpea+ Pearl millet Pigeonpea+Sorghum Pigeonpea+Blackgram	Intercropping of Pigeonpea+ Pearl millet	Sowing of pigeonpea + pearl millet on ridges Wider spacing of Pigeon pea at 90cm and normal spacing of Pearl millet at 45 cm	
	Rainfed medium land	**Sequence cropping :** Rice– Lentil Rice –Pea Rice- Chickpea Rice- Mustard	Replace rice with greengram Chickpea and pearl millet Under upland Condition Only	Sowing with seed cum ferti drills across the slope, weed management through dry land weeder, Thinning of population in case of pearl millet and greengram, Chickpea, Conservation furrow, Intercultivation Surface water management	Breeder seed may be obtained from the University (NDUAT) Seed drills under RKVY Supply of seeds through NFSM
		Inter cropping: Pigeonpea+ Blackgram Pigeonpea+ Sorghum	Intercropping of Pigeonpea+ Rice	Sowing of pigeonpea + rice on ridge and furrow system Wider spacing of Pigeon pea at 90cm and normal spacing of rice at 30cm	
	Rainfed low land	**Sequence cropping:** Rice– Lentil Rice –Wheat Rice- Pea Rice- Mustard	Water stagnation is up to 1m depth: Transplanting with tall rice varieties Cross- 116, and Masoori	Transplanting of rice seed lings should be completed before 10 th of August through community base nursery	Breeder seed may be obtained from the University (NDUAT) Seed drills under RKVY Supply of seeds through NFSM

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 3rd week of August	Very deep alluvial soils - Upland	**Sequence cropping:** Rice– Lentil Rice –Pea Rice- Chickpea Rice- Mustard Pearlmillet- Lentil	Sowing of pearl millet for grain and fodder purposes Under upland Condition Only Pearl millet: WCC 75, Raj 171, Pusa 23, Pusa -322 ICMH-451	Weed management through dryland weeder Thinning of population in case of pearl millet grown for grain purpose only	Breeder seed may be obtained from the University (NDUAT) Seed drills under RKVY Supply of seeds through NFSM
		Inter cropping: Pigeonpea+ Pearl millet Pigeonpea+Sorghum Pigeonpea+Blackgram	Intercropping of pigeonpea + pearl millet	Sowing of pigeonpea + pearl millet on ridges Wider spacing of Pigeon pea at 90cm and Pearl millet at 45 cm	
	Rainfed medium land	**Sequence cropping :** Rice– Lentil Rice –Pea Rice- Chickpea Rice- Mustard	Early maturing rice varieties of medium height, such as, IR-36,Pant dhan 12 and HUR-105	Direct sowing of rice varieties may be replaced by transplanting of rice seed lings after puddling the field. Community nursery may be utilized for the transplanting	Breeder seed may be obtained from the University (NDUAT) Seed drills under RKVY Supply of seeds through NFSM
		Inter cropping system Pigeonpea+ Blackgram Pigeonpea+ Sorghum	Intercropping of Pigeon pea + pearl millet and Pigeon pea + green gram/Black gram	Sowing of pigeon pea + pearl millet on ridges Wider spacing of Pigeon pea 90cm and Pearl millet at 45 cm	
	Rainfed low land	**Sequence cropping:** Rice– Lentil Rice –Wheat Rice- Pea Rice- Mustard	Tall rice varieties Cross- 116 and Mahsoori may be transplanted with the onset of first shower in the area where natural water logging is up to 1m in depth	Transplating of rice seed lings should be completed before 25 th of August through community best nursery	Breeder seed may be obtained from the University (NDUAT) Seed drills under RKVY Supply of seeds through NFSM

