KRISHI VIGYAN KENDRA, AURANGABAD

Agriculture Contingency Plan Aurangabad

Bihar Agricultural University, Sabour,

Bhagalpur (Bihar)

KRISHI VIGYAN KENDRA, SIRIS,

AURANGABAD

State : Bihar

Agriculture Contingency Plan : Aurangabad District - Aurangabad

1.0 District Agriculture profile				
1.1	**Agro-Climatic/Ecological Zone**	**Zone – III (B)**		
	Agro Ecological sub Region (ICAR)	Sub-humid eco-system		
	Agro-Climatic Region (Region (Planning Commission)	**Zone – III (B)**		
	Agro-Climatic Zone (NARP).	South Bihar alluvial plan		
	List all the districts falling under the NARP-Zone	Aurangabad, Gaya, Jahanabad, Patna, Arwal, Rohtash		
	Agro ecological Situation	**Area (ha)**	**% of geographical area of the district**	**Name of Block**
	Irrigated plain (Lome & Sandy lome Soil)	**138661.43**	**42.02**	**Obra, Daudnagar, Haspura, Goh, Barun & Aurangabad**
	Rainfrd Plan (Sany loam, light to heavy loam Soil)	**39543.50**	**11.98**	**Deo, Madanpur, Rafigang, Kutumba, & Nabinagar**
	Hilly Upland (Rainfed & Plain & Undulated Surface)	**25401.80**	**7.70**	**Deo, Madanpur, Rafigang, Kutumba, & Nabinagar**
	Others	**126404.27**	**38.30**	
	Geographical coordinators of the districts	**Latitude**	**Longitude**	**Altitude**
		24^0 16' 30" to 25^0 03' 30" (North)	84^0 17' 35" to 85^0 23' 30" (East)	
	Name and address of the concerned ZRS/ZARS/PARS/RRITS	ARI, Lohia Nagar, Patna		
	Mention the KVK Located in the District	Aurangabad		
1.2	**Rainfall**	**Average (mm)**	**Normal Onset specify Week & Month**	**Normal cessation Week & Month**
	SW Monsoon (June – September)	1058.97	Last week of June	Last week of July
	NE Monsoon (October - December)	61.92	Third week of December	First week of January
	Winter (January - March)	48.34	first week of January	Last week of January
	Summer (April - May)	16.37	First week of April	Last week of April

	Annual	**1185.6**		

If a district falls in two NARP Zones mentioned the zone in which more than 50% area falls.

1.3 Land use pattern of the district (latest statistics)	**Geographical area (ha)**	**Forest area (ha)**	**Land under non-agril use (ha)**	**Permanent pastures & current fallow**	**Cultivable waste land (ha)**	**Crops and graves (ha)**	**Barren uncultivable land (ha)**	**Current follow (ha)**
Area (Lakh ha)	330.011	13.575	50.609	0.628	1.941	161.475	16.440	72.735

1.4 Major Soils	**Area (000ha)**	**Percent (%) of total**
1. Sandy Lome		
2. Loamy Soil		
3. Sandy Soil		
4. Kewal Soil (Black)		
5. Foothill Balthar Soil (Red)		
Other (specify)		

1.5 Agricultural land use	**Area (000ha)**	**Cropping Intensity**
Area sown more than once	88.213	**175.75%**
Net irrigated (ha)	89.021	
Gross cropped area(ha)	246.470	

1.6	**Irrigation**	**Area (000ha)**	**Percent (%)**	
	Net cultivated area	161.475		
	Net irrigated area (ha)	89.021		
	Gross cultivated area (ha)	246.470		
	Gross irrigated area (ha)	53.485		
	Rain fed area			
	Sources of Irrigation	**Number**	**Area (000 ha)**	**% area**
	Canals	3	81.208	91.22
	Tanks			
	Open wells	7601	4.127	4.63
	Bore wells			
	Left irrigation			
	Other sources		7.182	8.06
	Total	14083		
	Pump sets			
	Ground water availability and use	**No. of buckets**	**% area**	**Qty. of water**
	Over-exploited			
	Critical			
	Semi-critical			
	Safe			
	Waste water availability & use			

Over-exploited ground-water utilize : 100%, Critical – 90 – 100% Semi critical – 70 – 90% safe > 70%.

1.7 Area under major filed crops & horticulture etc. (as per latest figures) (Specify year 2004)

	S.No.	Major field crops cultivated	Area ('000 ha)							
			Kharif			*Rabi*				
			Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	Summer	Grand total
	1	Rice			105.259					
	2	Wheat						52.479		
	3	Maize								
	4	Gram						5.455		
	5	Lentil						12.719		
	Others (specify)	Khashari						14.451		

