State: UTTAR PRADESH

Agriculture Contingency Plan for District: MATHURA

1.0 **District Agriculture profile**				
1.1	**Agro-Climatic/ Ecological Zone**			
	Agro-Ecological Sub Region(ICAR)	Western Plain Zone,		
	Agro-Climatic Zone (Planning Commission)	Upper Gangetic Plain Region		
	Agro-Climatic Zone (NARP)	UP-3 South-western Semi-arid Zone		
	List all the districts falling the NARP Zone* (^ 50% area falling in the zone)	Firozabad, Aligrah, Hathras, Mathura, Mainpuri, Etah		
	Geographical coordinates of district headquarters	Latitude	Longitude	Altitude (mt)
		27.30 N	77.40 E	
	Name and address of the concerned ZRS/ZARS/RARS/RRS/RRTTS	-		
	Mention the KVK located in the district with address	Krishi Vigyan Kendra, Dairy Farm, Veterinary College, Mathura		
	Name and address of the nearest Agromet Field Unit(AMFU,IMD)for agro advisories in the Zone	C.S. Azad University of Agriculture & Technology Kanpur		

1.2	Rainfall	Normal RF (mm)	Normal Rainy Days (Number)	Normal Onset (Specify week and month)	Normal Cessation (Specify week and month)
	SW monsoon (June-sep)	518.7	45	3rdweek of June	4th[d] week of September
	Post monsoon (Oct-Dec)	25.3	10		
	Winter (Jan-March)	33.7	10	-	-
	Pre monsoon (Apr-May)	13.7	2	-	-
	Annual	591.4	67	-	-

1.3	Land use pattern of the district (Latest statistics)	Geographical area (ha)	Cultivable area (ha)	Forest area (ha)	Land under non-agricultural use (ha)	Permanent pastures (ha)	Cultivable wasteland	Land under Misc.tree crops and groves	Barren and uncultivable land	Current fallows (Ha)	Other fallows (ha)
	Area in (000' ha)	330.3	284.5	1.6	39.6	1.3	4.9	0.9	3.2	5.5	4.0

1.4	Major Soils	Area(‘000 ha)	Percent(%) of total
	Deep Fine soil	82.6	25%
	Deep fine moderate with loamy soil	66.1	20%
	Deep loamy soil	59.5	18%
	Other(Eroded)	122.2	37%

1.5	Agricultural land use	Area(‘000 ha)	Cropping intensity (%)
	Net sown area	269.3	140 %
	Area sown more than once	129.1	
	Gross cropped area	398.4	

1.6	Irrigation	Area(‘000 ha)		
	Net irrigation area	269.165		
	Gross irrigated area	329.709		
	Rain fed area	0.164		
	Sources of irrigation(Gross Irr. Area)	Number	Area(’000 ha)	Percentage of total irrigated area
	Canals	-	143.4	43.5
	Tanks	-	0	
	Open wells	-	0	
	Bore wells (Tube wells)	-	186.3	56.5
	Lift irrigation schemes	-	NA	
	Micro-irrigation	-	NA	
	Other sources	-	0	
	Total Irrigated Area	-	329.7	
	No. of Pump sets (2011-12)	-	52228	
	No. of Tractors	-	20620	
	Groundwater availability and use* (Data source: State/ Central Ground water Department/ Board)	No of blocks- Tehsils-	(%)area	Quality of water
	Over exploited	3	-	
	Critical	0	-	
	Semi-critical	2	-	
	Safe	0	-	
	Waste water availability and use		-	
	Ground water quality			Saline
*over-exploited groundwater utilization> 100%; critical: 90-100%; semicritical:70-90%; safe:<70%				

1.7 Area under major field crops & (As per latest figures 2013-14)

1.7	Major field crops cultivated	Area(‘000 ha)							
		Kharif			Rabi			Summer	Total
		Irrigated	Rain fed	Total	Irrigated	Rain fed	Total		
	Wheat	-	-	-	196.3	0	196.3	-	196.3
	Rice	48.0	-	48.0	-	-	-	-	48.0
	Rapeseed mustard	-	-	-	43.6	0.9	44.5	-	44.5
	Bajra	0.4	40.8	41.2	-	-	-	-	41.2
	Potato	-	-	-	11.5	0	11.5	-	11.5
	Barley	-	-	-	4.3	0	4.3	-	4.3