Condition			**Suggested Contingency measures**		
Early season drought **(Normal onset)**	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measues**	**Remarks on Implementation**
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	Very deep alluvial soils - Upland	**Sequence cropping:** Rice– Lentil Rice –Pea Rice- Chickpea Rice- Mustard Pearl millet- Lentil	Use of drought tolerant rice variety (NDR 97, Vandana and Govind) Shushk Samrat Gap filling or re-sowing of crop , as per need Use of dust mulch/ straw mulch Inter row harrowing	Use of additional N @10kg/ha Conservation furrow	
		Inter cropping: Pigeonpea+ Pearl millet Pigeonpea+Sorghum Pigeonpea+Blackgram	Earthting up of Pigeonpea, Thinning to maintain proper distance between the plants, Gap filling and re-sowing of crops as per need	Conservation tillage, Spray of 2% urea as foliar application	
	Rainfed medium land	**Sequence cropping:** Rice– Lentil Rice –Pea Rice- Chickpea Rice- Mustard	Gap filling or re-sowing of crops if needed. Transplanting of rice seedlings from community nursery Use of dust mulch/straw mulch , Inter-row harrowing	Use of additional N @10kg/ha Conservation furrow	
		Inter cropping : Pigeonpea+ Blackgram Pigeonpea+ Sorghum	Earthting up of Pigeonpea, Thinning to maintain proper distance between the plants, Gap filling and re-sowing of crops as per need	Conservation tillage, Spray of 2% urea as foliar application	

	Rainfed low land	**Sequence cropping:** Rice– Lentil Rice –Wheat Rice- Pea Rice- Mustard	Gap filling or re-sowing of crop, as per need. Use of dust mulch/ straw mulch Re transplanting of rice seedlings from community nursery as an when rains received.	Use of additional N @10kg/ha Conservation furrow	

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	Very deep alluvial soils - Upland	**Sequence cropping:** Rice– Lentil Rice –Pea Rice- Chickpea Rice- Mustard Pearl millet- Lentil	Life saving irrigation, if possible Dust/ straw mulch Thinning Inter row tilthing	Use of additional N @10kg/ha, Spray of 2% urea as foliar application, Conservation furrow	
		Inter cropping : Pigeonpea+ Pearl millet Pigeonpea+Sorghum Pigeonpea+Blackgram	Earthting up of Pigeonpea Thinning to maintain proper distance between the plants	Conservation tillage, Spray of 2% urea as foliar application	
	Rainfed medium land	**Sequence cropping:** Rice– Lentil Rice –Pea Rice- Chickpea Rice- Mustard	Life saving irrigation, if possible Dust/ straw mulch Thinning Inter row tilthing	Use of additional N @10kg/ha, Spray of 2% urea as foliar application , Conservation furrow	
		Inter cropping: Pigeon pea+ Blackgram	Earthting up of Pigeonpea Thinning to maintain	Conservation tillage Spray of 2% urea as foliar application	

		Pigeon pea+ Sorghum	proper distance between the plants, Gap filling and re-sowing of crops as per need		
	Low land	**Sequence cropping:** Rice– Lentil Rice –Wheat Rice- Pea Rice- Mustard	Life saving irrigation if possible Dust/ straw mulch Thinning Inter row tilthing	Use of additional N @10kg/ha Spray of 2% urea as foliar application Conservation furrow	

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	Very deep alluvial soils - Upland	**Sequence cropping:** Rice– Lentil Rice –Pea Rice- Chickpea Rice- Mustard Pearl millet- Lentil	Life saving irrigation If possible	1) Spraying of 2% urea as foliar application. 2) KCl Spray	Linkage to NREGS & CLDP
		Inter cropping: Pigeonpea+ Pearl millet Pigeonpea+Sorghum Pigeonpea+Blackgram	Harvest pearl millet and sorghum for fodder purposes Harvest Black gram after first picking If there is no winter rain ,give light irrigation to Pigeonpea crop	1) Spraying of 2% urea as foliar application. 2) KCl Spray	
	Rainfed medium land	**Sequence cropping:** Rice– Lentil Rice –Pea Rice- Chickpea	Life saving irrigation to rice – one or two depending upon availability of water in canal	1) Spraying of 2% urea as foliar application. 2) KCl Spray	Linkage to NREGS & CLDP