	Horticulture crops –Fruits	Total area (ha)	Irrigated	Rainfed
1	Mango	1072	-	-
2	Guava	613	-	-
3	Banana	302	-	-
4	Payaya	5	-	-
5				
	Horticulture crops –Vegetable	**Total area (ha)**	**Irrigated**	**Rainfed**
1	Potato	1163	-	-
2	Pumpkin	-	-	-
3	Tomato	465	-	-
4	Brinjal	650	-	-
5	Onion	500	-	-
	Medicinal and Aromatic crops	**Total area**	**Irrigated**	**Rainfed**
1	Tulshi	10	-	-
2	Mentha	-	-	-
3	Other	-	-	-
4		-	-	-
5		-	-	-
	Plantation crops	**Total area**	**Irrigated**	**Rainfed**
1		-	-	-
2		-	-	-
3		-	-	-
4		-	-	-

5		-	-	-
	Fodder crops	**Total area**	**Irrigated**	**Rainfed**
1	Barseem	7500	2500	5000
2	Sudan	3500	1000	2500
3		-	-	-
4		-	-	-
5		-	-	-
	Total fodder crops	**11000**	**3500**	**7500**
	Grand Total			

If break-up data (irrigated rainfed) is not available give total once.

1.8	**Livestock**	**Number (000)**		
	Cattle	43.419		
	Buffaloes total	92.058		
	Commercial Dairy Farm	0.050		
	Goat	96.026		
	Sheep	37.373		
	Other (Pig, Ox etc.)	44.745		
1.9	**Poultry**			
	Commercial	10.1800		
	Backyars	27.849		
1.10	**Inland Fisheries**	**Area (ha.)**	**Yield / ha**	**Production**
		1407ha	35 q	49245q
	Other			

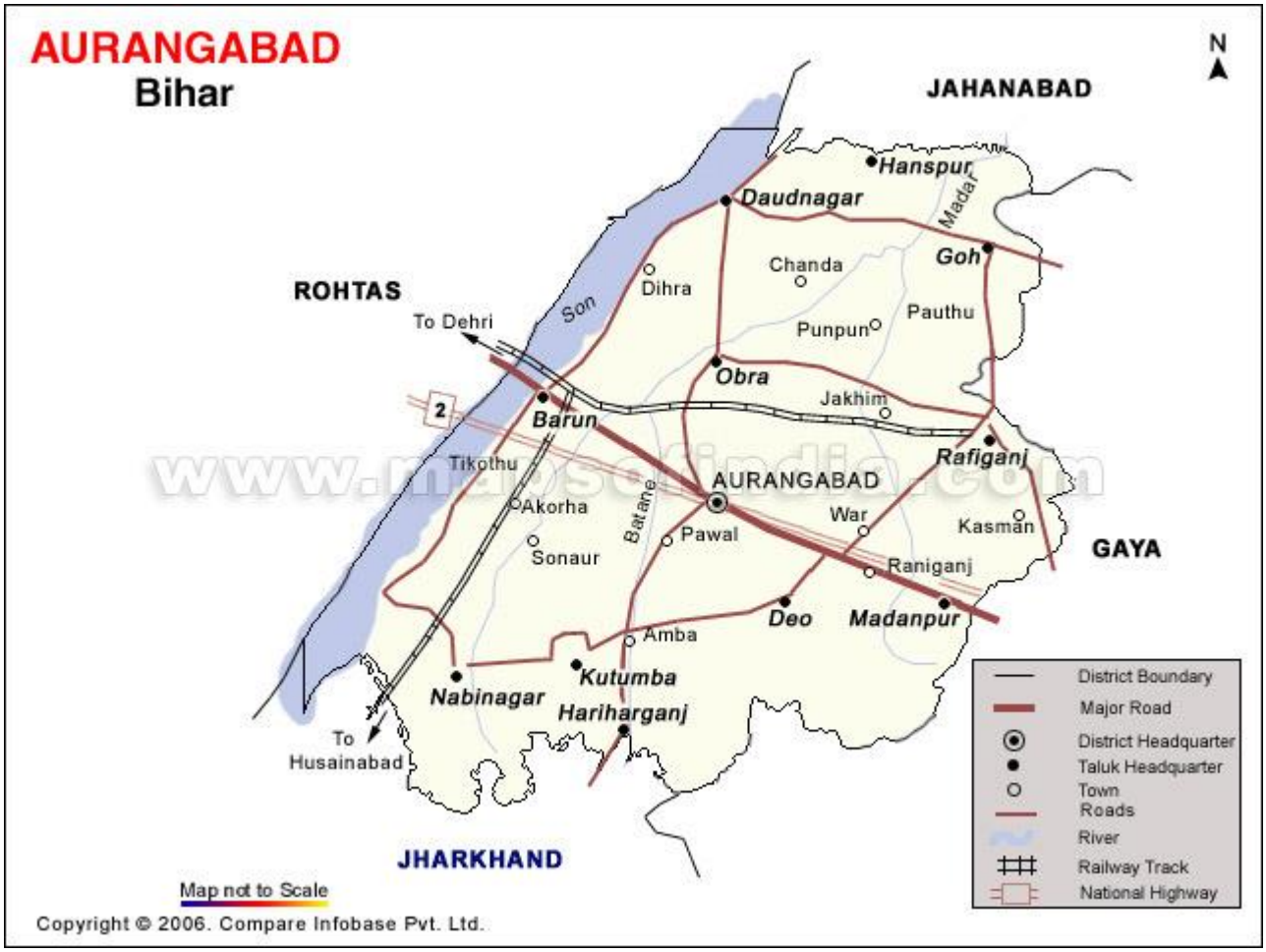
1.11	**Production and productivity of major crops**	**Kharif**		**Rabi**		**Summer**		**Total**	
		Production	**Productivity**	**Production**	**Productivity**			**Prod-uction**	**Prod-uctivity**
Crop 1	Rice	12100 M.T.	1797	-	-	-	-	12100 M.T.	1797
Crop 2	Wheat	-	-	175000 M.T.	2431	-	-	175000 M.T.	2431
Crop 3	Maize	-	-	1700 M. T.	3400	-	-	1700 M. T.	3400
Crop 4	Gram	-	-	2054 M.T.	800	-	-	2054 M.T.	800
Crop 5	Lentil			15500 M. T.	1000	-	-	15500 M. T.	1000
Crop6	Khashari			9090 M.T.	752	-	-	9090 M.T.	752
	Major Horticulture crops								
Crop 1	Mango	-	-	-	-	-	-	11792	-

