State: Uttar Pradesh

Agriculture Contingency Plan for District: Azamgarh

1.0 District Agriculture profile				
1.1	**Agro-Climatic/Ecological Zone**			
	Agro Ecological Sub Region (ICAR)	Northern Plain, Hot Subhumib (Dry) Eco-sub region (9.2)		
	Agro-Climatic Zone (Planning Commission)	Middle Gangetic Plain Region (IV)		
	Agro Climatic Zone (NARP)	Eastern Plain Zone (UP-9)		
	List all the districts falling under the NARP Zone*(*>50% area falling in the zone)	Barabanki,Ambedkarnagar,Faizabad,Sultanpur,Azamgarh,Mau,Jaunpur,Varanasi, Gazipur, Ballia,Bhadohi		
	Geographic coordinates of district headquarters	**Latitude**	**Longitude**	**Altitude**
		26’^{o}03’ N	83^{o}13’ E	91-190 m
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Directorate of Research, SAU, Kumarganj		
	Mention the KVK located in the district with address	KVK Azamgarh		

1.2	**Rainfall**	**Normal RF(mm)**	**Normal Rainy days**	**Normal Onset**	**Normal Cessation**
	SW monsoon (June-Sep)	899.7	42	3rd week of June	1st week of October
	NE Monsoon(Oct-Dec)	73.6	6		
	Winter (Jan- Feb)	51.8	4		
	Summer (March-May)	78.4	2		
	Annual	1103.5	54		

1.3	**Land use pattern of the district**	**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)	424.0	302.8	0.11	59.7	1.4	6.0	6.6	6.6	32.5	8.0

1. 4	Major Soils (common names like red sandy loam deep soils (etc.,)*	Area (‘000 ha)	Percent (%) of total Geographical area
	Sandy loam soils	203.2	
	Clay loam Soils	86.5	
	Others (problematic soils)-Sodic soils	158.1	

1.5	Agricultural land use	Area (‘000 ha)	Cropping intensity(%)
	Net sown area	302.87	172.4
	Area sown more than once	-	
	Gross cropped area	-	

1.6	Irrigation	Area (‘000 ha)		
	Net irrigated area	283		
	Gross irrigated area	368		
	Rainfed area	-		
	Sources of Irrigation	**Number**	**Area (‘000 ha)**	**Percentage of total irrigated area**
	Canals		71.0	19.3
	Tanks		0.004	
	Open wells		0.1	
	Bore wells	17.5	174	47.2
	Lift irrigation schemes			
	Micro-irrigation			
	Other sources			
	Total Irrigated Area		368.3	
	Pump sets		135	36.6

	No. of Tractors			
	Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	**No. of blocks/ Tehsils**	**(%) area**	**Quality of water (specify the problem such as high levels of arsenic, fluoride, saline etc)**
	Over exploited			
	Critical			
	Semi- critical			
	Safe			
	Wastewater availability and use			
	Ground water quality			
*over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%				

1.7 Area under major field crops & horticulture (2008-09)

- - -	**Major field crops cultivated**	**Area ('000 ha)**							
		Kharif			***Rabi***				
		Irrigated	**Rainfed**	**Total**	**Irrigated**	**Rainfed**	**Total**	**Summer**	**Grand total**
	Rice	114.5	0.4	114.9	-	-	-	-	114.9
	Sorghum	-	0.9	0.9	-	-	-	-	0.9
	Maize	0.3	0.4	0.7	-	-	-	-	0.7
	Pigeonpea	-	3.4	3.4	-	-	-	-	3.4
	Wheat	-	-	-	118	0.066	118.1		118.1
	Chickpea	-	-	-	0.2	0.9	1.1		1.1
	Pea	-	-	-	4.3	0.003	4.3		4.3

	Horticulture crops -	**Area ('000 ha)**		
		Total	**Irrigated**	**Rainfed**
	Fruits	**-**	**-**	**-**
	Horticulture crops -			

	Vegetables			
	Potato	3.9	3.9	
	Onion	0.152	0.152	
	Others	6.8	6.6	0.2

	Medicinal and Aromatic crops	**Total**	**Irrigated**	**Rainfed**
	Plantation crops	**Total**	**Irrigated**	**Rainfed**
	Fodder crops	**Total**	**Irrigated**	**Rainfed**
	Sorghum	0.9		0.9
	Bajra	0.03		0.03
	Maize	0.4		
	Total fodder crop area	3.6	1.2	2.4
	Grazing land			
	Sericulture etc			

