State: CHHATTISGARH

Agriculture Contingency Plan for District: Mahasamund

Agro-Climatic/Ecological Zone							
Agro Ecological Sub Region (ICAR)	11.0 Chhattisgarh/Mahanadi Bas	11.0 Chhattisgarh/Mahanadi Basin Agro-eco region (J3(Cd/Cm)5					
Agro-Climatic Zone (Planning Commission)	Zone-7 Eastern plateau and hills						
Agro Climatic Zone (NARP)	Chhattisgarh plain zone						
List all the districts falling under the NARP Zone* (*>50% area falling in the zone)	Raipur, Bilaspur, Korba, Raigarl Mahasamund, Kanker (11 distric	n, Janjgir-champa, Kabirdham, Raj ts)	jnandgaon, Durg, Dhamtari,				
Geographic coordinates of district headquarters	Latitude	Longitude	Altitude				
1	21°15' N	81°41' E	289 m				
Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Zonal Agricultural Research Station, Raipur 492006 (C.G.)						
Mention the KVK located in the district with address	Dr.(Smt.) Rekha Singh, Programme Coordinator, KVK,Mahasamund 07723-224659 94255-17103(phone/fax), E_mail ID: kvkmahasamund@yahoo.co.in						
Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro- advisories in the Zone	Department of Agrometeorology, College of Agriculture, IGKV, Raipur (C.G.)						

District	Total Geographic Area (000' ha.)	Sole Cropped Area (000' ha.)	Double Cropped Area (000' ha.)	Total Irrigated Area (000' ha.)	Irrigated percentage with total cropped area	Total Cropped Area (000' ha.)
Mahasamund	496.3	267.6	34.4	108.2	36%	302.1

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):	1035.0	48	3 rd week of June	4 th week of September
	NE Monsoon(Oct-Dec):	73.9	4	Post monsoon (October-December)	-
	Winter (Jan- March)	42.3	4	Winter rains	-
	Summer (Apr-May)	45.9	3	-	-
	Annual	1197.1	59	-	-

Include Digital maps of the district for	Location map of district with in State as Annexure I	Enclosed : Yes
	Mean annual rainfall as Annexure 2	Enclosed : Yes
	Soil map as Annexure 3	Enclosed : No

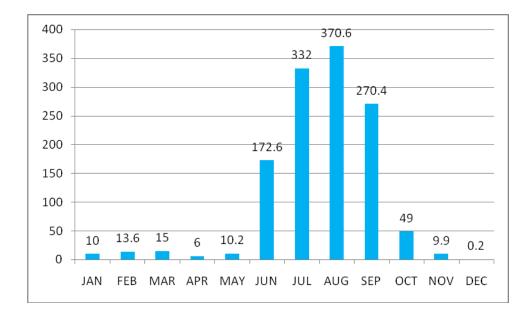
Annexure I

Location map of district within State



Annexure II

Mean annual rainfall (mm)



2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation

Condition	Major Farming situation ^a	Normal Crop / Cropping system ^b		Suggested Contingency measures				
				Change in crop / cropping system ^c including variety		Agronomic measures ^d	Remarks on Implementation ^e	
		Kharif	Rabi	Kharif	Rabi			
Early season drought: Delay by 2 weeks (July 1 st wk)	Unbunded upland Bharri	Mungbean (Pusa Vishal,HUM 1, HUM-16, BM 4, HUM 12) / Urdbean (TU 94-2, TAU-2,		No change No change		Normal Normal		
		KU 96-3, Indira Urd 1) Pigeonpea (ICPL87, JKM189, UPAS 120, BDN 2, Rajivlochan)						
		Mung	Hoursegram/ Niger	No change		Normal		
		Urid	Hoursegram/ Niger	No change		Normal		
		Groundnut	-	No change		Normal		
1		Sesamum		No change		Normal		
		Maize- Hishell, P 3785, Bio 9681, 900M, Seedtech		No change		Normal		