		Rice- Mustard			
		Inter cropping : Pigeonpea+ Blackgram Pigeonpea+ Sorghum	Harvest pearl millet and sorghum for fodder purposes Harvest Black gram after first picking If there is no winter rain ,give light irrigation to Pigeonpea crop	1) Spraying of 2% urea as foliar application. 2) KCl Spray	
	Rainfed low land	**Sequence cropping:** Rice– Lentil Rice –Wheat Rice- Pea Rice- Mustard	Life saving irrigation, if possible Dust/ straw mulch Thinning Interrow tilthing	Use of additional N @10kg/ha Spray of 2% urea as foliar application Conservation furrow Use of Azetobactor/ Azospirilum Use of Blue Green Algee @12.5kg/ha after 3-4 days of transplanting of rice seedlings	

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**
	Very deep alluvial soils - Upland	**Sequence cropping:** Rice– Lentil Rice –Pea Rice- Chickpea Rice- Mustard Pearl millet- Lentil	Dust/ straw mulch Inter row tilthing Defoliate older leaves Harvesting at physiological maturity.	Toria(Bhavani, T-9) / Agati mustard may be sown during last week of September to middle of October.	Linkage to NREGS & CLDP
		Inter cropping : Pigeonpea+ Pearl millet	1) Harvesting of pearl millet, sorghum and black gram at	1) Spraying of 2% urea as foliar application.	

		Pigeonpea+Sorghum Pigeonpea+Blackgram	physiological maturity 2) Life saving irrigation, if possible to Pigeonpea 3) Harvesting of pearl millet for fodder purposes	2) KCl Spray	
	Rainfed medium land	**Sequence cropping :** Rice– Lentil Rice –Pea Rice- Chickpea Rice- Mustard	Dust/ straw mulch Inter row tilthing Defoliate older leaves Harvesting at physiological maturity.	Toria(Bhavani, T-9) /Agati mustard may be sown during last week of September to middle of October.	Linkage to NREGS & CLDP
		Inter cropping system Pigeonpea+ Blackgram Pigeonpea+ Sorghum	1) Harvesting at physiological maturity 2) Life saving irrigation, if possible to Pigeonpea 3) Harvesting of sorghum for fodder purposes	1) Spraying of 2% urea as foliar application. 2) KCl Spray	
	Rainfed low land	**Sequence cropping :** Rice– Lentil Rice –Wheat Rice- Pea Rice- Mustard	Dust/ straw mulch Inter row tilthing Defoliate older leaves Harvesting at physiological maturity.	Use of Azetobactor/ Azospirilum, Use of Blue Green Algae @12.5kg/ha after 3-4days of transplanting of rice seedlings . Toria(Bhavani, T-9) /Agati mustard may be sown during last week of September to middle of October.	