								M.T.	
Crop 2	Banana	-	-	-	-	-	-	4832 M.T.	-
Crop 3	Guava	-	-	-	-	-	-	7356 M.T.	-
Crop 4	Lemon	-	-	-	-	-	-	3728 M.T.	-
Crop 5	Coconut	-	-	-	-	-	-	1030 M.T.	-
Other									

1.12	**Sowing window for 5 major crops (start and end of sowing period)**	**Crop1 _____ Rice**	**2_____ Wheat**	**3_____ Lentil**	**4_____ Gram**	**5_____ Rai**
	Kharif rainfed	25 May to 10 July (Depends on Rain)	-	-	-	-
	Kharif irrigated	25 May to 10 July	-	-	-	-
	Rabi rainfed	-	-	-	-	-
	Rabi irrigated		15 Nov. – 5 January	15 Oct. – 15 Nov.	15 Oct. – 30 Nov.	25 Oct. – 15 Nov.

1.13	**What is the major contingency the district is prone to (Tick mark)**	**Regular**			**Sporadic (Specify month of occurrence in brackets)**			**None**
		Severe	**Moderate**	**Mid**		**Moderate**	**Mid**	
1.	Flood	✓						
2.	Drought		✓					
3.	Heat wave	✓						
4.	Cold wave		✓					
5.	frost		✓					
6.	Pests and disease		✓					

1.14	**Include Digital maps of the district for**	**Location map of district with in State as Annexure I**	**Enclosed Yes/No**
		Mean Annual…. As Annexure II	yes
		Soil Map as Annexure III	No



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 ***	**Crop/ cropping system***	**Change in crop/cropping system***	**Agronomic moistures ***	**Remarks on Implementation***
Delay by 2 weeks (Specify month)	1 Upland	Rice-wheat	Medium Variety Rice-gram/lentil/ Kheshari	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice-Lentil	-do -	*Direct seeding Rice *Dapog Nursery * SRI technology * use of Zero Tillage	

				Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice-Gram	-do -	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
REFER TO THE MATRIX TABLE	2 Medium land	Rice-wheat	Medium Variety Rice-gram/lentil/ Kheshari	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice-Lentil	-do -	*Direct seeding Rice *Dapog Nursery * SRI technology * use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice-Gram	-do -	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
	3 Low land	Rice-wheat	Medium Variety Rice-gram/lentil/ Kheshari	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	

		Rice-Lentil	-do -	*Direct seeding Rice *Dapog Nursery * SRI technology * use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice-Gram	-do -	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	

Condition			**Suggested contingency measures.**		
Early season drought (delayed onset)	**Major Farming situation ***	**Crop/ cropping system***	**Change in crop/cropping system***	**Agronomic moistures ***	**Remarks on Implementation***
Delay by 4 weeks (Specify month)	1 Upland	Rice - Wheat	Short duration Rice – wheat	*Direct seeding Rice *Dapog Nursery * SRI technology * use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	Direct sowing of paddy
		Rice - Lentil	Short duration Rice – wheat	*Direct seeding Rice *Dapog Nursery * SRI technology * use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	Direct sowing of paddy
		Rice - gram	Short duration Rice – wheat	*Direct seeding Rice *Dapog Nursery * SRI technology	Direct sowing of paddy

				* use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
	2 Medium land	Rice - wheat	Short duration Rice – wheat	*Direct seeding Rice *Dapog Nursery * SRI technology * use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice - lentil	Short duration Rice – lentil	*Direct seeding Rice *Dapog Nursery * SRI technology * use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	Direct sowing of paddy
		Rice - Gram	Short duration Rice – Gram	*Direct seeding Rice *Dapog Nursery * SRI technology * use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
	3 Low land	Rice-wheat	Short duration Rice – wheat	*Direct seeding Rice *Dapog Nursery * SRI technology * use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice - lentil	Short duration Rice – lentil	*Direct seeding Rice *Dapog Nursery * SRI technology * use of Zero Tillage Machine for paddy	Direct sowing of paddy

				sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice - Gram	Short duration Rice – Gram	*Direct seeding Rice *Dapog Nursery * SRI technology * use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	Direct sowing of paddy