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

1.8	Major field crops cultivated	Area(‘000 ha)								
		Kharif		Rabi		Summer		Total		Crop residue as fodder (‘000 tons)
		Production (‘000 T)	Productivity (KG/HA)	Production (‘000 T)	Productivity (KG/HA)	Production (‘000 T)	Productivity (KG/HA)	Production (‘000 T)	Productivity (KG/HA)	
	Rice	101.6	2319	-	-	-	-	101.6	2319	NA
	Wheat	-	-	701.0	3619	-	-	701.0	3619	NA
	Bajra	53.2	1279	-	-	-	-	53.2	1279	NA
	Barley	-	-	20.3	3414	-	-	20.3	3414	NA
	Rapeseed Mustard	-	-	75.5	1715	-	-	75.5	1715	NA
	Potato	-	-	330.9	28059	-	-	330.9	28059	NA

Area under Horticulture crops –

	Horticulture crops -Fruits	Area (‘000 ha)		
		Total	Irrigated	Rainfed
	Mango	1.5	1.5	-
	Guava	0.7	0.7	-

	Horticulture crops -Vegetables	Total	Irrigated	Rainfed
	Potato	12.8	12.8	-
	Onion	0.02	0.02	-

Area under fodder crops & (As per latest figures 2010-11)

	Major Fodder crops cultivated	Area(ha)	Total
	Kharif	33824	33824
	Rabi	5131	5131
	Summer	2773	2773
	Total	41728	41728

1.8 Livestock

Livestock(year 2007)	Male(000)	Female(000)	Totat(000)
Non descriptive Cattle (local low yielding)	45.250	80.139	125.389
Improved cattle	0.015	0.123	0.138
Crossbred Cattle	3.062	13.614	16.676
Non descriptive Buffaloes (local low yielding)	43.715	154.751	198.466
Descript Buffaloes	109.373	416.086	525.459
Goat	30.463	51.702	82.165
Sheep			47.488
Other (Camel,Pig, Yak etc)			25.181
Commerical dairy farms (number)			0.000

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

1.11	Major field crops cultivated	Area('000 ha)								
		Kharif		Rabi		Summer		Total		Crop residue as fodder ('000 tons)
		Production ('000 T)	Productivity (KG/HA)	Production ('000 T)	Productivity (KG/HA)	Production ('000 T)	Productivity (KG/HA)	Production ('000 T)	Productivity (KG/HA)	
	Wheat	-	-	475.811	3459	-	-	475.8	3459	NA
	Bajra	185.2	1658	-	-	-	-	185.2	1658	NA

	Paddy	9.4	2156	-	-	-	-	9.4	2156	NA
	Redgram	0.9	848	-	-	-	-	0.9	848	NA
	Rapeseed Mustard	-	-	88.5	1567	-	-	88.5	1567	NA
	Potato	-	-	1363.7	249.19	-	-	1363.7	24919	NA

Major Horticultural crops (Crops to be identified based on total acreage)

1.11	Name of crop	Kharif		Rabi		Summer		Total		Crop residue as fodder
		Production ('000 t)	Productivity (000t /ha)	Production ('000 t)	Productivity (000t /ha)	Production ('000 t)	Productivity (000t/ha)	Production ('000 t)	Productivity (000t/ha)	
Major Horticultural crops (Crops to be identified based on total acreage)										
	Potato	-	-	330.0	25.8					-
	Onion			0.2	9.8					
	Others Veg.	2.6	11.3	7.7	11.3	2.6	11.3	12.8	11.3	

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

1.7	Major field crops cultivated	Total	
		Production (MT)	Productivity (Ql./HA)
	Kharif	1183840	350
	Rabi	359170	700
	Summer	83190	300
	Total	1626200	-