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**

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	Very deep alluvial soils Medium land	**Sequence cropping:** Rice– Lentil Rice –Wheat Rice- Pea Rice- Mustard Pearl millet- Lentil	Short duration rice varieties- NDR 97, Ratna, Narendra 118, Narendra 97, Pant Dhan-12, IR 36, HUR 105, Induri Sambha HUR 2-1 HUR-3022 to be grown under aerobic condition. Sowing of Pearlmillet on ridges.	Community nursery, Direct seeding in small beds. Use of micro-irrigation systems *viz.* sprinkler & sub-surface irrigation.	Breeders seed will be supplied by BHU and NDAUT, Faizabad. Seed drills RKVY and supply of seeds NFSM Ridger from U.P. agro industries.
		Inter cropping: Pigeonpea+ Pearl millet Pigeonpea+Sorghum Pigeonpea+Blackgram	Intercropping of pigeonpea + Pearl millet and Pigeon pea +rice under aerobic conditions only	Sowing of pigeonpea + pearl millet on ridges Wider spacing of Pigeon pea at 90cm and normal spacing of pearl millet i. e. 30 cm for dwarf and 45 cm for tillering genotypes.	
Limited release of water in canals due to low rainfall	Very deep alluvial soils - Low land	**Sequence cropping :** Rice– Lentil Rice –Wheat Rice- Pea Rice- Mustard	Water stagnation up to 1 m: Transplanting with tall rice varieties such as Cross- 116, and Mahsoori When water stagnation is more than 1 m: Transplanting with tall rice varieties such as NDR-8002, Jalmagana, Madhukar, Jal Priya, Jal Nidhi & Bar Avarodhi	Transplanting of rice seedlings should be completed before 15 th of July through community base nursery	Breeder seed may be obtained from the University (NDUAT) Seed drills under RKVY Supply of seeds through NFSM
	Canal irrigated Medium land	**Sequence cropping :** Rice– Lentil Rice –Wheat Rice- Pea Rice- Mustard Pearl millet- Lentil	Grow short duration aerobic rice such as NDR 97, NDR 118 Govind, Vandana, Varanideep, Susk Samrat & HUR 105 Desi & Composite varieties of maize should be grown.	Use of Rice seedlings from Community nursery, Direct seeding in small beds. Use of micro-irrigation systems *viz.* sprinkler & sub-surface irrigation.	Breeders seed will be supplied by BHU and NDAUT, Faizabad. Seed drills under RKVY and supply of seeds through NFSM
		Inter cropping : Pigeonpea+ Pearl millet	Intercropping of pigeonpea + Pearl millet and Pigeonpea +	Sowing of pigeon pea + pearl millet on ridges	

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
		Pigeonpea+Sorghum Pigeonpea+Blackgram	rice under aerobic conditions only	Wider spacing of Pigeon pea 90cm and normal spacing of pearl millet i. e. 30 cm for dwarf and 45 cm for tillering genotypes.	
	Canal irrigated Low land	**Sequence cropping :** Rice– Lentil Rice –Wheat Rice- Pea Rice- Mustard	Water stagnation up to 1 m: Transplanting with tall rice varieties such as Cross- 116, and Mahsoori When water stagnation is more than 1 m: Transplanting with tall rice varieties such as NDR-8002, Jalmagana, Madhukar, Jal Priya, Jal Nidhi & Bar Avarodhi	Transplanting of rice seed lings should be completed before 15 th of July through community base nursery	Breeder seed may be obtained from the University (NDUAT) Seed drills under RKVY Supply of seeds through NFSM
Non release of water in canals under delayed onset of monsoon in catchment	Very deep alluvial soils - Medium land	**Sequence cropping ;** Rice– Lentil Rice –Wheat Rice- Pea Rice- Mustard Pearl millet- Lentil	Shift to only aerobic rices. OR Rice may be replaced with pulses (Green gram, black gram), Oil seeds (sesame), vegetables (lobiya, lady's finger, brinjal, chillies)	Direct seeding in small beds. Use of micro-irrigation systems *viz.* sprinkler & sub-surface irrigation.	Breeders seed will be supplied by BHU and NDAUT, Faizabad. Seed drills under RKVY and supply of seeds through NFSM Ridger from U.P. agro industries.
		Inter cropping : Pigeonpea+ Pearl millet Pigeonpea+Sorghum Pigeonpea+Blackgram	Intercropping of pigeonpea + Pearl millet and Pigeonpea +rice under aerobic conditions only	Sowing of pigeonpea + pearl millet on ridges Wider spacing of Pigeon pea 90cm and normal spacing of pearl millet i. e. 30 cm for dwarf and 45 cm for tillering genotypes.	
	Canal irrigated Low land	**Sequence cropping :** Rice– Lentil Rice –Wheat Rice- Pea Rice- Mustard	Water stagnation up to 1 m: Transplanting with tall rice varieties such as Cross- 116, and Mahsoori When water stagnation is more than 1 m: Transplanting with tall rice varieties such as NDR-8002, Jalmagana, Madhukar,	If there is no proper germination, gap filling may be done from community based nursery.	Breeder seed may be obtained from the University (NDUAT) Seed drills under RKVY Supply of seeds through