Condition			**Suggested contingency measures.**		
Early season drought (delayed onset)	**Major Farming situation ***	**Crop/ cropping system***	**Change in crop/cropping system***	**Agronomic moistures ***	**Remarks on Implementation***
Delay by 6 weeks (August 1st week)	1 Upland	Rice - Wheat	Short duration Rice – wheat	*Direct seeding Rice *Dapog Nursery * SRI technology * use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
			Short duration Rice – Lentil	*Direct seeding Rice *Dapog Nursery * SRI technology * use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
			Short duration Rice – Gram	*Direct seeding Rice *Dapog Nursery * SRI technology * use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
	2 Medium	Rice - Wheat	Short duration Rice – wheat	*Direct seeding Rice *Dapog Nursery	

	land			* SRI technology * use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice - lentil	Short duration Rice – Lentil	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice - Gram	Short duration Rice – Gram	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
	3 Low land	Rice - Wheat	Short duration Rice – wheat	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice - lentil	Short duration Rice – Lentil	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice - Gram	Short duration Rice – Gram	*Direct seeding Rice *Dapog Nursery * SRI technology * use of Zero Tillage Machine for paddy	

				sowing + Dhaincha *Use Short duration variety of Paddy	

Condition			**Suggested contingency measures.**		
Early season drought (delayed onset)	**Major Farming situation ***	**Crop/ cropping system***	**Change in crop/cropping system***	**Agronomic moistures ***	**Remarks on Implementation***
Delay by 8 weeks (August 3rd week)	1 Upland	Rice - Wheat	Short duration Rice – Late variety Wheat	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice - lentil	Short duration Rice – lentil	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice - gram	Short duration Rice – gram	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
	2 Medium land	Rice - Wheat	Short duration Rice – Late variety Wheat	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice - lentil	Short duration Rice – lentil	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy	

				sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice - gram	Short duration Rice – gram	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
	3 Low land	Rice - Wheat	Short duration Rice – Late variety Wheat	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice - lentil	Short duration Rice – lentil	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice - gram	Short duration Rice – gram	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	

* Matrix for specifying condition of early season drought due to delayed onset of monsoon (2, 4, 6 & 8 weeks) compared to normal onset (2.1.1)

Monsoon onset month and week	Month and week for specifying condition of early season drought due to delayed onset of monsoon.			
	Delay in onset of monsoon by			
	2 weeks	4 weeks	6 weeks	8 weeks
June 1st Week	June 1st Week	July 1st Week	July 3rd Week	Aug. 1st Week
June 2nd Week	June 4th Week	July 2nd Week	July 4th Week	Aug. 2nd Week
June 3rd Week	July 1st Week	July 3rd Week	Aug. 1st Week	Aug. 3rd Week
June 4th Week	July 2nd Week	July 4th Week	Aug. 2nd Week	Aug. 4th Week
July 1st Week	July 3rd Week	Aug. 1st Week	Aug. 3rd Week	Sept. 1st Week
July 2nd Week	July 4th Week	Aug. 2nd Week	Aug. 4th Week	Sept. 2nd Week

Condition			Suggested contingency measures.		
Early season drought (Normal onset)	Major Farming situation *	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.	1 Upland	Rice - Wheat	*Life saving irrigation * Gap filling	*Mulching *Tillage conservation	
		Rice - lentil	*Life saving irrigation * Gap filling	*Mulching *Tillage conservation	
		Rice - Gram	*Life saving irrigation * Gap filling	*Mulching *Tillage conservation	
	2 Medium land	Rice - Wheat	*Life saving irrigation * Gap filling	*Mulching *Tillage conservation	
		Rice - lentil	*Life saving irrigation * Gap filling	*Mulching *Tillage conservation	
		Rice - Gram	*Life saving irrigation * Gap filling	*Mulching *Tillage conservation	
	3 Low land	Rice - Wheat	*Life saving irrigation * Gap filling	*Mulching *Tillage conservation	
		Rice - lentil	*Life saving irrigation * Gap filling	*Mulching *Tillage conservation	
		Rice - Gram	*Life saving irrigation	*Mulching *Tillage	