1.8	**Livestock**	**Male ('000)**	**Female ('000)**	**Total ('000)**
	Indigenous			414
	Non descriptive Cattle (local low yielding)			
	Improved crossbred cattle (Cow & Buffalo only)			816
	Non descriptive Buffaloes (local low yielding)			13
	Buffaloes			379
	Goat			136
	Sheep			129
	Others (Camel, Pig, Yak, Horse, Monkey etc.)			10
	Commercial dairy farms (Number)			
1.9	**Poultry**	**No. of farms**	**Total No. of birds ('000)**	
	Commercial			
	Backyard			

	Total		**141.298**

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**	

	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)			

1.11 Production and Productivity of major crops (Average of last 5 years: 2004- 08)

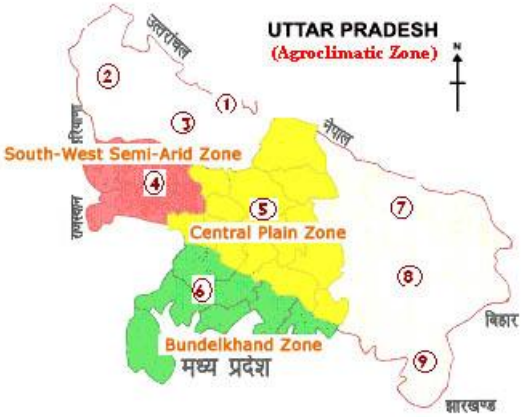
	Name of crop	**Kharif**		**Rabi**		**Summer**		**Total**		**Crop residue as fodder** ('000 tons)
		Production ('000 t)	**Productivity (kg/ha)**	**Production ('000 t)**	**Productivity (kg/ha)**	**Production ('000 t)**	**Productivity (kg/ha)**	**Production ('000 t)**	**Productivity (kg/ha)**	
Major Field crops (Crops identified based on total acreage)										
	Rice	292.8	2549	-	-	-	-	292.8	2549	-
	Sorghum	0.8	897	-	-	-	-	0.8	897	-
	Maize	0.8	1202	-	-	-	-	0.8	1202	-
	Pigeonpea	3.8	1132	-	-	-	-	3.8	1132	-
	Wheat	-	-	383.4	3246	-	-	383.4	3246	-
	Chick pea	-	-	1.2	1034	-	-	1.2	1034	-
	Pea	-	-	4.6	1068	-	-	4.6	1068	-

1.12	**Sowing window for 5 major field crops (start and end of normal sowing period)**	**Rice**	**Maize**	**Pigeonpea**	**Wheat**	**Lentil**
	Kharif- Rainfed	3rd week of June – 3rd week of July	2nd week of June – 4th week of June	1st week of July - 4th week of July		
	Kharif-Irrigated	4th week of June - 2nd week of August	3rd week of June – 2nd week of July	-		
	Rabi- Rainfed			Early rabi- September - October	2nd week of October – 2nd week of November	1st week of October – 3rd week of October
	Rabi-Irrigated			-	2nd week of November - 4th week of December	

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		√	

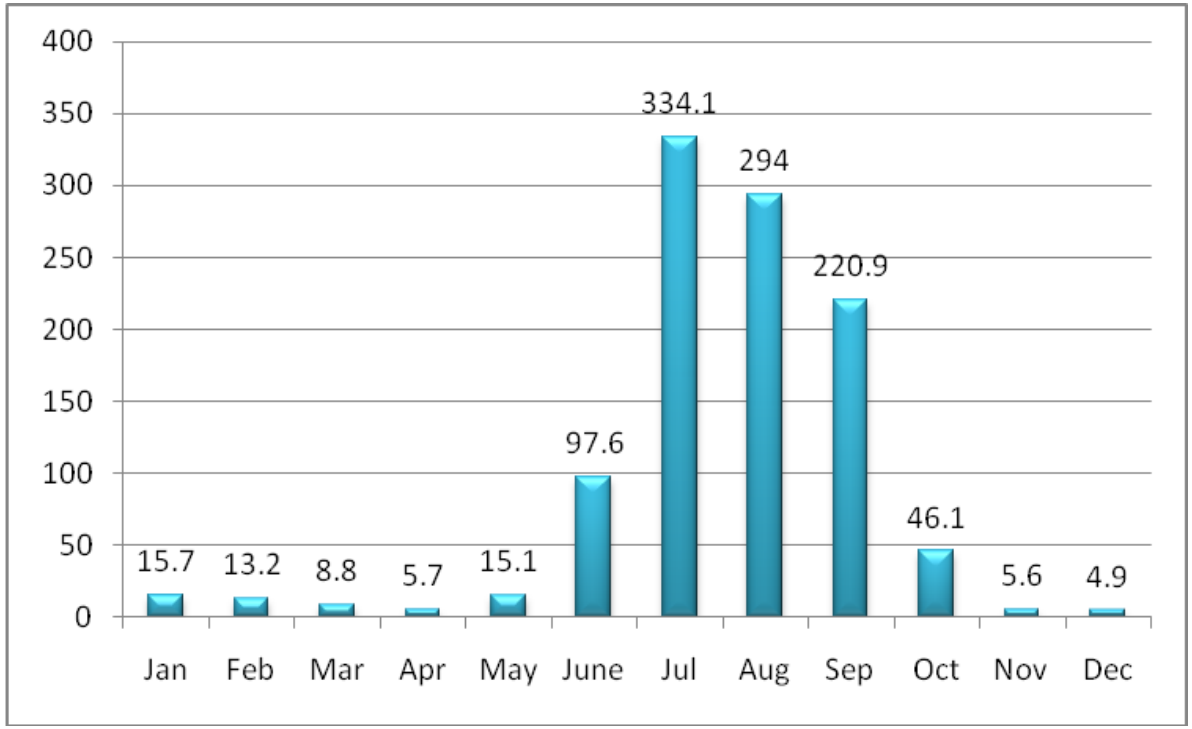
1.14	**Include Digital maps of the district for**	Location map of district within State as Annexure I	Enclosed: Yes
		Mean annual rainfall as Annexure 2	Enclosed: Yes
		Soil map as Annexure 3	Enclosed: Yes

