State: Madhya Pradesh

Agriculture Contingency Plan for District: ANUPPUR

1.0 District Agriculture profile				
1.1	**Agro-Climatic/Ecological Zone**			
	Agro Ecological Sub Region (ICAR)	Central Highlands (Malwa And Bundelkhand), Hot Subhumid (Dry) Eco-sub region (10.3)		
	Agro-Climatic Region (Planning Commission)	Eastern Plateau And Hills Region (VII)		
	Agro Climatic Zone (NARP)	North Hill Zone of Chattisgarh (MP-3)		
	List all the districts or part thereof falling under the NARP Zone	Shahdol, Sidhi, Anuppur, Dindori, Mandla, Umaria		
	Geographic coordinates of district headquarters	Latitude	Longitude	Altitude
		22° 70' to 23° 25' N	81° 10' to 82° 10' E	457 msl
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Regional Agricultural Research Station , Rewa		
	Mention the KVK located in the district	Programme Coordinator , Krishi Vigyan Kendra, Kalyanpur, Dist. Shahdol – 484 001		

1.2	**Rainfall**	Normal RF (mm)	Normal Onset (specify week and month)	Normal Cessation (specify week and month)
	SW monsoon (June-Sep)	1103	2nd week of June	4th week of September
	NE Monsoon(Oct-Dec)	58.9		
	Winter (Jan- Feb)	42.7		
	Summer (March-May)	31		
	Annual	1235.6		

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)	450.3	105.2	236.7	33.1	15.1	16.6	0.2	8.7	17.7	17.0

1. 4	**Major Soils (common names like red sandy loam deep soils (etc.,)***	**Area ('000 ha)**	**Percent (%) of total geographical area**
	Deep black soils	669.5	67.3
	Medium deep black soils	181.0	18.3
	Shallow black soils	142.2	14.3

Source:- NBSS & LUP, Nagpur

1.5	**Agricultural land use (2008-09)**	**Area ('000 ha)**	**Cropping intensity %**
	Net sown area	105.2	131
	Area sown more than once	32.1	
	Gross cropped area	137.3	

1.6	**Irrigation**	Area ('000 ha)		
	Net irrigated area	4.3		
	Gross irrigated area	4.3		
	Rainfed area	100.9		
	Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
	Open wells	1992	1.5	34.8
	Canals	80	0.8	18.6
	Bore wells	104	0.3	6.9
	Tanks	185	0.2	4.6
	Lift irrigation schemes river			
	Micro-irrigation			
	Other sources (reservoir)	2213	1.5	34.8
	Total Irrigated Area		4.3	
	Pump sets	10430	-	-

	No. of Tractors	764	-	-
	Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	No. of blocks/ Tehsils 04	(%) area	Quality of water (specify the problem such as high levels of arsenic, fluoride, saline etc)
	Over exploited			
	Critical			
	Semi- critical			
	Safe	04		
	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 etc. (2008-09)

1.7	**Major Field Crops cultivated**	**Area ('000 ha)**							
		Kharif			***Rabi***			**Summer**	**Total**
		Irrigated	***Rainfed***	**Total**	***Irrigated***	***Rainfed***	**Total**		
	Rice		108.0	108.0					108.0
	Minor Millets		18.8	18.8					18.8
	Maize		12.5	12.5					12.5
	Niger		12.4	12.4					12.4
	Pigeonpea (Tur)		4.1	4.1					4.1
	Blackgram		3.3	3.3					3.3
	Wheat				12.9		12.9		12.9
	Mustard				9.6		9.6		9.6
	Lentil				9.5		9.5		9.5
	Linseed				4.5		4.5		4.5
	Chickpea				3.6		3.6		3.6
	Horticulture crops - Fruits	**Total area (ha)**			**Irrigated**			**Rainfed**	
	Horticultural crops - Vegetables	**-**			**-**			**-**	

	Medicinal and Aromatic crops	**-**	**-**	**-**

	Plantation crops	**-**	**-**	**-**
	Fodder crops	**Total area (ha.)**	**Irrigated**	**Rainfed**
	Total fodder crop area			
	Grazing land	15100	-	-
	Sericulture etc			