			* Gap filling	conservation	
Condition			**Suggested contingency measures.**		
Mid season drought (long dry spell consecutive 2 weeks rainless (>25 mm)	**Major Farming situation ***	**Crop/ cropping system***	**Crop management***	**Soil nutrient & moisture conservation measures***	**Remarks on Implementation***
At vegetative stage	1 Upland	Rice - Wheat	*Life saving irrigation	*Mulching *Tillage conservation	
		Rice - lentil	*Life saving irrigation	*Mulching *Tillage conservation	
		Rice - Gram	*Life saving irrigation	*Mulching *Tillage conservation	
	2 Medium land	Rice - Wheat	*Life saving irrigation	*Mulching *Tillage conservation	
		Rice - lentil	*Life saving irrigation	*Mulching *Tillage conservation	
		Rice - Gram	*Life saving irrigation	*Mulching *Tillage conservation	
	3 Low land	Rice - Wheat	*Life saving irrigation	*Mulching *Tillage conservation	
		Rice - lentil	*Life saving irrigation	*Mulching *Tillage conservation	
		Rice - Gram	*Life saving irrigation	*Mulching *Tillage conservation	

Condition			Suggested contingency measures.		
Mid season drought (long dry spell)	**Major Farming situation ***	**Crop/ cropping system***	**Crop management***	**Soil nutrient & moisture conservation measures***	**Remarks on Implementation***
At reproductive stage	1 Upland	Rice - Wheat	*Life saving irrigation	*Mulching *Tillage conservation *Life saving irrigation	
		Rice - lentil	*Life saving irrigation	*Mulching *Tillage conservation *Life saving irrigation	
		Rice - Gram	*Life saving irrigation	*Mulching *Tillage conservation *Life saving irrigation	
	2 Medium land	Rice - Wheat	*Life saving irrigation	*Mulching *Tillage conservation *Life saving irrigation	
		Rice - lentil	*Life saving irrigation	*Mulching *Tillage conservation *Life saving irrigation	
		Rice - Gram	*Life saving irrigation	*Mulching *Tillage conservation *Life saving irrigation	
	3 Low land	Rice - Wheat	*Life saving irrigation	*Mulching *Tillage conservation *Life saving irrigation	
		Rice - lentil	*Life saving irrigation	*Mulching *Tillage conservation *Life saving irrigation	
		Rice - Gram	*Life saving irrigation	*Mulching *Tillage conservation	

				*Life saving irrigation	

Condition			**Suggested contingency measures.**		
Terminal drought	**Major Farming situation ***	**Crop/ cropping system***	**Crop management***	**Soil nutrient & moisture conservation measures***	**Remarks on Implementation***
	1 Upland	Paddy - Wheat		* Mulching *Use Rain gun for irrigation	
		Paddy - lentil		* Mulching *Use Rain gun for irrigation	
		Paddy - gram		* Mulching *Use Rain gun for irrigation	
	2 Medium land	Paddy - Wheat		* Mulching *Use Rain gun for irrigation	
		Paddy - lentil		* Mulching *Use Rain gun for irrigation	
		Paddy - gram		* Mulching *Use Rain gun for irrigation	
	3 Low land	Paddy - Wheat		* Mulching *Use Rain gun for irrigation	
		Paddy - lentil		* Mulching *Use Rain gun for irrigation	
		Paddy - gram		* Mulching *Use Rain gun for irrigation	

Condition			**Suggested contingency measures.**		
	Major Farming situation *	**Crop/ cropping system***	**Change in crop/cropping system***	**Agronomic measures***	**Remarks on Implementation***
Delayed /limited release of water in canals due to low rainfall	1 Upland	Rice - Wheat	Short duration Rice – Late variety Wheat	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage	

				Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice - lentil	Short duration Rice – lentil	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice - gram	Short duration Rice – gram	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
	2 Medium land	Rice - Wheat	Short duration Rice – Late variety Wheat	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice - lentil	Short duration Rice – lentil	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice - gram	Short duration Rice – gram	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	

	3 Low land	Rice - Wheat	Short duration Rice – Late variety Wheat	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice - lentil	Short duration Rice – lentil	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice - gram	Short duration Rice – gram	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	

Condition			**Suggested contingency measures.**		
	Major Farming situation *	**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	1 Upland	Rice - Wheat	Short duration Rice – Late variety Wheat	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice - lentil	Short duration Rice – lentil	*Direct seeding Rice *Dapog Nursery * SRI technology	

				* Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice - gram	Short duration Rice – gram	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
	2 Medium land	Rice - Wheat	Short duration Rice – Late variety Wheat	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice - lentil	Short duration Rice – lentil	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice - gram	Short duration Rice – gram	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
	3 Low land	Rice - Wheat	Short duration Rice – Late variety Wheat	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration	

				variety of Paddy	
		Rice - lentil	Short duration Rice – lentil	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	
		Rice - gram	Short duration Rice – gram	*Direct seeding Rice *Dapog Nursery * SRI technology * Use of Zero Tillage Machine for paddy sowing + Dhaincha *Use Short duration variety of Paddy	

Condition			**Suggested contingency measures.**		
	Major Farming situation *	**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	1 Upland	Paddy - Wheat	Short duration Rice – Late variety Wheat	* Mulching *Use Rain gun for irrigation	
		Paddy - lentil	Short duration Rice – Lentil	* Mulching *Use Rain gun for irrigation	
		Paddy - gram	Short duration Rice - gram	* Mulching *Use Rain gun for irrigation	
	2 Medium land	Paddy - Wheat	Short duration Rice – Late variety Wheat	* Mulching *Use Rain gun for irrigation	
		Paddy - lentil	Short duration Rice – Lentil	* Mulching *Use Rain gun for irrigation	
		Paddy - gram	Short duration Rice - gram	* Mulching *Use Rain gun for irrigation	
	3 Low land				
		Paddy - Wheat	Short duration Rice – Late variety Wheat	* Mulching *Use Rain gun for irrigation	