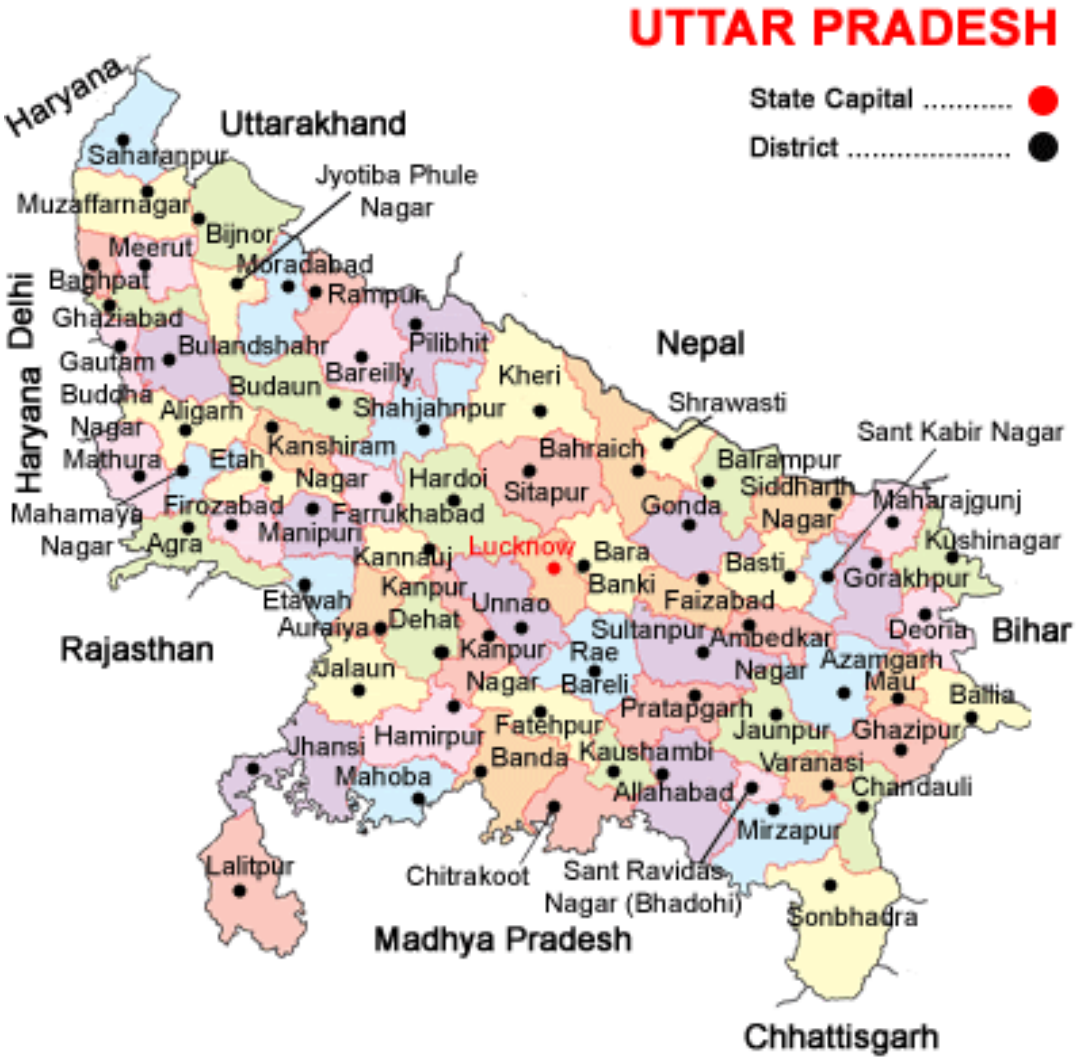
1.12	**Sowing window for 5 major field crops**	**Bajra**	**Til**	**Rice**	**Urd**	**Jowar**	**Moong**	**Wheat**	**Barley**	**Gram/Pea**	**Mustard**
	Kharif –Rainfed	2nd week of July to last week of July	2nd week of July to last week of July	-	2nd week of July to First week of August	Last week of June to 2nd week of july	2nd week of July to First week of August	-	-	-	-
	Kharif - Irrigated	-	-	Last week	-	-	-	-	-	-	-

				of June 2nd week of August							
	Rabi –Rainfed								Last week of Oct to last week of Nov	first week of Oct last week of Oct	2nd week of Sep to first week of Oct
	Rabi - Irrigated							first week of Nov last week of Nov	-	-	-

1.13	What is the major contingency the district is prone to?	Regular	Occasional	None
	Drought		√	
	Flood			√
	Cyclone			√
	Hail storm			√
	Heat wave		√	
	Cold wave		√	
	Frost	√		
	Sea water intrusion			√
	Sheath Blight, Stemborer , Pyrilla loose smut, Heliothis, Rust etc white grub.			√