1.8	**Livestock**	**Male ('000)**	**Female ('000)**	**Total ('000)**
	Non descriptive Cattle (local low yielding)			262.5
	Crossbred cattle			
	Non descriptive Buffaloes (local low yielding)			
	Graded Buffaloes			66.3
	Goat			60.7
	Sheep			0.5
	Others (Pig, horse etc.)			6.6
	Commercial dairy farms (Number)	-	-	
1.9	**Poultry**	**No. of farms**	**Total No. of birds ('000)**	
	Commercial			
	Backyard			

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)	

		Not applicable		
	ii) Inland (Data Source: Fisheries Department)	**No. Farmer owned ponds**	**No. of Reservoirs**	**No. of village tanks**
		141	**14**	**1379**

	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)	-	Reservoirs 70 kg/ha	-

1.11 Production and Productivity of major crops

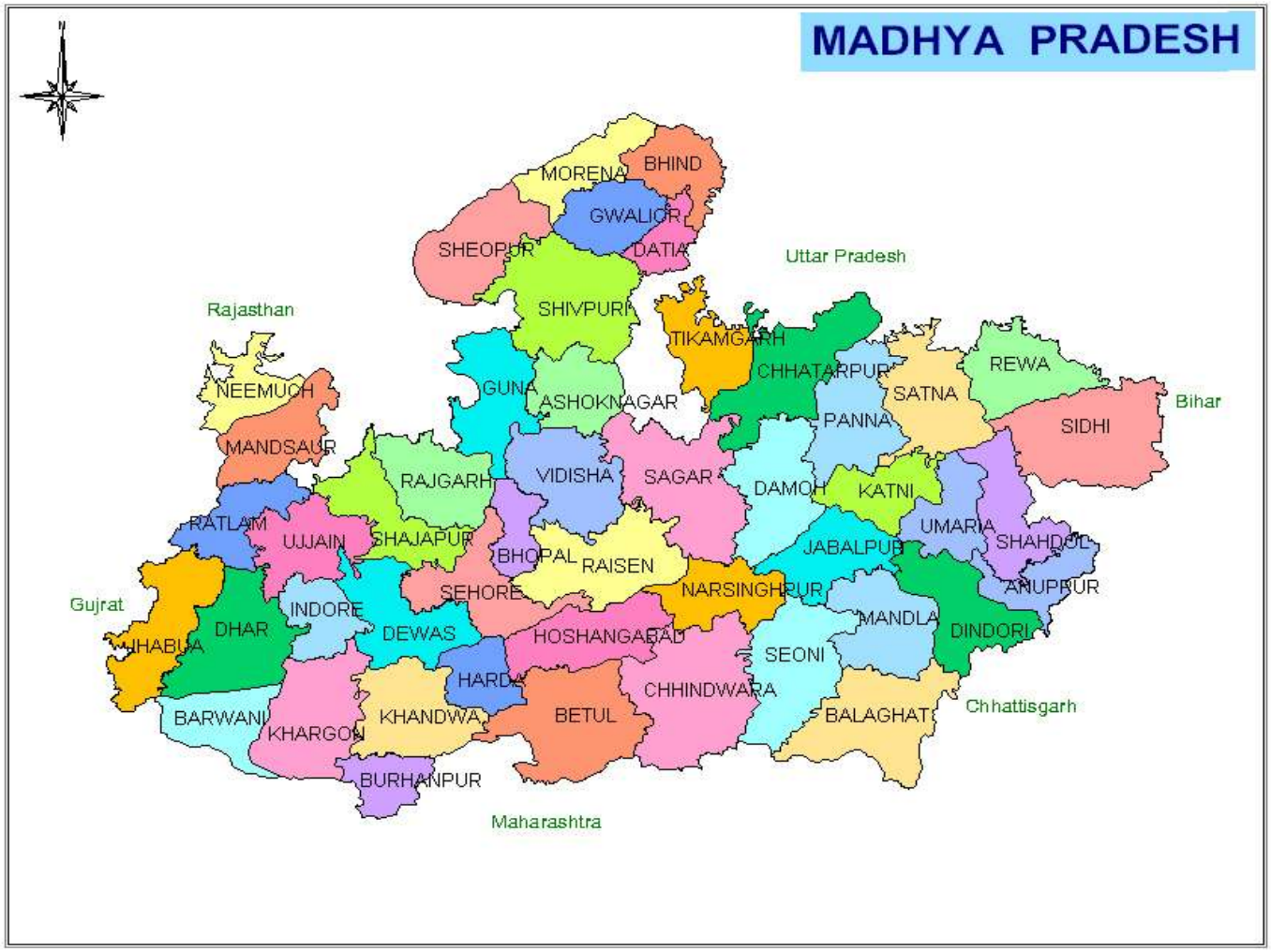
1.11	Name of crop	**Kharif**		**Rabi**		**Summer**		**Total**		**Crop residue as fodder** ('000 tons)
		Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	
	Rice	87.5	893					87.5	893	
	Maize	10.3	852					10.3	852	
	Minor Millets	5.7	318					5.7	318	
	Niger	2.6	278					2.6	278	
	Pigeonpea	1.5	416					1.5	416	
	Blackgram	1.04	368					1.0	368	
	Wheat			9.4	735			9.4	735	
	Mustard			3.1	345			3.1	345	
	Lentil			2.9	349			2.9	349	
	Chickpea			1.4	406			1.4	406	
	Linseed			1.04	254			1.04	254	