		Paddy - lentil	Short duration Rice – Lentil	* Mulching *Use Rain gun for irrigation	
		Paddy - gram	Short duration Rice – Gram	* Mulching *Use Rain gun for irrigation	

Condition			**Suggested contingency measures.**		
	Major Farming situation *	**Crop/ cropping system***	**Change in crop/cropping system***	**Agronomic measures***	**Remarks on Implementation***
Insufficient ground water recharge due to low rainfall	1 Upland	Paddy - Wheat	Short duration Rice – Late variety Wheat	* Mulching *Use Rain gun for irrigation	
		Paddy - lentil	Short duration Rice – Lentil	* Mulching *Use Rain gun for irrigation	
		Paddy - gram	Short duration Rice - gram	* Mulching *Use Rain gun for irrigation	
	2 Medium land	Paddy - Wheat	Short duration Rice – Late variety Wheat	* Mulching *Use Rain gun for irrigation	
		Paddy - lentil	Short duration Rice – Lentil	* Mulching *Use Rain gun for irrigation	
		Paddy - gram	Short duration Rice – gram	* Mulching *Use Rain gun for irrigation	
	3 Low land	Paddy - Wheat	Short duration Rice – Late variety Wheat	* Mulching *Use Rain gun for irrigation	
		Paddy - lentil	Short duration Rice – lentil	* Mulching *Use Rain gun for irrigation	
		Paddy - gram	Short duration Rice – gram	* Mulching *Use Rain gun for irrigation	
Any other condition (specify)					

Notes :

- Suggested change in the crop variety or cropping system in view of delay in release of irrigation water, loss water solubility etc.
- All agronomic measures like improved method of irrigation (skip row etc.). micro irrigation (drip/sprea le....) detailed irrigation limited area irrigation mulching etc. that improve water use efficiency and make best use of limited water including methods of ground water recharge and sharing .
- Comments on source of availability of seed of the allmate crop or variety, any constraints in marketing of alternative crop implications for livestock and dairy sectors and details of state or central schemes like National Rule Impioymer Guara Scheme (NRIGS) Restriya Krishi Vikas Yojana (RKVY) NHM) etc. which facilitate implementation of the agronomic measure suggested.

2.2 Unusual rains (untimely, un-seasonal etc) (for both rainfed and Irrigated Situation)

Condition	**Suggested contingency measure**			
Comm... high rainfall in a short span leading to water longing	**Vegetative Stage**	**Flowering Stage**	**Crop Maturity Stage**	**Post Harvest**
Crop 1(specify)Rice	Re-plantation, Gap filling	-	Drenching	Storage properly
Crop2 Wheat	Re-sowing, Select variety Properly	Drainage of water properly	Drainage of water properly	Storage properly
Crop 3 Maize	Re-sowing, Select variety Properly	Drainage of water properly	Drainage of water properly	Storage properly
Crop 4 Gram	Re-sowing, Select variety Properly	Drainage of water properly	Drainage of water properly	Storage properly
Crop 5 Lentil	Re-sowing, Select variety Properly	Drainage of water properly	Drainage of water properly	Storage properly
Horticulture	**Vegetative Stage**	**Flowering Stage**	**Crop Maturity Stage**	**Post Harvest**
Crop 1 (specify) Mango	Re-plantation	Drainage of water properly	Drainage of water properly	Storage properly
Crop 2 Banana	Re-plantation	Drainage of water properly	Drainage of water properly	Storage properly
Crop 3 Guava	Re-plantation	Drainage of water properly	Drainage of water properly	Storage properly
Crop 4 Lemon	Re-plantation	Drainage of water properly	Drainage of water properly	Storage properly
Crop 5 Coconut	Re-plantation	Drainage of water properly	Drainage of water properly	Storage properly
Heavy rainfall with high speed winds is in short span	**Vegetative Stage**	**Flowering Stage**	**Crop Maturity Stage**	**Post Harvest**
Crop 1(specify) Rice	Re-plantation, Gap filling	-	Drenching	Storage properly
Crop2 Wheat	Re-sowing, Select variety Properly	Drainage of water properly	Drainage of water properly	Storage properly
Crop 3 Maize	Re-sowing, Select variety Properly	Drainage of water properly	Drainage of water properly	Storage properly
Crop 4 Gram	Re-sowing, Select variety Properly	Drainage of water properly	Drainage of water properly	Storage properly
Crop 5 Lentil	Re-sowing, Select	Drainage of water	Drainage of water	Storage