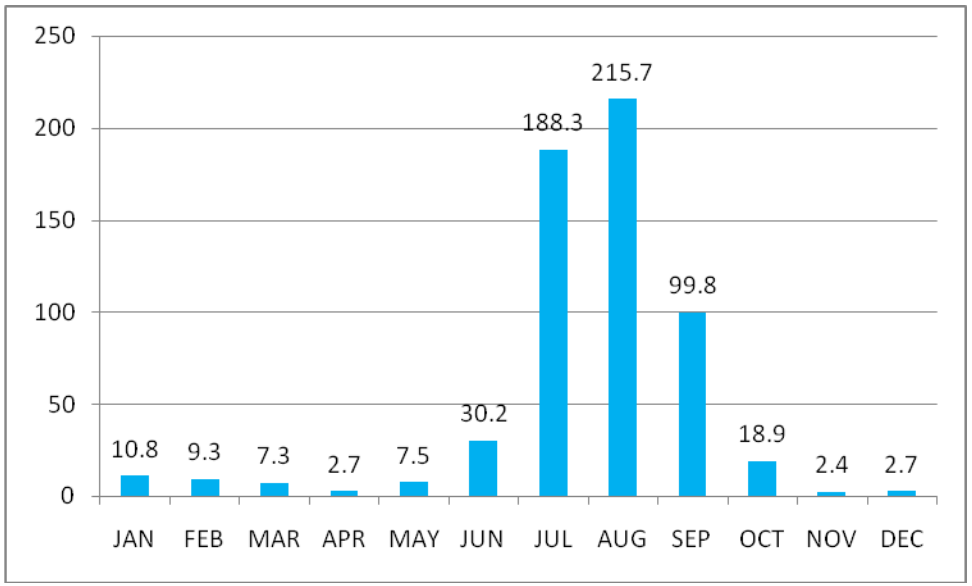
1.14	Include Digital maps of the district for	Location map of district within State as Annexure I	Enclosed: Yes
		Mean annual rainfall as Annexure 2	Enclosed: Yes
		Soil map as Annexure 3	Enclosed: Yes

Annexure I
Location map of Mathura district

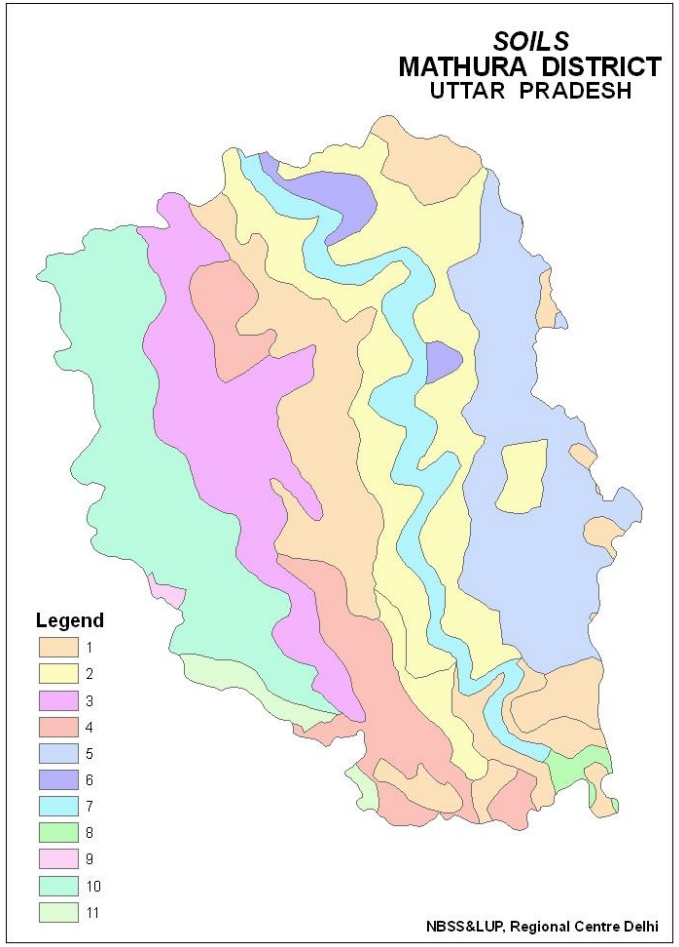


Annexure 2

Average month-wise rainfall (mm) of Mathura District



1.14. Soil map of Mathura district



Alluvial plain (0-1% slope)