Annexure I


UTTAR PRADESH
(Agroclimatic Zone)
N
South-West Semi-Arid Zone
Central Plain Zone
Bundelkhand Zone
मध्य प्रदेश
नेपाल
बिहार
झारखण्ड
Agroclimatic Zones of U.P.
1. Bhabhar and Tarai Zone
2. Western Plain Zone
3. Mid Western Plain zone
4. South Western Plain Zone
5. Central Plain Zone
6. Bundelkhand Zone
7. North Eastern Plain Zone
8. Eastern Plain Zone
9. Vidhya Zone


UTTAR PRADESH
Saharanpur
Muzaffarnagar
Bijnor
Baghpat
Meerut
Jyotiba Phule Nagar
Ghaziabad
Moradabad
Rampur
Pilibhit
Bareilly
Bulandshahr
Budaun
Kheri
Aligarh
Shahjahanpur
Shrawasti
Mathura
Hathras
Etah
Bahraich
Balrampur
Farrukhabad
Sitapur
Hardoi
Siddharthnagar
Maharajganj
Firozabad
Mainpuri
Gonda
Agra
Kannauj
Sant Kabir Nagar
Barabanki
Kushinagar
Etawah
Lucknow
Basti
Auraiya
Faizabad
Gorakhpur
Unnao
Kanpur Dehat
Kanpur Nagar
Ambedkar Nagar
Deoria
Rae bareli
Sultanpur
Jalaun
Azamgarh
Mau
Fatehpur
Pratapgarh
Ballia
Hamirpur
Jaunpur
Jhansi
Ghazipur
Banda
Kaushambi
Mahoba
Varanasi
Chitrakoot
Allahabad
Chandauli
Mirzapur
Lalitpur
Sonbhadra

Annexure II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50
0
15.7
13.2
8.8
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15.1
97.6
334.1
294
220.9
46.1
5.6
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Jan
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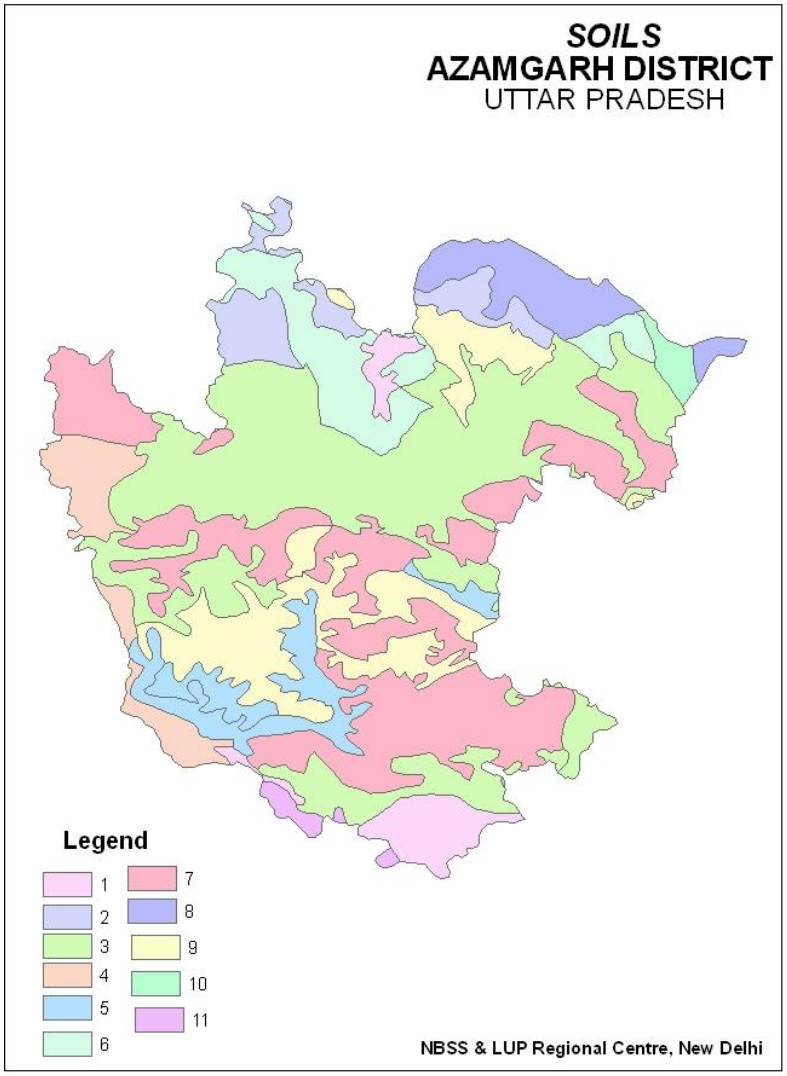
Dec

