State: Uttar Pradesh

Agriculture Contingency Plan for District: Gonda

1.0 District Agriculture profile				
1.1	**Agro-Climatic/Ecological Zone**			
	Agro Ecological Sub Region (ICAR)	Eastern Plain, Hot Subhumid (moist) Eco-Region (13.1)		
	Agro-Climatic Zone (Planning Commission)	Middle Gangetic Plain Region (IV)		
	Agro Climatic Zone (NARP)	North Eastern Plain Zone (UP-8)		
	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**
		27°28' N	82°01' E	120 m
	Name and address of the concerned ZRS/ZARS/ RARS/ RRS/ RRTTS	Directorate of Research, SAU, Kumarganj, Faizabad		
	Mention the KVK located in the district with address	KVK, Gonda		

1.2	**Rainfall**	**Normal RF(mm)**	**Normal Rainy days**	**Normal Onset**	**Normal Cessation**
	SW monsoon (June-Sep)	1029.8	44	3rd week of June	1st week of October
	NE Monsoon(Oct-Dec	70.4	5		
	Winter (Jan- Feb)	37.6	2		
	Summer (March-May)	29	7		
	Annual	1166.8	58		

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)	401.1	292.3	12.9	52.5	1.2	7.9	8.06	3.44	16	6.3

1. 4	**Major Soils (common names like red sandy loam deep soils (etc.,)***	**Area ('000 ha)**	**Percent (%) of total Geographical area**
	Sandy soils	-	37.2
	Sandy loam soils	-	62
	Sandy clay soils	-	-
	Others (specify):	-	-

1.5	**Agricultural land use**	Area ('000 ha)	Cropping intensity(%)
	Net sown area	292.3	
	Area sown more than once	-	
	Gross cropped area	-	

1.6	**Irrigation**	Area ('000 ha)
	Net irrigated area	252.20
	Gross irrigated area	368.32
	Rainfed area	-

	Sources of Irrigation	Number	Area (‘000 ha)	Percentage of total irrigated area
	Canals		64.0	19.28
	Tanks		0.004	
	Open wells		0.13	
	Bore wells	17.54	174.05	47.25
	Lift irrigation schemes			
	Micro-irrigation			
	Other sources (please specify)			
	Total Irrigated Area		368.329	
	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 (Specify year eg., 2008-09)

1.7	**Major field crops cultivated**	**Area ('000 ha)**							
		Kharif			***Rabi***				
		Irrigated	**Rainfed**	**Total**	**Irrigated**	**Rainfed**	**Total**	**Summer**	**Grand total**
	Rice	127.32	0.35	127.68	-	-	-	-	-
	Maize	549.4	0.37	549.807	-	-	-	-	-
	Pigeon pea	588.8	-	588.80	-	-	-	-	-
	Wheat	-	-	-	149.98	0.06	150.046	-	-
	Chickpea	-	-	-	34.34	0.96	35.308	-	-
	Lentil	-	-	-	152.19	0.003	152.19	-	-
	-	-	-	-	-	-	-	-	-

	Horticulture crops - Vegetables	**Total**	**Irrigated**	**Rainfed**
	Potato	2591	2591	0
	Onion	0.152	0.152	0
	Others	6.908	6.684	0.224

	Medicinal and Aromatic crops	**Total**	**Irrigated**	**Rainfed**
	Plantation crops	**Total**	**Irrigated**	**Rainfed**
	Fodder crops	**Total**	**Irrigated**	**Rainfed**
	Jowar	0.59	0	0.947
	Bajra	0.37	0	0.032
	Maize	549.43	0	0.377
	Total fodder crop area	**3.652**	**1.245**	**2.407**

	Grazing land	-	-	-
	Sericulture etc	-	-	-
	Others (specify)	-	-	-

1.8	**Livestock**	**Male ('000)**	**Female ('000)**	**Total ('000)**
	Indigenous		-	306.29
	Non descriptive Cattle (local low yielding)	-	-	-
	Improved crossbred cattle (Cow & Buffalo only)		-	214.08
	Non descriptive Buffaloes (local low yielding)	-	-	-
	Buffaloes		-	-
	Goat		-	136.0
	Sheep		-	0.82
	Others (Camel, Pig, Yak, Horse, Monkey etc.)		-	10.20
	Commercial dairy farms (Number)	-	-	-
1.9	**Poultry**	**No. of farms**	**Total No. of birds ('000)**	
	Commercial	383	89270	
	Backyard	167	14807	