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

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


MADHYA PRADESH
MORENA
BHIND
GWALIOR
SHEOPUR
DATIA
Uttar Pradesh
Rajasthan
SHIVPURI
TIKAMGARH
CHHATARPUR
REWA
NEEMUCH
GUNA
ASHOKNAGAR
SATNA
Bihar
PANNA
SIDHI
MANDSAUR
RAJGARH
VIDISHA
SAGAR
DAMOH
KATNI
RATLAM
UJJAIN
SHAJAPUR
BHOPAL
RAISEN
UMARIA
JABALPUR
SHAHDOL
SEHORE
NARSINGHPUR
ANUPPUR
Gujrat
INDORE
MANDLA
DHAR
DEWAS
HOSHANGABAD
DINDORI
JHABUA
SEONI
HARDA
CHHINDWARA
Chhattisgarh
BARWANI
KHANDWA
BETUL
BALAGHAT
KHARGON
BURHANPUR
Maharashtra


AGROCLIMATIC ZONES
BUNDELKHAND
CENTRAL NARMADA VALLEY
CHATTISGARH PLAIN BALAGHAT
GRID REGION
JHABUA HILLS
KYMORE PLATEAU SATPURA HILLS
MALWA PLATEAU
NIMAR PLAINS
NOTHERN HILL REGION OF CHATTISGARH
SATPURA PLATEAU
VINDHYA PLATEAU
AGROCLIMATIC ZONES OF MADHYA PRADESH
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CHHATARPUR
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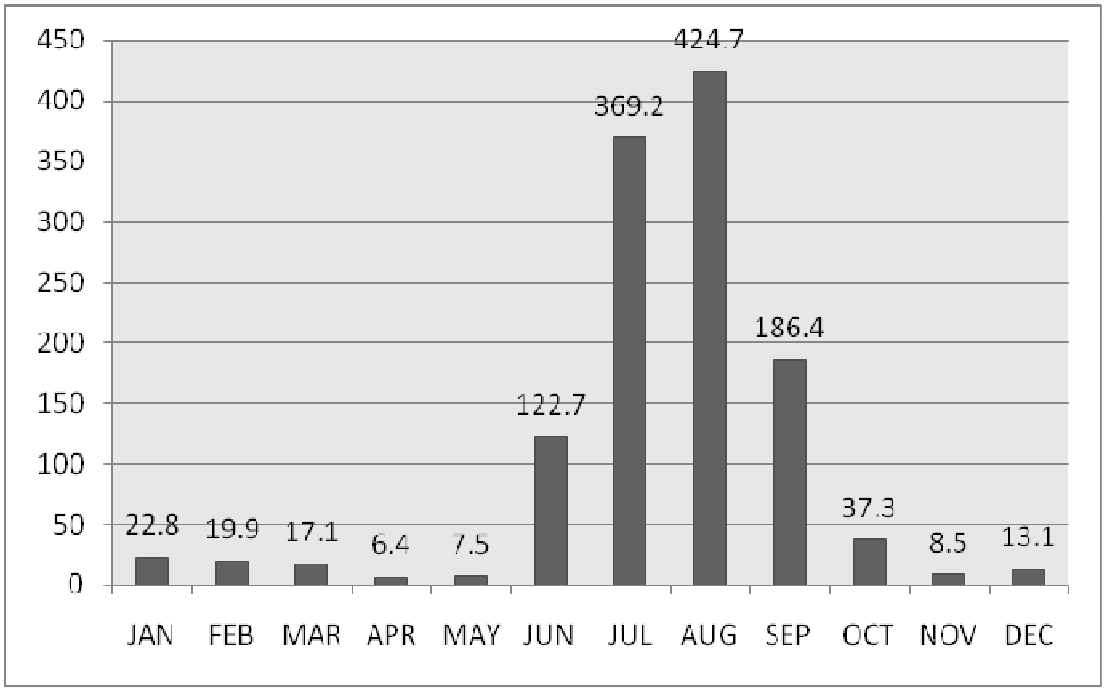
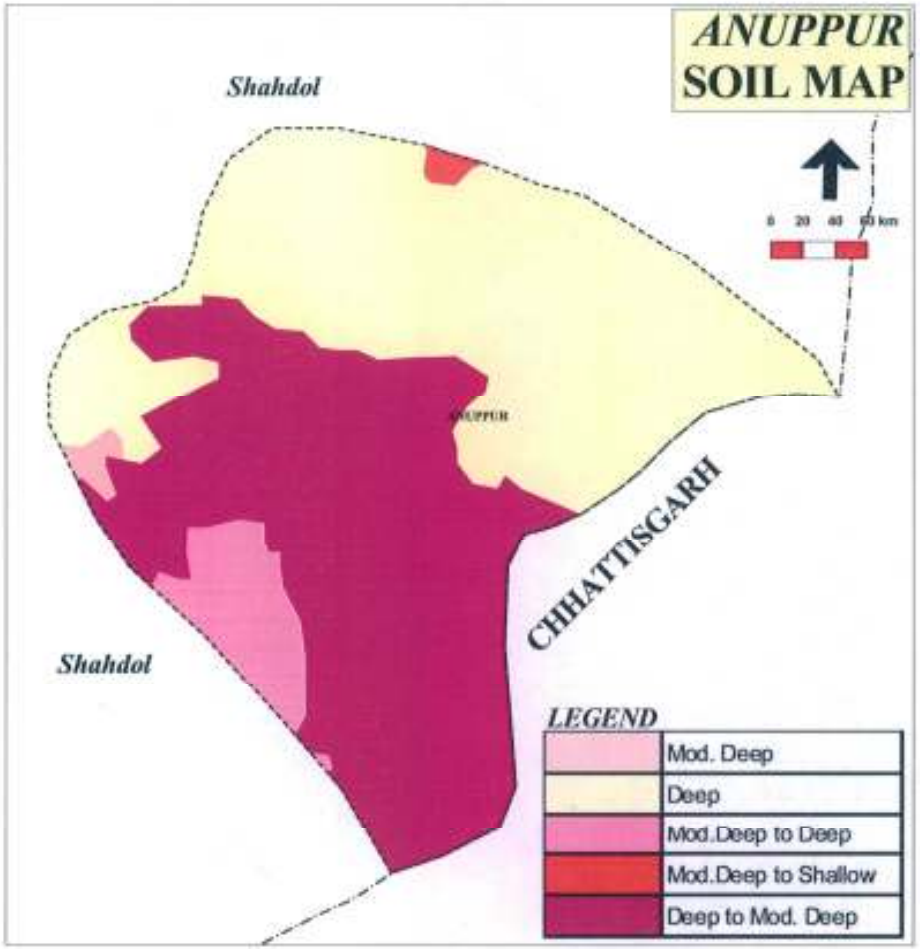
SATNA
SIDHI
NIMACH
MANDSAUR
RAJGARH
VIDISHA
SAGAR
DAMOH
KATNI
UMARIA
SHAHDOL
SHAJAPUR
RATLAM
UJJAIN
BHOPAL
JABALPUR
RAISEN
SEHORE
NARSIMHAPUR
ANUPPUR
INDORE
DEWAS
DINDORI
JHABUA
DHAR
HOSHANGABAD
MANDLA
HARDA
SEONI
CHHINDWARA
WEST NIMAR
EAST NIMAR
BETUL
BALAGHAT
BARWANI
BURHANPUR
0
45
90
180
Kilometers