Annexure III



SOILS OF AZAMGARH 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 moderately saline and sodic associated with loamy soils, slightly eroded
4. Deep, fine soils and slightly eroded associated with loamy soils slightly saline and moderately sodic
5. Deep, silty soils to with loamy soils with moderate salinity and sodicity and water logging
6. Deep, loamy soils with moderately water logging associated with loamy soils with slight salinity/sodicty
7. Deep, silty loamy soils slightly saline and slightly sodic
8. Deep, silty loamy soils slightly eroded
9. Deep, silty soils with moderate salinity/sodicity associated with loamy soils

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

10. Deep, loamy soils
11.

Recent Alluvial Plain (1-3% slope)

12. Deep, loamy soils, slightly eroded associated with silty soils

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	Sandy clay loam soils	Rice	Rice Transplanting/Direct seeding of Medium and Short duration varieties of Rice Such as NDR-97, NDR-359,NDR-80,NDR-118, Baranideep etc.	Raise Staggered rice nursery should be grown at 15 days interval in small areas at least two times	• Seed-drill under RKVY • Supply of seed through govt. agencies *ie*. NFSM,RKVY
		Maize	Maize-Prakash, Sartaj, Naveen, Tarun.	Intercropping/ mixed cropping of maize/sorghum/ Pearlmillet with long duration varieties of Pigeonpea	
		Pearl millet/ Sorghum	Pearlmillet-Pusa-3,Pusa-322,and WCC-75 Sorghum-CSB-13,CSB-15 and CSH-16.		
		Pigeonpea	No change	Sowing on raised beds Intercropping with Maize/Blackgram/Greengram	

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 4 weeks 3rd week of July	Sandy clay loam soils	Rice-Wheat	Rice-Wheat Transplanting/Direct seeding of Medium and Short duration varieties of Rice Such as NDR-97, NDR-359,NDR-80,NDR-118, Baranideep, Govind,Saket-4, Ratna,IR-36 and Pant-12 etc.	•Direct seedling of short duration varieties of Rice such as NDR-97, NDR-80, NDR-118, Saket-4 •Raise Staggered rice nursery should be grown at 15 days interval in small areas at least two times •Adopt SRI system of nursery raising •Transplanting of Rice (beyond 20th July) with 3-4 seedlings/hill to increasing the plant population of 60 hills/m^2, instead of 50 hills/$m^{2.}$ •Pruning of over aged Rice seedlings for better establishment and optimum plant stand • Foliar praying of 2.5 kg Urea + 2.5 kg Potash as to increase the drought tolerance in nursery / standing crops	• Seed-drill under RKVY • Supply of seed through govt. agencies *ie*. NFSM,RKVY
		Maize	Maize-Prakash, Sartaj, Naveen, Tarun.	Intercropping/ mixed cropping of maize with long duration varieties of Pigeonpea	
		Sorghum / Pearl millet	Sorghum-CSB-13,CSB-15 and CSH-16. Pearlmillet-Pusa-3,Pusa-322,and WCC-75 .	Intercropping/ mixed cropping of sorghum/ Pearlmillet with long duration varieties of pigeonpea	
		Pigeonpea	No change	Sowing on raised beds	