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)	-	-	-
	Others	-	-	-

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

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 (Crops to be identified based on total acreage)										
	Rice	251.72	19.77	-	-	-	-	-	-	-
	Jowar	0.56	9.43	-	-	-	-	-	-	-
	Maize	497.20	9.05	-	-	-	-	-	-	-
	Pigeon pea	45.05	7.65	-	-	-	-	-	-	-
	Wheat	-	-	416.64	22.78	-	-	-	-	-
	Pea	-	-	32.9	9.38	-	-	-	-	-
	Lentil	-	-	130.7	8.59	-	-	-	-	-
	Mustar	-	-	78.5	8.77	-	-	-	-	-

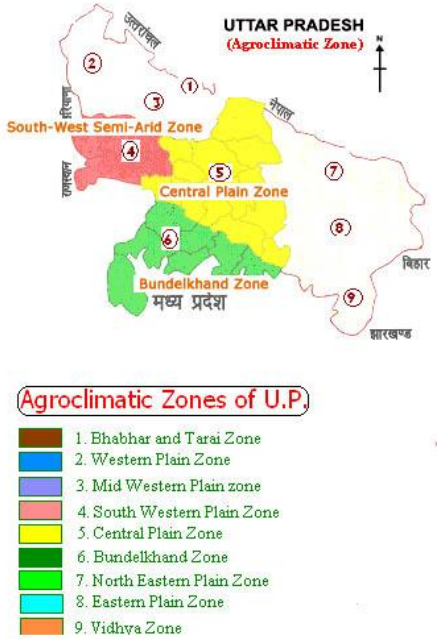
	d									
	Potato	-	-	569.4	219.76	-	-	-	-	-
Major Horticultural crops (Crops to be identified based on total acreage)										

1.12	**Sowing window for 5 major field crops**	**Rice**	**Maize**	**Wheat**	**Lentil**
	Kharif- Rainfed	3rd week of June – 3rd week of July	2nd week of June – 4th week of June		
	Kharif-Irrigated	4th week of June – 2nd week of August	3rd week of June – 3rd week of July		
	Rabi- Rainfed			3rd week of October – 3rd week of November	1st week of October – 4th week of October
	Rabi-Irrigated			3rd 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 (specify)		√	
	Others (specify)		-	-

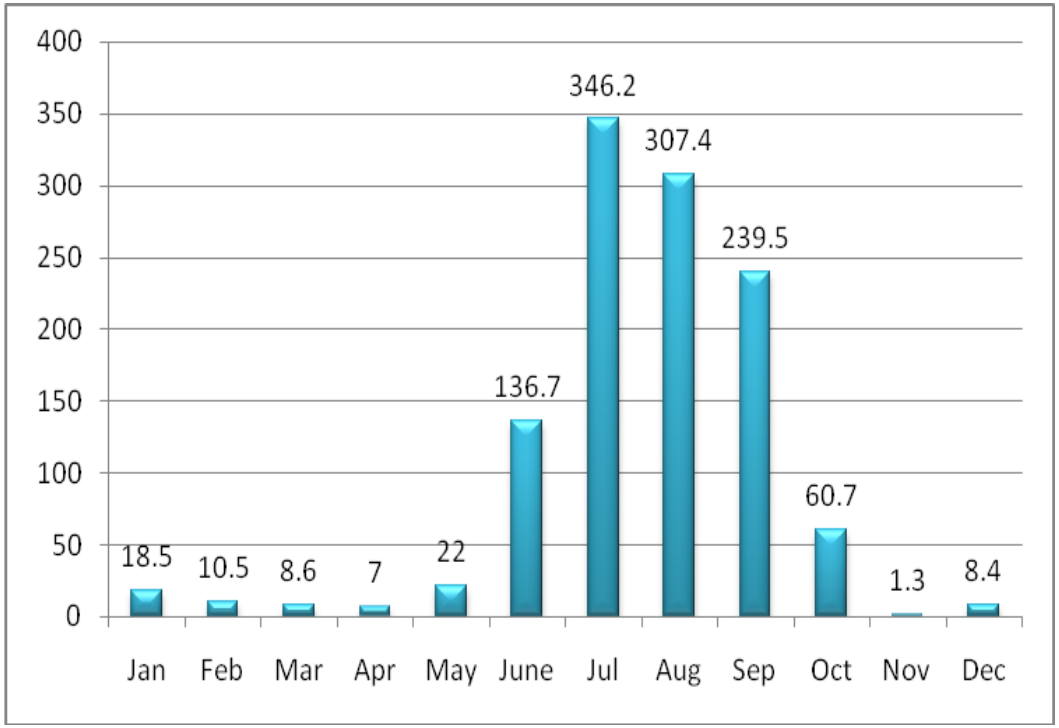
1.14	**Include Digital maps of the district for**	Location map of district within State as Annexure I	Enclosed: Yes
		Mean annual rainfall as Annexure 2	Enclosed: Yes
		Soil map as Annexure 3	Enclosed: Yes