1. Deep, loamy soils and slightly eroded
2. Deep, fine soils moderately saline and sodic associated with loamy soils, slightly eroded
3. Deep, fine soils and slightly eroded associated with loamy soils slightly saline and moderately sodic
4. Deep, silty soils associated with loamy soils slightly eroded
5. Deep, silty soils and slightly eroded associated with fine soils

Ravinous land (3-5% slope)

6. Deep, loamy soils and severely eroded
7. Deep, loamy soils, very severely eroded associated with silty soils, very severely eroded

Dissected uplands (3-5% slope)

8. Deep, loamy soils and moderately eroded associated with loamy soils, slightly eroded

Undulating Lands with hillocks (1-3% slope)

9. Deep, loamy soils with moderate erosion associated with sandy soils with moderate erosion

Gentle to very gentle sloping lands with monad nocks

10. Deep, loamy soils and slightly eroded associated with loamy skeletal soils, severely eroded
11. Deep, loamy soils, moderately 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)	Sandy Loam	Pigeon pea (Upas-120 Bahar, Narendra 1 and 2) + Pearl millet(NDFB 3) + Black gram (Ajad)	Pigeon pea (Bahar, Narendra 1 and 2) + Pearl millet(NDFB 3) + Black gram (Ajad) Seasmum-T-78, Pragti Sekhar	Pigeon pea +Pearl millet+ Black gram (1:2:1) Use multi crop planter and grow on raised bed, Gap filling, Thinning	Deptt. of Agriculture./Sadhan Sahkari samiti/UP agro
		Pigeon pea (Bahar, Narendra 1 and 2) +Sorghum (Varsha,CSH 13 and 23, Bundela)	Pigeon pea (Bahar, Narendra 1 and 2) + Pearl millet(NDFB 3) + Black gram (Ajad) Seasmum-T-78, Pragti Sekhar	Pigeon pea +Pearl millet+ urd bean (1:2:1) Use multi crop planter and grow on raised bed, Gap filling, Thinning	same
	Loamy Sand	Kharif Fallow- Rabi Toria lentil/Mustard/Pea/Chick pea		Summer ploughing for conserve moisture	

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 weeks of July)*	Loamy Sand	Pigeon pea (Bahar, Narendra 1 and 2) + Pearl millet(NDFB 3) + Black gram (Ajad)	Change in variety with short duration like Pearl millet –WCC 75, Pusa 322, 323	20% more seed rate, Mulching, Maize and pearl millets use as a fodder. Weed control	
		Pigeon pea (Bahar, Narendra 1 and 2) +Sorghum (Varsha,CSH 13 and 23, Bundela)	Change in variety with short duration like Pearl millet –WCC 75, Pusa 322, 323	20% more seed rate, Mulching, Maize and pearl millets use as a fodder. Weed control	

		Fallow- Toria lentil/Mustard/Pea/Chick pea			
	Sandy Loam	Pigeon pea (Bahar, Narendra 1 and 2) + Pearl millet(NDFB 3) + Black gram (Ajad)	Change in variety with short duration like Pearl millet –WCC 75, Pusa 322, 323	20% more seed rate, Mulching, Maize and pearl millets use as a fodder. Weed control	
		Pigeon pea (Bahar, Narendra 1 and 2) +Sorghum (Varsha,CSH 13 and 23, Bundela)	Change in variety with short duration like Pearl millet –WCC 75, Pusa 322, 323	20% more seed rate, Mulching, Maize and pearl millets use as a fodder. Weed control	

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)	Sandy loam	Pigeon pea (Bahar, Narendra 1 and 2) + Pearl millet(NDFB 3) + Black gram (Ajad)	Short duration cvs pearl millet for Fodder (NDFB 3) Prefer sole crop Black gram on raised bed using raised bed planter	Recommended practices	UP Agro/ other sources for raised bed planter
		Pigeon pea (Bahar, Narendra 1 and 2) +Sorghum (Varsha,CSH 13 and 23, Bundela)	Short duration cvs pearl millet for Fodder (NDFB 3) Prefer sole crop Black gram on raised bed using raised bed planter	Recommended practices	UP Agro/ other sources for raised bed planter
		Kharif Fallow Rabi-Toria/ lentil/ Mustard/Pea/Chick pea			
		Pigeon pea (Bahar, Narendra 1 and 2) + Pearl millet(NDFB 3) + Black gram (Ajad)			
		Pigeon pea (Bahar, Narendra 1 and 2) +Sorghum (Varsha,CSH 13 and 23, Bundela)			