				Intercropping with Maize/Blackgram/Greengram	

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 6 weeks 1st week of August	Sandy clay loam soils	Rice-Wheat	Rice-Wheat Paddy: Short duration varieties of paddy such as NDR-97, NDR-80,NDR-118, Pant Dhan-12 should be transplanted/direct seeding.	Direct seeding of rice In case of late transplanting of rice(beyond 20th July) planting should be dense by increasing the number of seedlings/hill from 2 to 3 to 3 to 4. Adopt SRI system of nursery raising Weeding and interculture Foliar spraying of 2.5 kg Urea + 2.5 kg Potash as to increase the drought tolerance in nursery / standing crops Life saving irrigation in transplanted rice	• Seed-drill under RKVY • Supply of seed through govt. agencies *ie*. NFSM,RKVY

		Maize	Greengram/ Blackgram Greengram: T-44, Pant mung-1, Narendra mung-1 Blackgram : Narendra urd-1,Pant urd-25	Intercropping/ mixed cropping of Greengram/ Blackgram/ maize/sorghum/ Pearlmillet with long duration varieties of pigeonpea	
		Sorghum / Pearl millet	If monsoon further delays beyond 10th July, then in fallow/upland composite varieties of sorghum Pearlmillet and Blackgram, Greengram and Sesame should be sown Sorghum- CSV-13, CSV-15 and composite varieties CSH-14 Pearlmillet -Pusa-23,Pusa-322 and WCC-75 and composite varieties ICTP-8203, Raj-171		
		Pigeonpea	Pigeonpea: Bahar	Maize + Pigeonpea(Narendra Arhar-1) 1:1 Sowing on raised beds Intercropping with Maize/Blackgram/Greengram Pigeonpea+ Blackgram/Greengram (1:3)	

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 8 weeks 3rd week of August	Sandy clay loam soils	Rice-Wheat	Preference should be given for sowing of Pearlmillet and Sesame Pearlmillet: Pusa 322, 323(Hybrid) and WCC-75, Raj-171(Composite) Sesame: - Type-4, Type-78, Type-12 Greengram : T-44, Pant mung-1, Pant mung-2, Samrat, Malviya, Janpriya, Malviya jyoti, Narendra mung-1 Blackgram : Narendra urd-1,Pant urd-25, Pant urd-19, Uttara, Type-9	Direct sowing In case of late transplanting of rice(beyond 20th July) planting should be dense by increasing the number of seedlings/hill from 2 to 3 to 3 to 4. Foliar praying of 2.5 kg Urea + 2.5 kg Potash as to increase the drought tolerance in nursery / standing crops Life saving irrigation in transplanted rice	• Seed-drill under RKVY • Supply of seed through govt. agencies *ie*. NFSM,RKVY
		Maize		Intercropping/ mixed cropping of Greengram/ Blackgram/maize/sorghum/ Pearlmillet with long duration varieties of pigeonpea Land preparation for sowing of early rabi crops like potato,toria,lahi and mustard	
		Sorghum / Pearl millet	Sowing of Fodder crops such as sorghum, Pearlmillet, maize, Blackgram, Greengram, lobia,Clusterbean in mono or double or triple cropping of mixed fodders. If monsoon further delays beyond 10th July, then in fallow/upland composite varieties of sorghum CSV-13, CSV-15 Pearlmillet ICTP-8203, Raj-171 and Hybrid		

			Blackgram, Greengram and Sesamum should be sown		
		Pigeonpea	September Pigeonpea Varieties Bahar, PDA-11, Pusa-9 should be done till Ist week of September.	-	

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.	Sandy clay loam soils	Rice	After seeding of rice if there is break of monsoon by 7 to 10 days and if seedling mortality is observed then re-sowing with the same variety Gap filling/transplanting in rice Using "Sanda" method, plant polulation can be maintainted with sufficient number of tillers in late drought condition as to minimize the production losses	Weeding at critical stages Foliar praying of 2.5 kg Urea + 2.5 kg Potash as to increase the drought tolerance in nursery / standing crops Life saving irrigation Proper electricity monitoring/rostering system should be ensured in area for regular supply of electricity for pumping of water for life saving irrigation	• Supply of inter cultural implements through RKVY • Farm ponds through IWSM programme • Pulse crop seeds supply through NFSM
		Maize	Ridge sowing Gap filling/ Thinning to maintain optimum plant population	Leaf mulching to conserve the soil moisture	

		Pigeonpea	Ridge sowing Gap filling/ Thinning to maintain optimum plant population	Leaf mulching to conserve the soil moisture	

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 & Flowering stage	Sandy clay loam soils	Rice	Gap filling/transplanting in rice Foliar spraying of 2% urea to boost up the growth	Weeding as to conserve the residual soil moisture Leaf mulching to conserve the soil moisture Foliar praying of 2.5 kg Urea + 2.5 kg Potash as to increase the drought tolerance in nursery / standing crops Life saving irrigation from the stored water during the rainy season. Proper electricity monitoring/rostering system should be ensured in area for regular supply of electricity for pumping of water for life	-

				saving irrigation	
		Maize Blackgram/ Greengram Pigeonpea	Thinning to maintain proper distance between the plants. Frequent interculture Earthing up in Pigeonpea Foliar spraying of 2% urea to boost up the growth	Foliar spraying of 2% MOP to increase the resistance to drought Leaf mulching to conserve the soil moisture Conservation furrow Life saving irrigation	