Annexure II

Mean annual rainfall (mm)



Annexure III



Source: NBSS & LUP, Nagpur

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**	**Agronomic measures**	**Remarks on Implementation**
Delay by 2 weeks (4th week of June)	Low land bunded, deep and medium deep black soils	Rice-Wheat/ Linseed/Lentil	Early maturing varieties of Rice (JR-201)	Dry sowing; bunding; mulching; Lehi method of sowing in rice	-
		Rice-Chickpea / lentil			
		Soybean	No change	-	
	Upland unbunded shallow black soils	Rice	Early maturing varieties of Rice (JR-201)		
		Maize-Mustard	Early maturing varieties of Maize (JM-421)	Sowing of Maize by ridge & furrow method	
		Kodo millets	No change	Mulching	
		Niger			
		Soybean			
		Blackgram			

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 (2nd week of July)	Low land bunded, deep and medium deep black soils	Rice-Wheat/	Early maturing varieties of Rice (JR-201, JRH-4,5,8,12), MTU-1010	Dry sowing with 25%; Higher seed rate and seed treatment with fungicide	Source of seed: KVK, NSC, Beej nigam Dept. of Agriculture, Seed Production Society
		Rice-Chickpea / lentil			
		Soybean			
	Upland unbunded shallow black soils	Rice	Early maturing varieties of Rice	Moisture conservation practices like ridging; conservation furrows; dust mulch; Rice straw	
		Maize-Mustard	Early maturing varieties of Maize (JM-421, JM 216, JM 12)		

		Kodo millets	No change	mulch.	
		Niger			
		Soybean			
		Blackgram			

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 (4th week of July)	Low land bunded, deep and medium deep black soils	Rice-Wheat/ Linseed/Lentil	Niger, Kodo millet **Niger** : Line sowing Improved varieties JNC-6, JNC-1,JNC-9	Line sowing; Balanced fertilization Line sowing of minor millets	Source of seed: KVK, NSC, Beej nigam Dept. of Agriculture, Seed Production Society
		Rice-Chickpea / lentil			
		Soybean			
	Upland unbunded shallow black soils	Rice			
		Maize-Mustard			
		Kodo millets			
		Niger			
		Soybean			
		Blackgram			

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 (2nd week of August)	Low land bunded, deep and medium deep black soils	Rice-Wheat/ Linseed/Lentil	Niger: JNC-6, JNC-1,JNC-9	Line sowing Improved varieties; Balanced fertilization	Source of seed: KVK, NSC, Beej nigam Dept. of Agriculture, Seed
		Rice-Chickpea / lentil			
		Soybean			

	Upland unbunded shallow black soils	Rice			Production Society
		Maize-Mustard			
		Kodo millets			
		Niger			
		Soybean			
		Blackgram			

Condition			**Suggested Contingency measures**		
Early season drought (Normal onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil management**	**Remarks on Implementation**
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	Low land bunded, deep and medium deep black soils	Rice-Wheat/ Linseed/Lentil	Re-sowing of early maturing varieties of rice and maize	Weeding and intercultural operations; Mulching,	Seed source- SAUs and Beej nigam
		Rice-Chickpea / lentil			
		Soybean			
	Upland unbunded shallow black soils	Rice			
		Maize-Mustard			
		Kodo millets			
		Niger			
		Soybean			
		Blackgram			

Condition			**Suggested Contingency measures**		
Early season drought (Normal onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil management**	**Remarks on Implementation**
At vegetative stage	Low land bunded,	Rice-Wheat/ Linseed/Lentil	Weeding and intercultural operations;	Mulching, Provide supplemental	

	deep and medium deep black soils	Rice-Chickpea / lentil	Maintain optimum plant stand. Life saving irrigation through sprinkler.	irrigation if available ,	
		Soybean			
	Upland unbunded shallow black soils	Rice			
		Maize-Mustard			
		Kodo millets			
		Niger			
		Soybean			
		Blackgram			