Condition	Major Farming	Normal Crop / Cropping		Suggested Contingency measures				
	situation ^a	system ^b			/ cropping system ^c	Agronomic measures ^d	Remarks on	
				including variety			Implementation ^e	
		Kharif	Rabi	Kharif	Rabi			
		2324, Pro						
		4640, DMH						
		117, Pro						
		Agro- 4212						
		PEM 1, VH -						
		9,17HQPM-1						
		NMH-731NK- 30, NMH-						
		803KMH-						
		3426						
	Bundeded upland	Rice-		No change		Normal		
	Bharri	Purnima,		i to enange		Normai		
	Diam	Danteshwari,						
		Samleshwari,						
		Annada						
		Rice	Hoursegram	No change		Normal		
		Rice	Niger	No change		Normal		
	Midland Inceptisol	Rice-		No change		1. Direct dry seeding in	Linkage with	
	(Matasi-Sandy	MTU1010,				line technique	RKVY for supply	
	loam)	IR64, IR 36,				suggested for better	of tractor and	
		Indira Barani				crop yield and double	animal drawn	
		Dhan 1,				cropping	seed drill for line	
		Chandrahasni,				2. Line sowing to avoid	sowing	
		Samleshwari		XX 1		mortality of		
	C1 11 X 1 1	D:		No change		germinating seed in		
	Shallow Lowland	Rice-		No change		case drought follows after scanty rainfall		
	Alfisols	Mahamaya, s				events		
	(Dorsa-clayloam or Vertisols	swarna, Samada				3. Promote application of		
	(Kanhar-clayey)	Sampda, IGKV R1,				post emergence		
	(Ixaiiiai-Clayty)	IGKV R1, IGKV R2,				herbicide for timely		
		Bamleshwari,				weed management and		
		Indira Sona				avoiding biasi operation		
		Rice	Lathyrus/	No change				
			linseed/gram/	0 -				

Condition	Major Farming	Normal Crop /	Cropping		Suggested	Contingency measures	
	situation ^a	system ^b		Change in crop / c		Agronomic measures ^d	Remarks on
				including variety			Implementation ^e
		Kharif	Rabi	Kharif	Rabi		
			mung (relay)			_	
		Rice	Lentil	No change		_	
		Rice	Gram	No change		_	
		Rice	Linseed	No change		_	
		Rice	Safflower	No change		_	
	Bahra lowland	Rice- Swarna,	Fallow	No change			
	Vertisols	Swarna sub1,					
	(Kanhar-clayey)	Jaldubi,					
		Bamleshwari,					
		MTU 1001, IGKV R 1244					
		Rice	Lathyrus/	No change		-	
		Rice	linseed/gram/	No change			
			mung (relay)				
		Rice	Wheat	No change		_	
		Rice	Mung	No change		_	
Early season	Unbunded upland	Mungbean	wrung	No change		25 % higher seed rate	
drought:	Bharri	(Pusa				-do-	
Delay by 4	Diam	Vishal,HUM				-40-	
weeks (July		1, HUM-16,					
3 rd wk)		BM 4, HUM					
5 WK)		12)/					
		Urdbean (TU					
		94-2, TAU-2,					
		KU 96-3,					
		Indira Urd 1)					
		Pigeonpea					
		(ICPL87,					
		JKM189,					
		UPAS 120,					
		BDN 2,					
		Rajivlochan)					

Condition	Major Farming	Normal Crop / Cropping		Suggested Contingency measures					
	situation ^a	system ^b		Change in crop / cr	ropping system ^c	Agronomic measures ^d	Remarks on		
				including variety			Implementation ^e		
		Kharif	Rabi	Kharif	Rabi				
						-			
		Mung	Hoursegram/			-do-			
		Urid	Niger Hoursegram/			-do-			
		Und	Niger			-00-			
		Groundnut	Inger	Erect variety GG-		-do-			
		Groundhut		5/G-20		uo			
		Sesamum				-do-			
	Bundeded upland	Rice -		Rice- Tulsi, Indira					
	Bharri	Purnima,		barani dhan-1,					
		Danteshwari,		Annda, Anjali					
		Samleshwari,							
		Annada							
		Maize-							
		Hishell, P							
		3785, Bio 9681, 900M,							
		Seedtech							
		2324, Pro							
		4640, DMH							
		117, Pro							
		Agro- 4212							
		PEM 1 , VH -							
		9,17HQPM-1							
		NMH-731NK-							
		30, NMH-							
		803KMH-							
		3426	TT	Caracter					
		Rice Rice	Hoursegram	Groundnut Sesamum/					
		Rice	Niger	soybean(Indira					
				soy9, JS93-05,					
				JS335, JS80-21)					
	Midland Inceptisol	Rice-		Rice Purnima,		• Direct dry seeding in line	• Linkage with		
	(Matasi-Sandy	MTU1010,		Danteshwari,		technique suggested for	RKVY for		
	loam)	IR64, IR 36,		Samleshwari,					