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**
	Sandy clay loam soils	Rice	Alternate management of irrigation should be ensured for provide life saving irrigation Proper electricity monitoring/ rostering system should be ensured in area for regular supply of electricity for pumping of water for life saving irrigation	Better pulverization should be made for conservation of soil moisture following by planking for sowing of early rabi crops like toria and potato etc.. Toria variety- type-9, type-36, PT-303, PT-30 and ageti Rai should be sown in 1st week of September while Bhawani variety can be	-

				sown in 2nd week of September. In fallow fields to sow Ageti rai, potato varieties like Kufri Ashoka, Kufri Chandra mukhi and other vegetable crops like spinach,reddish coriander etc.	
		Maize Blackgram/ Greengram	Harvesting of intercrop at physiological maturity (Maize, Blackgram and Greengram) Harvesting of green cobs (maize) and sell in market and remaining portion will be used for fodder.	Better pulverization should be made for conservation of soil moisture following by planking for sowing of early rabi crops like toria and potato etc.. Toria variety- type-9, type-36, PT-303, PT-30 and ageti Rai should be sown in 1st week of September while Bhawani variety can be sown in 2nd week of September.	
		Pigeonpea	Earthing up of Pigeonpea Life saving irrigation to pigeonpea if possible.		

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	Sandy clay loam soils	Rice – Wheat / Pea/ Lentil	Short duration rice varieties- NDR 97, Ratna, Narendra 118, Narendra 97, Pant Dhan 12, HUR 105, Induri Sambha, HUR 2-1, HUR-3022 to be grown under aerobic condition.	Community nursery Direct seeding in small beds. Use of micro-irrigation systems *viz*. sprinkler & sub-surface irrigation.	Breeder's seed will be supplied by BHU and NDUAT, Faizabad. Seed drills RKVY and supply of seeds NFSM Breeders seed will be supplied by BHU and NDUAT, Faizabad. Seed drills RKVY and supply of seeds NFSM Breeders seed will be supplied by BHU and NDUAT, Faizabad. Seed drills under RKVY and
Limited release of water in canals due to low rainfall	Sandy clay loam soils	Rice – Wheat / Pea/ Lentil	Rice\ Maize \ Sorghum Grow short duration aerobic rice such as NDR 97, NDR 118, Govind, Vandana, Varanideep, Susk Samrat , HUR 105 Maize: Malviya hybrid Makka-2, Naveen & Jaunpuri Pearl millet : WCC 75, Raj 171, Pusa 23 Sorghum: **C**SH-16, CHS-9, CHS-14, CSV-13 &CSV-15 should be grown on ridges for fodder/grain purposes.	Community nursery, Direct seeding in small beds. Use of micro-irrigation systems *viz*. sprinkler & sub-surface irrigation.	

Non release of water in canals under delayed onset of monsoon in catchment	Sandy clay loam soils	Rice – Wheat / Pea/ Lentil	Shift to only aerobic rice Or Rice may be replaced by pulses Greengram: Pant Mung -8, PDM-11, Samrat, Jyoti, Jagriti, Janpriya, Jan Chetana & Jan Kalyani Blackgram: Type 9, Pant U 19, Pant U 35, Narendra Urd 1 & Azad Urd-3 Sesame :Type 4, T-12, T-13, Shekhar, GT1, TC 25 &TC 289	Direct seeding in small beds. Use of micro-irrigation systems *viz.* sprinkler & sub-surface irrigation.	supply of seeds through NFSM Breeder's seed will be supplied by BHU and NDUAT, Faizabad. Seed drills under RKVY and supply of through seeds NFSM Breeder's seed will be supplied by BHU and NDAUT, Faizabad. Seed drills under RKVY and supply of seeds through NFSM
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	Sandy clay loam soils	Rice – Wheat / Pea/ Lentil	Sorghum\ Pearl millet	Conservation tillage, Sowing of Pearl millet & Sorghum for grain purposes at 45 cm on ridges. Foliar application of 2% MOP Use of mulches (straw/dust).	
Insufficient groundwater recharge due to low rainfall	Sandy clay loam soils	Rice – Wheat / Pea/ Lentil	Rice should be replaced with pulses (green gram & black gram), oilseeds (Sesame) in *Kharif* and wheat by Chickpea & lentil in *Rabi* season.	Direct seeding in small beds. .	