Condition			**Suggested Contingency measures**		
Mid season drought (long dry spell)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil management**	**Remarks on Implementation**
At flowering/ fruiting stage	Low land bunded, deep and medium deep black soils	Rice-Wheat/ Linseed/Lentil	Life saving irrigation (Preferably with sprinkler method) Intercultural operations	Green leaf mulching or dust Mulching; supplemental irrigation if available Mulching;	
		Rice-Chickpea / lentil			
		Soybean			
	Upland unbunded shallow black soils	Rice			
		Maize-Mustard			
		Kodo millets			
		Niger			
		Soybean			
		Blackgram			

Condition			**Suggested Contingency measures**		
Terminal drought **(Early withdrawal of monsoon)**	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil management**	**Remarks on Implementation**
	Low land bunded, deep and medium deep black soils	Rice-Wheat/ Linseed/Lentil	Harvest the crop at physiological maturity. Apply light irrigation; Soil moisture conservation by repeat tillage operations	Sowing of mustard, batri, linseed and gram in october month	Seed source: SAU
		Rice-Chickpea / lentil			
		Soybean			
	Upland unbunded shallow black soils	Rice			
		Maize-Mustard			
		Kodo millets			
		Niger			
		Soybean			
		Blackgram			

2.1.2 Irrigated situation

Condition			**Suggested Contingency measures**		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delayed release of water in canals due to low rainfall	Deep to medium deep soils	Rice-Wheat	Medium duration variety of Rice (JRH-4,5,8, MTU 1010, IR-64, PS-3,5,), MTU-1081	Micro irrigation (Drip, sprinkler, Sub surface irrigation), Mulching,	Seed arrangement under RKVY, NFSM, ISOPAM .
		Rice- Chickpea	Medium duration variety of Rice (JRH-4,5,8, MTU 1010, IR-64, PS-3,5,), MTU-1081	Micro irrigation (Drip, sprinkler, Sub surface irrigation), Mulching,	

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measure	Remarks on Implementatio
Limited release of water in canals due to low rainfall	Deep to medium deep soils	Rice-Wheat	Soybean- Pigeon pea Sesame in Directed Seeded Rice	Micro irrigation (Drip, sprinkler, Sub surface irrigation), Mulching,	-
		Rice- Chickpea	Pigeonpea- Minor millets Sesame in Directed Seeded Rice		
		Maize-Wheat	Pigeonpea – Kodo millet		

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 catchments	Deep to medium deep soils	Rice-Wheat	Maize, Blackgram, Sesame; short duration rice under limited area.	Micro irrigation	-
		Rice- Chickpea	Pigeonpea- kodo millet	Micro irrigation	
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	Deep to medium deep soils	Rice-Wheat	Maize-Pigeonpea	Farm bunding, deep ploughing; mulching	
		Rice- Chickpea	Pigeonpea- kodo millet	Farm bunding	

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**
Insufficient groundwater recharge due to low rainfall	Deep to medium deep soils	Rice-Wheat	Maize-Pigeonpea Sesame, Blackgram	Farm bunding; Ridge &furrow irrigation, Broad bed furrow irrigation, Micro irrigation	
		Rice- Chickpea	Pigeonpea- kodo millet Sesame, Blackgram		

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, Pigeonpea, Maize, Minor millets	Drainage, IPM	Drain excess water. Nutrient sprays to promote quick flowering/fruiting.	Harvesting at physiological maturity immediately and shifting produce to safer place and protection against pest/disease damage in storage etc.	shifting of produce to safer place for drying and maintaining the quality of grain/fodder and protection against pest/disease damage in storage etc
Horticulture				
Mango	Drain out excessive water	Application of hormones/nutrient sprays	-	shifting of produce to safer place
Heavy rainfall with high speed winds in a short span-			**Not applicable**	
Outbreak of pests and diseases due to unseasonal rains				
Maize, Minor millets	Adoption of suitable integrated Pest Management Practices	Adoption of integrated Pest Management Practices	Adoption of integrated Pest Management Practices	Adoption of integrated Pest Management Practices
Rice	Spraying of Monocrotophos 36 EC 14 ml or Cypermethrin 10 EC 6 ml per 10 liter of water against	Spraying of Monocrotophos 36 EC 14 ml or Cypermethrin 10 EC 6 ml per	Removal and destruction of infected panicles due to Loose smut	