Annexure I

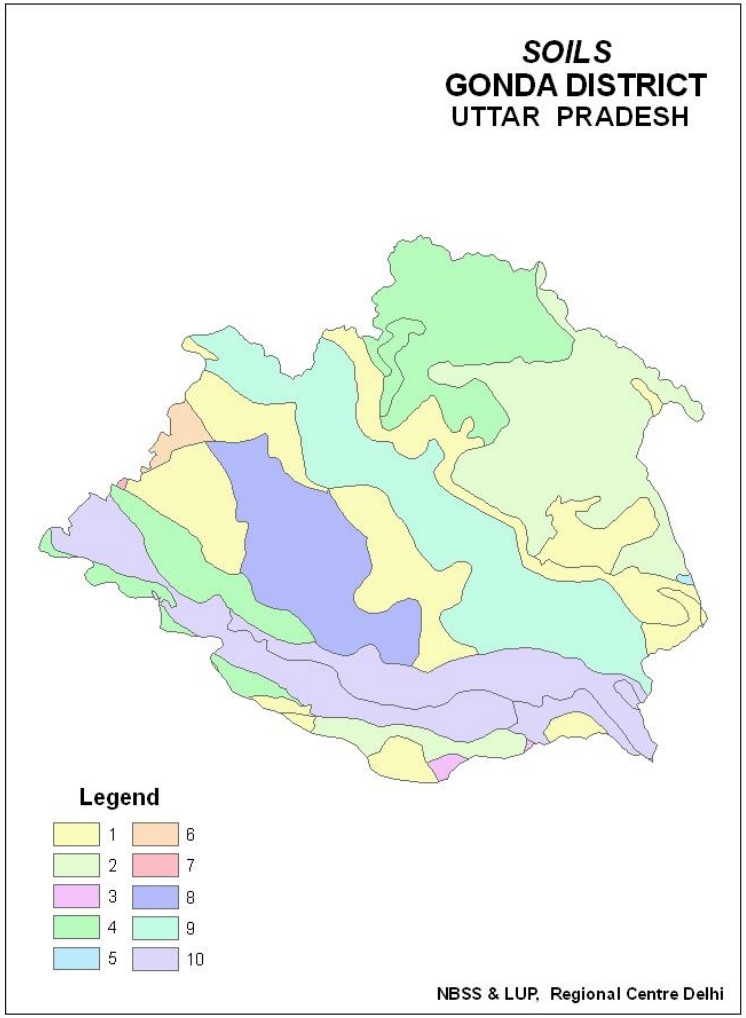



UTTAR PRADESH
Saharanpur
Muzaffarnagar
Bijnor
Baghpat
Meerut
Jyotiba Phule Nagar
Ghaziabad
Moradabad
Rampur
Pilibhit
Bareilly
Bulandshahr
Budaun
Kheri
Aligarh
Shahjahanpur
Shrawasti
Mathura
Hathras
Etah
Bahraich
Balrampur
Farrukhabad
Sitapur
Hardoi
Siddharthnagar
Maharajganj
Firozabad
Mainpuri
Gonda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