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)	Sandy loam	Pigeon pea (Bahar, Narendra 1 and 2) + Pearl millet(NDFB 3) + Black gram (Ajad)	Planning for early rabi crops in september e.g. Toria (Type 36,Type 9, Bhavani) Mustard (Varuna, Pusa bold)	Land preparation	
		Pigeon pea (Bahar, Narendra 1 and 2) +Sorghum (Varsha,CSH 13 and 23, Bundela)	Planning for early rabi crops in september e.g. Toria (Type 36,Type 9, Bhavani) Mustard (Varuna, Pusa bold)	Land preparation	
		Fallow-lentil/Mustard/Pea/Chick pea			
		Pigeon pea (Bahar, Narendra 1 and 2) + Pearl millet(NDFB 3) + Black gram (Ajad)			

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 loam	Pigeon pea (Bahar, Narendra 1 and 2) + Pearl millet(NDFB 3) + Urd bean (Ajad) Sesame	• No Change • Gap filling to maintain proper plant population • Resowing if the plant population is<30%	Weed management Mulching Life saving irrigation	
		Pigeon pea (Bahar, Narendra 1 and 2) +Sorghum (Varsha,CSH 13 and 23, Bundela)	• No Change • Resowing if the plant population is<30%	Weed management Mulching Life saving irrigation	
		Fallow-lentil/Mustard/Pea/Chick pea			

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	Sandy loam	Pigeon pea (Bahar, Narendra 1 and 2) + Pearl millet(NDFB 3) + Black gram (Ajad)	Weeding, Mulching with removed weeds	Foliar spray with 1% KCl	
		Pigeon pea (Bahar, Narendra 1 and 2) +Sorghum (Varsha,CSH 13 and 23, Bundela)	Weeding, Mulching with removed weeds	Foliar spray with 1% KCl	

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	Sandy loam	Pigeon pea (Bahar, Narendra 1 and 2) + Pearl millet(NDFB 3) + Black gram (Ajad)	Weeding, Mulching with removed weeds	Opening conservation furrow, Life saving irrigation	
		Pigeon pea (Bahar, Narendra 1 and 2) +Sorghum (Varsha,CSH 13 and 23, Bundela)	Weeding, Mulching with removed weeds	Opening 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 loam	Pigeon pea (Bahar, Narendra 1 and 2) + Pearl millet(NDFB 3) + Black gram (Ajad)	**In case of Pearl Millet in severe case, Harvest for fodder**	**Harvest at physiological maturity,**	**-**
		Pigeon pea (Bahar, Narendra 1 and 2) +Sorghum (Varsha,CSH 13 and 23, Bundela)	**In case of Sorghumt in severe case, Harvest for fodder**	-	

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 Loam	Rice	Short duration varieties such as Narendra 97, Susk Samrat, Shahbhagi, NDR 118, NDR 80	• DSR • drum seeding • SRI • Ensure application of K	
		Maize	HQPM 5, Naveen, Tarun, Sweta, Kanchan	• Ridge and furrow system • Ensure application of K	
		Pearl millet	PMH 1		
		Sorghum	Popular hybrids		

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Limited release of water in canals due to low rainfall	Sandy Loam	Rice	Short duration varieties such as Narendra 97, Susk Samrat, Shahbhagi, NDR 118, NDR 80	• DSR • drum seeding • SRI • Ensure application of K	
		Maize	HQPM 5, Naveen, Tarun, Sweta, Kanchan	• Ridge and furrow system • Ensure application of K	
		Pearl millet	PMH 1		
		Sorghum	Popular hybrids		

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Non release of water in canals under delayed onset of monsoon in catchment	Sandy Loam	Rice	Replace rice with Sorghum/Pearl Millet/Maize	• Irrigation at critical stage	
		Maize	Prefer short duration cvs with raised bed planting		
		Pearl millet	Prefer short duration		
	Sandy Loam	Sorghum			