	stem borer	10 liter of water against stem borer		
Horticulture	-			

2.3 Floods: Not applicable

Condition	**Suggested contingency measure**			
Transient water logging/ partial inundation1	**Seedling / nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Continuous submergence for more than 2 days2	**Not applicable**			
Sea water intrusion3	**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	Light and repeated irrigation at the appearance of hair line cracks in soil surface, Correct iron deficiency with 0.5% iron sulphate spray.	Repeated irrigation at the appearance of hair line cracks in soil surface, pounding of water for 15 days after transplanting to check Fe deficiency and for crop establishment.	Repeated irrigation at the appearance of hairline cracks in soil surface	Harvest at physiological maturity
Pigeonpea, Maize	Protect the crop with the help of light irrigation; wind breaks are necessary where cold and heat wave is regular	Protect the crop with the help of light irrigation, wind breaks are necessary where cold and heat wave is regular	Protect the crop with the help of light irrigation, wind breaks are necessary where cold and heat wave is regular	Harvest at physiological maturity
Cold wave				
Chick pea Wheat	Light irrigation	Light irrigation	Light irrigation	Harvest at physiological maturity
Frost				
Chickpea, Lentil, Pigeonpea	Protect the crop with the help of light irrigation, Smoking around the field to increase the temperature; wind breaks are necessary	Protect the crop with the help of light irrigation; Smoking around the field; wind breaks are necessary where cold and heat wave in regular	Protect the crop with the help of light irrigation; Smoking around the field; wind breaks are necessary where cold and heat wave in regular	Harvest at physiological maturity

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	As the district is occasionally prone to drought the following practices may be implemented to prevent fodder shortage problem Sowing of cereals (fodder varieties of Sorghum/Bajra) and leguminous crops (Lucerne, Berseem, Horse gram, Cowpea) during North-East monsoon under dry land system for fodder production. Collection of soybean, gram and chick pea stover for use as feed supplement during drought Preserving the green maize fodder as silage Encourage fodder production with Bajra – stylo-Bajra on rotation basis and also to cultivate short-term fodder crops like sunhemp	Harvest and use biomass of dried up crops (Rice, wheat, Maize, Soybean, Black gram, Green gram, chick pea etc.,) material as fodder Harvest all the top fodder available (Subabul, Glyricidia, Pipol, Prosopis etc) and feed the LS during drought Concentrate ingredients such as Grains, brans, chunnies & oilseed cakes, low grade grains etc. unfit for human consumption should be procured from Govt. Godowns for feeding as supplement for high productive animals during drought Promotion of Horse gram as contingent crop and harvesting it at vegetative stage as fodder Continuous supplementation of minerals and vitamin to prevent infertility. Encourage mixing available kitchen waste with dry fodder while feeding to the milch animals	Encourage progressive farmers to grow multi cut fodder crops of sorghum/bajra/maize with input subsidy Supply of quality stem cuttings of Hybrid napier (CO1), paragrass, guinea grass etc., well before monsoon Encourage growing fodder crops like Berseem in winter and Juar in summer season Flushing the stock to recoup Replenish the feed and fodder banks
Drinking water	Adopt various water conservation methods at village level to improve the ground water level	Adequate supply of drinking water. Restrict wallowing of animals in water	Watershed management practices shall be promoted to conserve the