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
			Jal Priya, Jal Nidhi & Bar Avarodhi		NFSM

	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	Very deep alluvial soils Medium land	**Sequence cropping :** Rice– Lentil Rice –Wheat Rice- Pea Rice- Mustard Pearl millet- Lentil	Shift to only aerobic rices. OR Rice may be replaced pulses (Green gram, black gram), Oil seeds (sesame), vegetables (Cowpea, Bhendi, Brinjal, Chillies)	Direct seeding in small beds. Use of micro-irrigation systems *viz.* sprinkler & sub-surface irrigation.	Breeders seed will be supplied by BHU and NDAUT, Faizabad. Seed drills RKVY and supply of seeds NFSM Ridger from U.P. agro industries.
		Inter cropping: Pigeonpea+ Pearl millet Pigeonpea+Sorghum Pigeonpea+Blackgram	Intercropping of pigeonpea + Pearl millet and Pigeonpea +rice under aerobic conditions only	Sowing of pigeonpea + pearl millet on ridges Wider spacing of Pigeon pea at 90cm and normal spacing of pearl millet i. e. 30 cm for dwarf and 45 cm for tillering genotypes.	
	Canal irrigated Low land	**Sequence cropping :** Rice– Lentil Rice –Wheat Rice- Pea Rice- Mustard	Water stagnation up to 1 m: Transplanting with tall rice varieties such as Cross- 116, and Mahsoori When water stagnation is more than 1 m: Transplanting with tall rice varieties such as NDR-8002, Jalmagana, Madhukar, Jal Priya, Jal Nidhi & Bar Avarodhi	If there is no proper germination, gap filling may be done from community based nursery. If there is no sufficient population in the field tillers may be separated and re transplanted to maintain the proper population.	Breeder seed may be obtained from the University (NDUAT) Seed drills under RKVY Supply of seeds through NFSM

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Insufficient	Very deep alluvial soils	**Sequence cropping ;**	Shift to only aerobic rice or Rice may be replaced pulses	Direct seeding in small beds.	Breeders seed will be supplied by BHU and

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
groundwater recharge due to low rainfall	Medium land	Rice– Lentil Rice –Wheat Rice- Pea Rice- Mustard Pearl millet- Lentil	(Green gram, black gram), Oil seeds (sesame), vegetables (Cowpea, Bhendi, Brinjal, Chillies)	Use of micro-irrigation systems *viz.* sprinkler & sub-surface irrigation.	NDAUT, Faizabad. Seed drills under RKVY and supply of seeds through NFSM
		Inter cropping : Pigeonpea+ Pearl millet Pigeonpea+Sorghum Pigeonpea+Blackgram	Intercropping of pigeonpea + Pearl millet and Pigeonpea + rice under aerobic conditions only	Sowing of pigeonpea + pearl millet on ridges Wider spacing of Pigeon pea at 90 cm and normal spacing of pearl millet i. e. 30 cm for dwarf and 45 cm for tillering genotypes.	
	Very deep alluvial soils Low land	**Sequence cropping :** Rice– Lentil Rice –Wheat Rice- Pea Rice- Mustard	Water stagnation up to 1 m: Transplanting with tall rice varieties such as Cross- 116, and Mahsoori When water stagnation is more than 1 m: Transplanting with tall rice varieties such as NDR-8002, Jalmagana, Madhukar, Jal Priya, Jal Nidhi & Bar Avarodhi	Transplanting of rice seedlings should be completed before 15 th of July through community base nursery	Breeder seed may be obtained from the University (NDUAT) Seed drills under RKVY Supply of seeds through NFSM