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

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Insufficient groundwater recharge due to low rainfall	Bore well irrigated Areas Upland Tube well irrigated	Rice	• Replace with sorghum/ Pearl millet/Urd/Moong • CVS. from rainfed		
Any other condition (specify)					

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	strengthening the bunds	strengthening the bunds	Drain out excess water	
Maize	Drain out excess water and strengthening the bunds	Drain out excess water and strengthening the bunds	Drain out excess water	
Pearl Millet	Drain out excess water and strengthening the bunds	Drain out excess water and strengthening the bunds	Drain out excess water	
Sorghum	Drain out excess water and strengthening the bunds	Drain out excess water and strengthening the bunds	Drain out excess water	
Sesame	Drain out excess water and strengthening the bunds	Drain out excess water and strengthening the bunds	Drain out excess water	
Horticulture				
Ber	Drain out excess water In young plantation drenching with COC			
Aonla	Drain out excess water In young plantation drenching with COC			
Mango	Drain out excess water			
Heavy rainfall with high speed winds in a short span[2]	Not applicable			
Outbreak of pests and diseases due to unseasonal rains	Need based and recommended plant protection measures			

2.3 Floods

Condition	**Suggested contingency measure**			
Transient water logging/ partial inundation[1]	**Seedling / nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Continuous submergence for more than 2 days[2]	-	-	-	-
Sea water intrusion[3]	-	-	-	-

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				
Pigeon pea			Provide light irrigation if possible	
Mustard			2% Urea spray Apply control measures for Aphids	
Potato		Plant protection for early/late blight Provide light irrigation Fumigation	Plant protection for early/late blight Provide light irrigation Fumigation	
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	**During the event**	**After the event**
Drought			
Feed and Fodder availability	Top dressing of N in 2-3 split doses @ 20-25 kg N/ha in common property resources (CPRs) or private property resources (PPRs) like waste and degraded lands with the monsoon pattern for higher biomass production Promote cultivation of short duration fodder crops of sorghum/bajra/maize suitable to the district Sowing of fodder crops like *Stylo* and *Cenchrus* on bunds so as to provide fodder and strengthening of bunds Avoid burning of paddy straw and storing as dry fodder for future use Proper drying, bailing and densification of harvested dry fodder for transport to the needy villages Complete feed preparation using red gram stalks may be exploited Preserving maize fodder as silage for future use Establishment of silvi-pastoral system in CPRs with *Stylosanthus hamata* and	Harvest and use biomass of dried up crops (Sorghum, Bajra, Maize, Rice, chick pea etc) material as fodder. Harvest the tree fodder (Neem, Subabul, Acasia, Pipal etc) and unconventional feeds resources available and use as fodder for livestock (LS). Available feed and fodder should be cut from CPRs and stall fed in order to reduce the energy requirements of the animals In case of mild drought, the available dry fodder may be enriched with urea and molasses and the productive livestock should be supplemented with vitamin & minerals mixture. The available silage may be used as green fodder supplement for high yielders and pregnant animals In case of severe drought, UMMB, hay, concentrates and vitamin & mineral mixture should be transported to the needy areas from the reserves at the district level initially and latter stages from the near by districts. All the hay should be enriched with 2% Urea molasses solution or 1% common salt solution and fed to LS Herd should be split and supplementation should be given only to the highly productive and breeding animals Provision of emergency grazing/feeding (Cow-calf	Green and concentrates supplementation should be provided to all the animals. Short duration fodder crops of should be sown in unsown and crop failed areas where no further routine crop sowing is not possible Promote cultivation of fodder crops during Rabi season