	for adequate water supply. Identification of water resources Desilting of ponds Rain water harvesting and create water bodies/watering points (when water is scarce use only as drinking water for animals) Construction of drinking water tanks in herding places/village junctions/relief camp locations Community drinking water trough can be arranged in shandies /community grazing areas	bodies/resources Add alum in stagnated water bodies	rainwater. Bleach (0.1%) drinking water / water sources Provide clean drinking water
Health and diseases management	Procure and stock emergency medicines and vaccines for important endemic diseases of the area All the stock must be immunized for endemic diseases of the area Surveillance and disease monitoring network to be established at Joint Director (Animal Husbandry) office in the district Adequate refreshment training on draught management to be given to VAS, Jr.VAS, LI with regard to health & management measures Procure and stock multivitamins & area specific mineral mixture	Carryout deworming to all animals entering into relief camps Identification and quarantine of sick animals Constitution of Rapid Action Veterinary Force Performing ring vaccination (8 km radius) in case of any outbreak Restricting movement of livestock in case of any epidemic Tick control measures be undertaken to prevent tick borne diseases in animals Rescue of sick and injured animals and their treatment Organize with community, daily lifting of dung from relief camps	Keep close surveillance on disease outbreak. Undertake the vaccination depending on need Keep the animal houses clean and spray disinfectants Farmers should be advised to breed their milch animals during July-September so that the peak milk production does not coincide with mid summer
Floods	**NA**		
Cyclone	NA		
Heat wave and cold wave			
Heat wave	i) Plantation around the shed	Allow the animals early in the morning or late in the evening for grazing during heat waves	Feed the animals as per routine schedule

	ii) H_2O sprinklers / foggers in the shed **iii)** Application of white reflector paint on the roof **iv)** Thatched sheds should be provided as a shelter to animal to minimize heat stress	Feed green fodder/silage / concentrates during day time and roughages / hay during night time in case of heat waves Put on the foggers / sprinklers /fans during heat weaves in case of high yielders (Jersey/HF crosses) In severe cases, vitamin 'C' and electrolytes should be added in H_2O during heat waves.	Allow the animals for grazing (normal timings)
Cold wave	Covering all the wire meshed walls / open area with gunny bags/ polyethylene sheets (with a mechanism for lifting during the day time and putting down during night time)	Allow for grazing between 10AM to 3PM during cold waves Add 25-50 ml of edible oil in concentrates and fed to the animal during cold waves Apply / sprinkle lime powder in the animal shed during cold waves to neutralize ammonia accumulation	Feed the animals as per routine schedule Allow the animals for grazing (normal timings)
Insurance	Encouraging insurance of livestock	Listing out the details of the dead animals	Submission for insurance claim and availing insurance benefit Purchase of new productive animals

2.5.2 Poultry

	Suggested contingency measures		
	Before the event	During the event	After the event
Drought			
Shortage of feed ingredients	Storing of house hold grain like maize, broken rice 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		Use water sanitizers or offer cool hygienic	

		drinking water	
Health and disease management	Culling of sick birds. Deworming and vaccination against RD and IBD	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
Floods	**NA**		
Cyclone	NA		
Heat wave and cold wave			
Shelter/environment management	**Heat wave:** 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
	Cold wave: 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	Deworming and vaccination against RD and fowl pox	Supplementation of house hold grain Provide cool and clean drinking water with electrolytes and vit.C In hot summer, add anti-stress probiotics in drinking water or feed	Routine practices are followed

2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event	During the event	After the event
Drought			
Shallow water in ponds due to insufficient rains/inflow	1. Restricted release of water from reservoir. 2. Supplementary water harvest structures like pond and tanks have to be developed.	1. Restrict lifting of water for irrigation purpose of crops 2. Catch the stock, market the produce to	1. Excavate the ponds to increase the depth. 2. Try to release water into the

	3. Renovation and maintenance of existing water harvest structures	reduce the density of population in ponds.	pond if it rains in off-season
Impact of heat & salt load build up in ponds / change in water quality	1. Prepare to release water into the habitat	1. Mixing of water from the water harvest structure like ponds and tanks into the fish habitat.	1. Monitoring the water quality and health of aquatic organisms
Floods	**NA**		
Cyclone	**NA**		
Heat wave and cold wave			
Management of pond environment	Good water quality to be maintained, Water depth to be maintained	Recirculation of water and pruning	Water treatment with lime
Health and diseases management	Prophylactic measures to be taken	Maintain good quality water in ponds	Treatment of pond water with lime and medicines