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

Condition	Suggested contingency measure			
Continuous high rainfall in a short span leading to water logging	**Vegetative stage**	**Flowering stage**	**Crop maturity stage**	**Post harvest**
Rice	Provide drainage	Proper bunding, drain out excess water	Harvesting at physiological maturity	Shift to safer place
Wheat	Provide drainage	Proper bunding, drain out excess water	Harvesting at physiological maturity	Shift to safer place

Lentil	Provide drainage	Proper bunding, drain out excess water	Harvesting at physiological maturity	Shift to safer place
Pearl millet	Provide drainage	Proper bunding, drain out excess water	Harvesting at physiological maturity	Shift to safer place
Pigeon pea	Provide drainage	Proper bunding, drain out excess water	Harvesting at physiological maturity	Shift to safer place
Pea	Provide drainage	Proper bunding, drain out excess water	Harvesting at physiological maturity	Shift to safer place
Horticulture				
Potato	Drain out excess water, Sown on ridges	Drain out excess water, Sown on ridges	Drain out excess water, Sown on ridges	Shift to safer place
Vegetable pea	Drain out excess water, Sown on ridges	Drain out excess water, Sown on ridges	Drain out excess water, Sown on ridges	Shift to safer place
Cauliflower	Drain out excess water, Sown on ridges	Drain out excess water, Sown on ridges	Drain out excess water, Sown on ridges	Shift to safer place
Tomato	Drain out excess water, Sown on ridges	Drain out excess water, Sown on ridges	Drain out excess water, Sown on ridges	Shift to safer place
Chili	Drain out excess water, Sown on ridges	Drain out excess water, Sown on ridges	Drain out excess water, Sown on ridges	Shift to safer place
Heavy rainfall with high speed Winds in short span				
Rice	Drain out excess water	Drain out excess water, protected with vegetable barriers	Drain out excess water and protect with vegetable barriers from wind	Keep the grains at safer place
Wheat	Drain out excess water	Drain out excess water and speed of wind may be protected with vegetable barriers	Drain out excess water and protect with vegetable barriers from wind	Keep the grains at safer place
Lentil	Drain out excess water, sowing on ridges and furrow	Drain out excess water, Earthing up, Harvest for fodder purpose	Drain out excess water, Harvesting at physiological maturity	Keep the grains at safer place
Pearl millet	Drain out excess water, sowing on ridges and furrow	Drain out excess water, Earthing up, Harvest for fodder purpose	Drain out excess water, Harvesting at physiological maturity	Keep the grains at safer place
Pigeonpea	Drain out excess water, Earthing up	Drain out excess water	Drain out excess water	Keep the grains at safer place

Pea	Drain out excess water	Tie the sugarcane plants together	Tie the sugarcane plants together	
Horticulture				
Potato	Drain out excess water	Drain out excess water	Drain out excess water	Shift to safer place
Vegetable Pea	Drain out excess water	Drain out excess water	Drain out excess water	Shift to safer place
Cauliflower	Drain out excess water	Drain out excess water, protected with vegetable barriers	Drain out excess water, protected with vegetable barriers	Shift to safer place
Tomato	Drain out excess water.	Drain out excess water	Drain out excess water	Shift to safer place
Chili	Drain out excess water	Drain out excess water	Drain out excess water	Shift to safer place
Outbreak of pests and diseases due to unseasonal rains				
Rice, Wheat, Lentil, Pearl millet, Pigeonpea, Pea	Need based plant protection (integrated pest and disease management)	Need based plant protection (integrated pest and disease management	Need based plant protection (integrated pest and disease management	Safe storage against stored grain pest and diseases

2.3 Floods

Condition	**Suggested contingency measure**			
Transient water logging/ partial inundation	**Seedling / nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Rice	Re sowing with short duration varities	Provide drainage	Prevent premature seed germination	Harvesting at physiological maturity Shift to safer place
Continuous submergence for more than 2 days				
Rice	Varieties having submergence tolerance should be grown *viz.* Swarana sub-1, IR-64 sub-1 Community nursery	Re transplanting after cessation of flood from community nursery.	Prevent premature seed germination	Harvesting at physiological maturity
Sea water intrusion	Not Applicable			