Annexure II


400
350
300
250
200
150
100
50
0
346.2
307.4
239.5
136.7
60.7
18.5
10.5
8.6
7
22
1.3
8.4
Jan
Feb
Mar
Apr
May
June
Jul
Aug
Sep
Oct
Nov
Dec

Annexure III



SOILS OF GONDA 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, fine soils and slightly eroded associated with loamy soils
5. Deep, loamy soils and slightly eroded associated with loamy soils with moderate salinity and sodicity and moderate water logging.
6. Deep, silty soils associated with loamy soils slightly eroded

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

7. Deep, loamy soils and slightly eroded associated with stratified loamy soils slightly eroded

Recent Alluvial Plain (1-3% slope)

8. Deep, silty soils and slight flooding associated with loamy soils and slight flooding
9. Deep, loamy soils with slight flooding

Active Flood Plain (1-3% slope)

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

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	Deep loamy soils (tarai 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	-
	Sandy loam soils	Maize	Maize	Intercropping/ mixed cropping of maize/sorghum/ Pearlmillet with long duration varieties of Pigeonpea	
		Pigeonpea	Pigeonpea	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	Deep loamy soils (tarai 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
	Sandy loam soils	Maize	Maize Maize-Prakash, Sartaj, Naveen, Tarun.	Maintain weed free condition for soil moisture conservation Intercropping/ mixed cropping of maize 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	Deep loamy soils (tarai 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
	Sandy loam soils	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+green gram(2:2)	
		Pigeonpea	Pigeonpea: Bahar	Maize (Tipekhiya) in Pigeonpea(Narendra Arhar-1) crop in 1:1 row ratio 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	Deep loamy soils (tarai 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,	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	• Seed-drill under RKVY • Supply of seed through govt. agencies *ie*. NFSM,RKVY

			Malviya jyoti, Narendra mung-1 Blackgram : Narendra urd-1,Pant urd-25, Pant urd-19, Uttara, Type-9	Life saving irrigation in transplanted rice	
	Sandy loam soils	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	
		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.	Deep loamy soils (tarai 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
	Sandy loam soils	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	Deep loamy soils (tarai 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	
	Sandy loam soils	Maize	Thinning to maintain proper	Foliar spraying of 2%	

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

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 clay loam soils	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	
	Sandy loam soils	Maize 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**

	Deep 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.	

	Sandy loam soils	Maize	Harvesting of intercrop at physiological maturity (Maize, Blackgram and Greengram) Earthing up of Pigeonpea Harvesting of green cobs (maize) and sell in market and remaining portion will be used for fodder. Life saving irrigation to pigeonpea if possible.	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		-	

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	Not applicable				
Limited release of water in canals due to low rainfall	Not applicable				
Non release of water in canals	Not applicable				

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
under delayed onset of monsoon in catchment					
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	Not applicable				
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[0]**			
Transient water logging/ partial inundation[1]	**Seedling / nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Rice	• Arrangement of Drainage channel • Drainage of water from the rice fields	• Removal of excess water	• Foliar spray of 5% urea	-
Maize	• Drainage of water • Creation of surface drains at appropriate places to avoid water logging			
Continuous submergence for more than 2 days[2]				
Rice	• Drainage of excess water through drainage channel • Transplanting of deep water rice –Madhupur, Jalmagn, Jalpriya, Jalnidhi, Awarodhi	• Just after finishing of floods, top dressing of urea could be ensured in the field	• Foliar spray of 5% urea	• 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. • Planting of Sugarcane on raised beds instead of flat bed. • Emphasis could be given for cultivation of Toria,

				Urd, Mung/Sunflower
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	**Not applicable**			
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:	**Not applicable**			
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 drinking water	• Proper treatment of affected (animals 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 Tubewell & other water sources	•Provide the drinking water	•Provide the drinking 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	

[a] based on forewarning wherever available

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		

[a] based on forewarning wherever available