Condition	Major Farming	Normal Crop /	Cropping	Suggested Contingency measures				
	situation ^a	system ^b		Change in crop / cr	opping system ^c	Agronomic measures ^d	Remarks on	
				including variety		0	Implementation ^e	
		Kharif	Rabi	Kharif	Rabi		-	
		Indira Barani		Annada Indira		better crop yield and	supply of	
		Dhan 1,		barani dhan-1		double cropping	tractor and	
		Chandrahasni,				•Line sowing to avoid	animal drawn	
		Samleshwari				mortality of germinating	seed drill for	
	Shallow Lowland	Rice-		Rice- MTU1010,		seed in case drought	line sowing	
	Alfisols	Mahamaya, s		IR64, IR 36, Indira		follows after scanty	• Linkage with	
	(Dorsa-clay loam)	swarna,		Barani Dhan 1,		rainfall events	MNREGA for	
	or	Sampda,		Chandrahasni,		• Promote application of	WC measures:	
	Vertisols	IGKV R1,		Samleshwari		post emergence	Digging of	
	(Kanhar-clayey)	IGKV R2,				herbicide for timely	shallow dug	
		Bamleshwari,				weed management and	wells and	
		Indira Sona	T at the second	Rice- Chandrahasni	Coriander	avoiding biasi operation	renovation of	
		Rice	Lathyrus/				existing WHSs	
			linseed/gram/	IR64, Mahamaya, Bambleshwari,	(leaf), toria, Lathyrus/			
			mung (relay)	karma masuri	linseed/			
				Karma masun	mung (relay)			
		Rice	Lentil		Lentil	-		
		Rice	Gram		Gram	-		
		Rice	Linseed		Linseed	-		
		Rice	Safflower		Coriander	-		
		Idee	Sulliowel		(leaf), toria			
	Bahra lowland	Rice- Swarna,	Fallow	Rice- Mahamaya,	Fallow	1		
	Vertisols	Swarna sub1,		swarna, Sampda,				
	(Kanhar-clayey)	Jaldubi,		IGKV R1, IGKV				
	× 557	Bamleshwari,		R2, IGKV R 1244				
		MTU 1001,		,				
		IGKV R 1244						
			Lathyrus/		Coriander			
			linseed/gram/		(leaf), toria,			
			mung (relay)		Lathyrus/			
					linseed/			
					mung (relay)			
			Wheat		Wheat			
			Mung		Mung			

Condition	Major Farming	Normal Crop /	Cropping		Suggested	Contingency measures	
	situation ^a	system ^b		Change in crop / cr	opping system ^c	Agronomic measures ^d	Remarks on
				including variety			Implementation ^e
		Kharif	Rabi	Kharif	Rabi		
Early season	Unbunded upland Bharri	Mungbean (Pusa		Hoursegram/ Niger		25 % higher seed rate	
drought: Delay by 6 weeks (Aug. 1 st wk)	Dialii	Vishal,HUM 1, HUM-16, BM 4, HUM 12) / Urdbean (TU 94-2, TAU-2, KU 96-3, Indira Urd 1) Pigeonpea (ICPL87, JKM189, UPAS 120, BDN 2, Rajivlochan)		Hoursegram/ Niger		-do-	
		Mung	Hoursegram/ Niger	Mung/ urid		-do-	
		Urid	Hoursegram/ Niger	Mung		-do-	
		Groundnut		Urid(PTU4, TU94- 2, pant-U31, KU96-3, TAU2)		-do-	
		Sesamum		Mung		-do-	
	Bharri	Rice- Purnima, Danteshwari, Samleshwari, Annada		Rice- Purnima, Tulsi, Indira barani dhan-1, Aditya, Anjali		Sowing of sprouted seed (<i>lai-chaupa</i>)adopting lehi method of rice cultivation	
		Rice	Hoursegram	Pigeonpea		Mixed or intercropping of pigeonpea and mung (4:2)	
		Rice	Niger	Sesamum		Mixed or intercropping of sesamum and mung (4:2)	

Condition	Major Farming	Normal Crop /	Cropping	Suggested Contingency measures				
	situation ^a	system ^b		Change in crop / cr	opping system ^c	Agronomic measures ^d	Remarks on	
				including variety			Implementation ^e	
		Kharif	Rabi	Kharif	Rabi			
				Groundnut		-do-		
	Midland Inceptisol (Matasi-Sandy loam)	Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrahasni, Samleshwari Rice-		Rice- Purnima, Danteshwari, Samleshwari, Annada		 Direct dry seeding in line technique suggested for better crop yield and double cropping Promote direct seeding or rice and discourage transplanting 	• Linkage with RKVY for supply of tractor and animal drawn seed drill for line sowing	
	Shallow Lowland Alfisols (Dorsa-clay loam) or Vertisols (Kanhar-clayey)	Mahamaya, s swarna, Sampda, IGKV R1, IGKV R2, Bamleshwari, Indira Sona		IR64, IR 36, Indira Barani Dhan 1, Chandrahasni, Samleshwari		 Sowing of sprouted seed (<i>lai-chaupa</i>)adopting lehi method of rice cultivation Line sowing to avoid mortality of germinating seed in case drought follows after scanty 	• Linkage with MNREGA for WC measures: Digging of shallow dug wells and renovation of existing WHSs	
		Rice	Lathyrus/ linseed/gram/ mung (relay)	Rice- IR64, Chandrahasni Bambleshwari, karma masuri	Coriander (leaf), toria, linseed/ mung (relay)	 rainfall events Promote application of post emergence herbicide for timely 	• Utilize harvested rain water of WHS in crop	
		Rice	Lentil		Lentil	weed management and	production by	
		Rice	Gram		Gram	avoiding biasi operation	adopting drip	
		Rice	Linseed		Linseed	• Increase 25percent seed	system or	
		Rice	Safflower		Coriander (leaf), toria	rate of rabi crops.Seed rate of wheat may	sprinklers that may be	
	Bahra lowland Vertisols (Kanhar-clayey)	Rice- Swarna, Swarna sub1, Jaldubi, Bamleshwari, MTU 1001, IGKV R 1244	Fallow	Rice- Mahamaya, swarna, Sampda, IGKV R1, IGKV R2, IGKV R 1244	Fallow	 be increased from one- and half to two times Sowing of rabi crops adopting zero tillage technique 	converged from micro irrigation scheme of Agriculture Department	
			Lathyrus/ linseed/gram/ mung (relay)		Coriander (leaf), toria, Lathyrus/ linseed/			