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	Drain out excess water	Harvesting at physiological maturity	Shift to safer place
Pigeonpea	Provide drainage and Practice of sowing on ridges	Make inter-row furrow to Drain out excess water	Harvesting at physiological maturity	Shift to safer place
Heavy rainfall with high speed winds in a short span[2]	-	-	-	-
Outbreak of pests and diseases due to unseasonal rains				
Rice, Wheat, Chickpea, Pigeonpea, Pearl millet	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[o]**			
Transient water logging/ partial inundation[1]	**Seedling / nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**

Rice	• Provide surface drainage • Re-sowing with short duration varieties • Raise community nursery in the village	• Removal of excess water • Drainage of excess water through drainage channel should be made.	Provide drainage • Prevent premature seed germination • Foliar spray of 5% urea	Harvesting at physiological maturity Shift produce to safer place Provision for buying / marketing of discoloured grain at the earliest to provide relief
Maize	Provide drianage , creation of surface drains at appropriate places to avoid water logging Removal of silt from contour staggered trenches Divergent drain be made to collect runoff at suitable points either in artificially Created ponds or diverting to wells. Drainage of excess water through drainage channel should be made.	Divergent drain be made to collect runoff at suitable points either in artificially created ponds or diverting to wells.	Divergent drain be made to collect runoff at suitable points either in artificially created ponds or diverting to wells.	
Continuous submergence for more than 2 days[2]				

Rice	• Drainage of excess water through drainage channel • Transplanting of deep water rice – Madhupur, Jalmagn, , Jalnidhi, Awarodhi, Mahsur-1, Jallahari, Swarna, , Jal priya, Jal nidhi, Mayank swarna sub-1should be preferred. **In low lying areas;** 1. Water stagnation upto 30-50 cm ht.- Mahsuri, Jal lahri, Swarna, Sabha mahsuri 2. Water stagnation upto 50-100 cm height – Chakya-69, Madhukar, Jalpriya 3. >100 cm height – Jalnidhi, Jalmagna 4. Water logging- Awarodhi, Madhukar Drainage of excess water through drainage channel should be made.	If crops fails due to water logging caused by excess rainfall, then resowing by end week of August or early maturing varieties of crops should be taken If top dressing of urea is not possible due to water stagnation/floods, then foliar spray of 5% urea solution can be done. Drainage of excess water through drainage channel should be made.	If crops fails due to water logging caused by excess rainfall, then resowing by end week of August or early maturing varieties of crops should be taken Drainage of excess water through drainage channel should be made. If top dressing of urea is not possible due to water stagnation/floods, then foliar spray of 5% urea solution can be done. If water logging/floods occurs prior to September, then emphasis could be given for the cultivation of Toria,Blackgram, Greengram or Sunflower.	If water logging/floods occurs prior to September, then emphasis could be given for the cultivation o early rabi crops like Toria,Blackgram, Greengram or Sunflower.
Sugarcane	Planting of sugarcane varieties such as UP 9530 and Co.S 96436 could be taken in flood affected areas Planting of sugarcane on Raised bed should be preferred instead of flat bed in flood affected areas of	In flood affected areas, preference should be given for planting of Autumn sugarcane in the month of October sothat their grand growth completed to the maximum extent prior to floods.	If top dressing of urea is not possible due to water stagnation/floods, then foliar spray of 5% urea solution can be done.	• Preference should be given for planting of Autumn Sugarcane in the month of Oct so that their grand growth completed to the maxi. Extent prior to floods.

	NEPZ.	If top dressing of urea is not possible due to water stagnation/floods, then foliar spray of 5% urea solution can be done.		
Sea water intrusion	Not Applicable			

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

Extreme event type	**Suggested contingency measure[r]**			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Heat Wave				
Rice	Provide watering Light and frequent irrigation during night	• Provide light irrigation • Irrigation interval should be decreased	Irrigation interval should be decreased	-
Wheat	-	-	Provide light irrigation	Harvesting at physiological maturity
Chickpea	-	-	Provide light irrigation	Harvesting at physiological maturity
Pigeonpea	• Mulching	• Irrigation interval should be decreased	• Irrigation interval should be decreased	-
Cold wave				
Wheat	Provide light irrigation	Provide light irrigation	Provide light irrigation	-

Pigeonpea	Mulching	Light irrigation for survival	Light irrigation for survival	Harvesting at physiological maturity
Frost				
Wheat	Light irrigation	Light irrigation for survival	Light irrigation for survival	-
Pigeonpea	• Grow as inter crop • Smoke generation to create heat during night time	• Light Sprinkler irrigation • Smoke generation to create heat during night time	• Light irrigation for survival • Smoke generation to create heat during night time	-
Hailstorm	Not Applicable			
Cyclone	Not Applicable			