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

Extreme event type	**Suggested contingency measure**			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**

Heat Wave				
Rice	-	-	Provide Light irrigation to reduce temperature	Harvesting at physiological maturity
Pigeonpea	-	-	Provide Light irrigation	Harvesting at physiological maturity
Wheat	Provide irrigation	Provide Light irrigation	Provide Light irrigation	
Lentil	Pre irrigation before sowing	Provide Light irrigation	Provide Light irrigation to reduce temperature	
Pea	Pre irrigation before sowing	Provide Light irrigation	Provide Light irrigation	
Horticulture				
Potato	Provide Light irrigation	Provide Light irrigation	Provide Light irrigation	
Vegetable pea	Provide Light irrigation	Provide Light irrigation	Provide Light irrigation	
Cauliflower	Provide Light irrigation	Provide Light irrigation	Provide Light irrigation	
Tomato	Provide Light irrigation	Provide Light irrigation	Provide Light irrigation	
Chilli	Provide Light irrigation	Provide Light irrigation	Provide Light irrigation	
Cold wave				
Wheat	-	Provide irrigation to provide relief from cold wave		-
Lentil	-	Provide irrigation to provide relief from cold wave		-
Pigeonpea	-	Provide irrigation to provide relief from cold wave		-
Horticulture				
Mango	-	-	Smoking by burning waste material to increase temperature	-
Frost				
Wheat	-	-	Provide Light irrigation	

Pulse crops	-	-	Provide light irrigation	
Horticulture				
Mango	-	Provide light irrigation	Smoking in orchards to increase temperature by burning waste material	
Hailstorm	Not Applicable			
Cyclone	Not Applicable			

2.5 Contingent strategies for Livestock, Poultry & Fisheries

2.5.1 Livestock

	Suggested contingency measures		
	Before the events	**During the event**	**After the event**
Drought			
Feed and fodder availability	Insurance Encourage perennial fodder on bunds and waste land on community basis Establishing fodder banks, encouraging fodder crops in irrigated area Silage – using excess fodder for silage	Utilizing fodder from perennial trees and Fodder bank reserves. Utilizing fodder stored in silage. Transporting excess fodder from adjoining districts Use of feed mixtures. Allow the cattle's for grazing at barren lands.	Availing Insurance
Drinking water	Preserving water in the tank for drinking purpose Excavation of Bore wells	Using preserved water in the tanks for drinking. Wherever ground water resources are available priority for drinking purpose.	
Health and disease management	Veterinary preparedness with medicines and vaccines	Conducting mass animal Health Camps and treating the affected once in Campaign	
Floods			
Feed and fodder availability	Grow the fodder crops at safer places (non- flood prone area)	Utilizing fodder from perennial trees and Fodder bank reserves. Utilizing fodder stored in silage. Transporting excess fodder from adjoining districts Use of feed mixtures. Shift the live stocks at safer place.	Availing insurance

Drinking water		Shift the live stocks at safer place where drinking water is available.	
Health and disease management	Veterinary preparedness with medicines and vaccines	Conducting mass animal Health Camps and treating the affected once in Campaign	
Cyclone	Not Available		
Heat wave and cold wave	Not Available		

2.5.2 Poultry

	Suggested contingency measures			**Convergence/linkages with ongoing programs, if any**
	Before the event	**During the event**	**After the event**	
Drought	Insurance & Integration Establishing feed reserve Bank	Utilizing from feed reserve banks	Availing insurance Strengthening feed Reserve Banks	
Shortage of feed ingredients				
Drinking water				
Health and disease management	Emergency Veterinary preparedness with medicines vaccination to birds	Campaign and Mass Vaccination	Culling affected birds	
Heat wave and cold wave	Not Applicable			

[a] based on forewarning wherever available

2.5.3 Fisheries/ Aquaculture: Not applicable