	variety Properly	properly	properly	properly
Horticulture	**Vegetative Stage**	**Flowering Stage**	**Crop Maturity Stage**	**Post Harvest**
Crop 1 (specify) Mango	Re-plantation & Staking	Drainage of water properly	Drainage of water properly& Staking	Storage properly
Crop 2 Banana	Re-plantation & Staking	Drainage of water properly	Drainage of water properly & Staking	Storage properly
Crop 3 Guava	Re-plantation & Staking	Drainage of water properly	Drainage of water properly & Staking	Storage properly
Crop 4 Lemon	Re-plantation & Staking	Drainage of water properly	Drainage of water properly & Staking	Storage properly
Crop 5 Coconut	Re-plantation & Staking	Drainage of water properly	Drainage of water properly & Staking	Storage properly
Outbreak of pests and diseases due to unseasonal rains				
Crop 1(specify) Rice	Spray of insecticides and pesticides	Drainage of water properly	Drainage of water properly	Storage properly
Crop2 Wheat	Spray of insecticides and pesticides	Drainage of water properly	Drainage of water properly	Storage properly
Crop 3 Maize	Spray of insecticides and pesticides	Drainage of water properly	Drainage of water properly	Storage properly
Crop 4 Gram	Spray of insecticides and pesticides	Drainage of water properly	Drainage of water properly	Storage properly
Crop 5 Lentil	Spray of insecticides and pesticides	Drainage of water properly	Drainage of water properly	Storage properly
Horticulture				
Crop 1 (specify) Mango	Spray of insecticides and pesticides	Spray of insecticides and pesticides	Spray of insecticides and pesticides	
Crop 2 Banana	Spray of insecticides and pesticides	Spray of insecticides and pesticides	Spray of insecticides and pesticides	
Crop 3 Guava	Spray of insecticides and pesticides	Spray of insecticides and pesticides	Spray of insecticides and pesticides	
Crop 4 Lemon	Spray of insecticides and pesticides	Spray of insecticides and pesticides	Spray of insecticides and pesticides	
Crop 5 Coconut	Spray of insecticides and pesticides	Spray of insecticides and pesticides	Spray of insecticides and pesticides	

2.3 Floods

Condition	Suggested contingency measure			
Transient water logging partial inundation	**Seeding/ nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Crop 1(specify) Rice				
Crop2 Wheat	Proper drainage system, Re-sowing	-	-	Stop irrigation
Crop 3 Maize		Apply sub-surface drainage system	Apply sub-surface drainage system	Stop irrigation
Crop 4 Gram		Raised bed system	Reduce irrigation interval	Stop irrigation
Crop 5 Lentil		Sub-surface drainage system	Stop irrigation	Stop irrigation
Horticulture				
Crop 1 (specify) Mango	Proper drainage system, stop irrigation	Sub-surface drainage system	Stop irrigation	Stop irrigation
Crop2 Guava	Proper drainage system, stop irrigation	Sub-surface drainage system	Stop irrigation	Stop irrigation
Crop 3 Banana	Proper drainage system, stop irrigation	Sub-surface drainage system	Stop irrigation	Stop irrigation
Crop 4 Lemon	Proper drainage system, stop irrigation	Sub-surface drainage system	Stop irrigation	Stop irrigation
Continuous submergence for more than 2 days				
Crop 1(specify) Rice	Proper drainage system , stop irrigation & Replanting	Sub-surface drainage system	Stop irrigation	Stop irrigation
Crop2 Wheat	Proper drainage system , stop irrigation & Replanting	Sub-surface drainage system	Stop irrigation	Stop irrigation
Crop 3 Maize	Proper drainage system , stop irrigation & Replanting	Sub-surface drainage system	Stop irrigation	Stop irrigation
Crop 4 Gram	Proper drainage system , stop irrigation & Replanting	Sub-surface drainage system	Stop irrigation	Stop irrigation
Crop 5 Lentil				
Horticulture				
Crop 1 (specify) Mango	Proper drainage system , stop irrigation	Sub-surface drainage system	Stop irrigation	Stop irrigation
Crop2 Guava	Proper drainage system , stop irrigation	Sub-surface drainage system	Stop irrigation	Stop irrigation

Crop 3 Banana	Proper drainage system , stop irrigation	Sub-surface drainage system	Stop irrigation	Stop irrigation
Crop 4 Lemon	Proper drainage system , stop irrigation	Sub-surface drainage system	Stop irrigation	Stop irrigation
Sea-water inundation				
Crop 1				
Crop 2				
Crop 3				
Crop 4				
Crop 5				