2.5 Contingent strategies for Livestock, Poultry & Fisheries

2.5.1 Livestock

	Suggested contingency measures		
	Before the event[s]	**During the event**	**After the event**
Drought			
Feed and fodder availability	• Storage of straw and silage in silo pit according to population of animal		
Drinking water	• Maintenance and inspection of Tubewells, Hand pumps, Ponds, Tanks etc.		
Health and disease management	• Vaccination of animals against FMD, HS, B.Q. and De warming		
Floods			
Feed and fodder availability	• Increase the area of fodder	• Provide safe place for the animals	• Sowing of rabi fodder crops like - Berseem, Lucerne, Oat and other rabi crops
Drinking water	• Crops according to population and their storage	• Distribution of stored feed and fodders according to the population	• Drain of infected stored water and supply of fresh water for drinking.
Health and disease management	• Arrangement of clean drinking water	• Provide neat & clean	• Proper treatment of affected (animals

		drinking water	vaccination & Dewarming)
Cyclone			
Feed and fodder availability	• Arrangement of clean drinking water	• Organize health camp regularly	-
Drinking water			
Health and disease management			
Heat wave and cold wave			
Shelter/environment management	• Shelter house/Farm house should not face directly	• Proper availability of shelter, drinking water and feeds & fodder as per need of the animals	• Provide shelterbelts of good quality materials
Health and disease management	• Ensure the availability of drinking water and as well as electrolytes		• Routine health check up by veterinary doctors

[s] based on forewarning wherever available

2.5.2 Poultry

	Suggested contingency measures			**Convergence/linkages with ongoing programs, if any**
	Before the event[a]	**During the event**	**After the event**	
Drought				
Shortage of feed ingredients				
Drinking water	• Deep tube well provide clean drinking	• Provide the drinking water	• Provide the drinking water	
Health and disease management	• Vaccination against infectious diseases	• Vaccination	• Vaccination for infectious diseases such as- Ranikhet, infectious Coryza, IBD, ILT	
Floods				
Shortage of feed ingredients	• Inspection of established	• Provide the drinking	• Provide the drinking water	

	Tubewell & other water sources	water		
Drinking water	• Vaccination against infectious diseases	•Vaccination	• Vaccination for infectious diseases such as- Ranikhet, infectious Coryza, IBD, ILT	
Health and disease management				
Cyclone				
Heat wave and cold wave				
Shelter/environment management	• Arrangement of proper shelter and cooler/heater to maintain the proper temp. of the shelter house	•Maintenance of surrounds temp. and prevent the birds from direct exposure of heat/ cold waves	•Heat check up	
Health and disease management	• Vaccination	•Vaccination	• Vaccination • Availability of neat & clean water	

2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event[a]	**During the event**	**After the event**
1) Drought			
A. Capture			
Marine			
Inland	Arrange for alternative water resources	Sell the produce at minimum acceptable size to the consumer	Lime Application
(i) Shallow water depth due to insufficient rains/inflow	Stocking of Air breathing		
(ii) Changes in water quality		Increased water temperature	
(iii) Any other		Decrease dissolve oxygen	
B. Aquaculture			
(i) Shallow water in ponds due to insufficient rains/inflow	Arrange for alternative water resources	Minimum disturbance to the fish i.e. minimum fishing activities	Maintain the pond properly by liming, manuring and fertilization

(ii) Impact of salt load build up in ponds / change in water quality			
2) Floods			
A. Capture			
Marine			
Inland	Harvest the large size fish	Protect the escape of fish	Manage the inlet, outlet structures along with pond land
(i) No. of boats / nets/damaged			
(ii) No.of houses damaged			
(iii) Loss of stock			
(iv) Changes in water quality			
(v) Health and diseases			
B. Aquaculture			
(i) Inundation with flood water	Make 2.5 m high bylonnet boundry on the band of pond	Check for outlet to remain open	Close outlet and open inlet
(ii) Water contamination and changes in water quality		Close inlet and divert water receiving channel	Treatment of water with Alum and $KmnO_4$
(iii) Health and diseases			Feeding, liming, manuring and fertilization of ponds
(iv) Loss of stock and inputs (feed, chemicals etc)			
(v) Infrastructure damage (pumps, aerators, huts etc)			
3. Cyclone / Tsunami			
A. Capture			
B. Aquaculture			
(i) Overflow / flooding of ponds		Stocking of fish sped for a period of 1-2 month	
(ii) Changes in water quality (fresh water / brackish water ratio)	Liming	Lime+alum	Harvesting and selling fish seeds
(iii) Health and diseases		Lime+alum	
(iv) Loss of stock and inputs (feed, chemicals etc)			Netting of fish+$KmnO_4$ application
(v) Infrastructure damage (pumps,			

aerators, shelters/huts etc)			
4. Heat wave and cold wave	Not Applicable		