	Cenchrus ciliaris as grass with *Leucaena leucocephala* as tree component Creation of permanent fodder, feed and fodder seed banks in all drought prone villages	camps or other special arrangements to protect high productive & breeding stock) Available kitchen waste should be mixed with dry fodder while feeding Arrangements should be made for mobilization of small ruminants across the districts where no drought exits with subsidized road/rail transportation and temporary shelter provision for the shepherds Unproductive livestock should to be culled during severe drought Create transportation and marketing facilities for the culled and unproductive animals (10000-20000 animals) in case of severe drought Subsidized loans (5-10 crores) should be provided to the livestock keepers for purchase of supplements, concentrate feed ingredients etc., in case of severe drought	
Heat & Cold wave	In villages which are chronically prone to heat waves the following permanent measures are suggested i) Plantation of trees like Neem, Pipal, Subabul around the shed ii) Spreading of husk/straw/coconut leaves on the roof of the shed iii) Water sprinklers / foggers in the animal shed **iv)** Application of white reflector paint on the roof to reduce thermal radiation effect **Cold wave :** Covering all the wire meshed walls / open area with gunny bags/	Allow the animals preferably early in the morning or late in the evening for grazing during heat waves Allow for grazing between 10AM to 3PM during cold waves Feed green fodder/silage / concentrates during day time and roughages / hay during night time in case of heat waves Add 25-50 ml of edible oil in concentrates per kg and fed to the animal during cold waves Apply / sprinkle lime powder (5-10g per square feet) in the animal shed during cold waves to neutralize ammonia accumulation Put on the foggers / sprinklers during heat weaves and heaters during cold waves in case of high productive	Green and concentrates supplementation should be provided to all the animals. Allow the animals for grazing (normal timings)

	polyethylene sheets with a mechanism for lifting during the day time and closing during night	animals In severe cases, vitamin 'C' (5-10ml per litre) and electrolytes (Electral powder @ 20g per litre) should be added in water during severe heat waves.	
Health and Disease management	List out the endemic diseases (species wise) in that district and store vaccines for those diseases Timely vaccination (as per enclosed vaccination schedule) against all endemic diseases Surveillance and disease monitoring network to be established at Joint Director (Animal Husbandry) office in the district	Constitution of Rapid Action Veterinary Force Procurement of emergency medicines and medical kits Performing ring vaccination (8 km radius) in case of any outbreak Restricting movement of livestock in case of any epidemic Rescue of sick and injured animals and their treatment	Conducting mass animal health camps Conducting fertility camps Mass deworming camps
Insurance	Insurance policy for loss of production due to drought may be developed Encouraging insurance of livestock	Listing out the details of the dead animals and loss of production in high yielders	Submission for insurance claim and availing insurance benefit Purchase of new productive animals
Drinking water	Identification of water resources Rain water harvesting and create water bodies/watering points (when water is scarce use only as drinking water for animals)	Restrict wallowing of animals in water bodies/resources Provision of wholesome clean drinking water at least 3 times in a day	Bleach (0.1%) drinking water / water sources Provide clean drinking water

2.5.2 Poultry

	Suggested contingency measures		
	Before the event[a]	**During the event**	**After the event**
Drought			
Shortage of feed ingredients	Storing of house hold grain like maize, broken rice, bajra etc, in to use as feed in case of severe drought	Supplementation only for productive birds with house hold grain Supplementation of shell grit (calcium) for laying birds Culling of weak birds	Supplementation to all survived birds
Drinking water	Rain water harvesting	Sanitation of drinking water	Give sufficient water as per the bird's requirement
Health and disease management	Culling of sick birds. Deworming and vaccination against RD and fowl pox	Mixing of Vit. A,D,E, K and B-complex including vit C in drinking water (5ml in one litre water)	Hygienic and sanitation of poultry house Disposal of dead birds by burning / burying with lime powder in pit
Heat wave			
Shelter/environment management	Provision of proper shelter with good ventilation	In severe cases, foggers/water sprinklers/wetting of hanged gunny bags should be arranged Don't allow for scavenging during mid day	Routine practices are followed
Health and disease management	Deworming and vaccination against RD and fowl pox	Supplementation of house hold grain Provide cool and clean drinking water with electrolytes and vit. C (5-10 ml per litre) In hot summer, add anti-stress probiotics in drinking water or feed (Reestobal etc., 10-20ml per litre)	Routine practices are followed
Cold wave			

Shelter/environment management	Provision of proper shelter Arrangement for brooding Assure supply of continuous electricity	Close all openings with polythene sheets In severe cases, arrange heaters Don't allow for scavenging during early morning and late evening	Routine practices are followed
Health and disease management	Arrangement for protection from chilled air	Supplementation of grains Antibiotics (Ampicilline/ Ampiclox etc., 10g in one litre) in drinking water to protect birds from pneumonia	Routine practices are followed