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

Extreme events type	**Suggested contingency measure**			
	Seedling/nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Heat Wave*				
Crop 1 Rice	Use sprinkler irrigation system / Rain gun	Applying Rain gun/ Sprinkler	Applying Rain gun/ Sprinkler	
Crop 2 Wheat		Applying Rain gun/ Sprinkler	Applying Rain gun/ Sprinkler	
Crop 3 Maize		Use Drip-irrigation & Rain gun	Use Drip-irrigation & Rain gun	
Crop 4 Gram		Use sprinkler & straw mulching	Use sprinkler irrigation	
Crop 5 Lentil		Use sprinkler & straw mulching	Use sprinkler irrigation	
Horticulture				
Crop 1 (specify) Mango	Use Drip irrigation, mulching & shed net house	Use drip irrigation & mulching	Use drip irrigation & mulching	
Crop2 Guava	Use Drip irrigation, mulching & shed net house	Use drip irrigation & mulching	Use drip irrigation & mulching	
Crop 3 Banana	Use Drip irrigation, mulching & shed net house	Use drip irrigation & mulching	Use drip irrigation & mulching	
Crop 4 Lemon	Use Drip irrigation, mulching & shed net house	Use drip irrigation & mulching	Use drip irrigation & mulching	
Cold Wave*				
Crop 1				
Crop 2				
Crop 3				
Crop 4				
Crop 5				
Horticulture				
Crop 1 (specify) Mango	Use of Poly Tunnel			
Crop2 Guava	Use of Poly Tunnel			
Crop 3 Banana	Use of Poly Tunnel			
Crop 4 Lemon	Use of Poly Tunnel			
Forest*				

Crop 1				
Crop 2				
Crop 3				
Crop 4				
Crop 5				
Horticulture				
Crop 1 (specify)				
Crop 2				
Crop 3				
Crop 1				
Crop 2				
Crop 3				
Crop 4				
Crop 5				
Horticulture				
Crop 1 (specify)				
Crop 2				
Crop 3				
Cyclone				
Crop 1				
Crop 2				
Crop 3				
Crop 4				
Crop 5				
Horticulture				
Crop 1 (specify)				
Crop 2				
Crop 3				

2.5 Contingent strategies for Livestock, Poultry & Gisheries

2.5.1 Livestock

	Suggested contingency measures		
	Before the event	**During the event**	**After the event**
Drought			
Feed and fodder availability	Emergency stock maintaining	Use of emergency stock	Give light and nutritive feed
Drinking water	Use clean water , Stocking + Bleaching powder	Use clean water	Use clean water
Health & Disease management	Vaccination	Treatment if required	Proper care of animals health
Floods			
Feed and fodder availability	Emergency stock maintaining	Use of emergency stock	Give light and nutritive feed
Drinking water	-	Use of bleaching powder	Use clean water
Health & Disease	Vaccination	Treatment if required	Proper care of animals

management			health
Cyclone			
Feed and fodder availability	-	Kept in house	Give light and nutritive feed
Drinking water	-	Use clean water	Use clean water
Health & Disease management	-	Vaccination	Proper care of animals health
Heat wave and cold wave			
Storage of feed ingredients	Storage of Dry feed & fodder	Use of stored feed	Give light and nutritive feed
Health & Disease management	Vaccination	Treatment if required	Proper care of animals health

2.5.2 Poultry

	Suggested contingency measures		
	Before the event	**During the event**	**After the event**
Drought			
Storage of feed ingredients	Emergency stock maintenance	Use of emergency stock	Give light and nutritive feed
Drinking water	Emergency stock	Use of stock	Use clean water
Health & Disease management	Vaccination	Treatment if required	Proper care of animals health
Floods			
Storage of feed ingredients	Emergency stock maintained	Use of emergency stock	Give light and nutritive feed
Drinking water	Emergency stock	Use bleaching powder & medicines	Use clean water
Health & Disease management	Vaccination	Treatment if required	Proper care of animals health
Cyclone			
Storage of feed ingredients	Emergency stock maintained	Use of emergency stock	Give light and nutritive feed
Drinking water	-	-	Use clean water
Health & Disease management	Vaccination	Treatment if required	Proper care of animals health
Heat wave and cold wave			
Storage of feed ingredients	Emergency stock maintained	Use of emergency stock	-
Health & Disease management	-	Treatment if required	-

2.5.3 Fisheries

	Suggested contingency measures		
	Before the event	**During the event**	**After the event**
Drought			
Storage water in ponds due to insufficient rain/inflows	Alignment of water in pond (arrangement)	Alignment of water in pond	Give light and nutritive feed
Impact of heat & cold load build up in ponds / change in water	Shady trees to be implanted	Over population in the pond fish specially in upper layer	Proper care of animals health

quantity			
Floods			
Inundation with flood water	Uplifting of border of ponds	Use of Net for stopping flow of fish	Give light and nutritive feed
Water contamination and changes in BCO	Use of Bleaching powder	Use of bleaching powder	Proper care of animals health
Cyclone			
Overflow/flooding of ponds	Uplifting border of ponds	-	Give light and nutritive feed
Change in fresh briniest water ratio	-	-	Use clean water
Health & Disease management	Covering of poultry house, plantation of trees	Use of medicines if required	Proper care of animals health
Heat wave and cold wave			
Management of pond environment	Plantation of trees around pond	-	Give light and nutritive feed
Health & Disease management	-Do-	Use of medicines if required	Proper care of animals health

* based on for warning wherever available

Note: All data is secondary data given by Dist. Agricultural Office, Aurangabad, commissary Gaya and ATMA, Aurangabad

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