Condition	Major Farming	Normal Crop / Cropping			Suggested	Contingency measures	
	situation ^a	system ^b		Change in crop / cr including variety		Agronomic measures ^d	Remarks on Implementation ^e
		Kharif	Rabi	Kharif	Rabi	•	
					mung (relay)	_	
			Wheat		Wheat	_	
			Mung		Mung	~	
Early season drought: Delay by 8	Unbunded upland Bharri	Mungbean (Pusa Vishal,HUM			Hoursegram/ Niger	Sowing in line or broadcasting in September	
weeks (Aug. 3 rd wk)		1, HUM-16, BM 4, HUM 12) / Urdbean (TU 94-2, TAU-2, KU 96-3, Indira Urd 1) Pigeonpea (ICPL87, JKM189, UPAS 120, BDN 2, Rajivlochan)			Hoursegram/ Niger	Sowing in line or broadcasting in September	
		Mung	Hoursegram/ Niger	Mung		25 % higher seed rate	
		Urid	Hoursegram/ Niger	Mung		25 % higher seed rate	
		Groundnut		Mung		25 % higher seed rate	
		Sesamum		Mung		25 % higher seed rate	
	Bundeded upland Bharri	Rice- Purnima, Danteshwari, Samleshwari, Annada Maize-		Mung(pusa vishal, pragya, Hum1, pairimung) Pigeonpea(ICPL87, Rajivlochan. Maruti)		Mixed or intercropping of pigeonpea and mung (4:2) or sesamum and mung (4:2)	

Condition	Major Farming				Suggested Contingency measures			
	situation ^a	uation ^a system ^b		Change in crop / cr	opping system ^c	Agronomic measures ^d	Remarks on	
			•	including variety			Implementation ^e	
		Kharif	Rabi	Kharif	Rabi			
		Hishell, P 3785, Bio 9681, 900M, Seedtech 2324, Pro 4640, DMH 117, Pro Agro- 4212 PEM 1, VH - 9,17HQPM-1 NMH-731NK- 30, NMH-						
		30, NMH- 803KMH- 3426 Rice	Hoursegram		Hoursegram Niger/mung	Sowing in line or broadcasting in September Sowing in line or		
			Niger		Triger/Inulig	broadcasting in September		
	Midland Inceptisol (Matasi-Sandy loam)	Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrahasni, Samleshwari		Rice- Indira barani dhan-1, Samleshwari, Danteshwari, purnima		 Promote direct Line seeding of rice and discourage transplanting Sowing of sprouted seed (<i>lai-chaupa</i>)adopting lehi method of rice cultivation 	• Linkage with RKVY for supply of tractor and animal drawn seed drill for line sowing	
	Shallow Lowland Alfisols (Dorsa-clay loam) or Vertisols (Kanhar-clayey)	Rice- Mahamaya, s swarna, Sampda, IGKV R1, IGKV R2, Bamleshwari, Indira Sona		Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrahasni, Samleshwari		 Promote application of post emergence herbicide for timely weed management and avoiding biasi operation Increase 25percent seed rate of rabi crops. Seed rate of wheat 	• Linkage with MNREGA for WC measures: Digging of shallow dug wells and renovation of existing WHSs	
		Rice	Lathyrus/ linseed/gram/	Rice- IR64, Chandrahasni		increased from one-and	• Utilize	

Condition	Major Farming	Normal Crop /	Cropping		Suggested	Contingency measures	
	situation ^a	system ^b			Change in crop / cropping system ^c		Remarks on
				including variety		_	Implementation ^e
		Kharif	Rabi	Kharif	Rabi		
			mung (relay)	Bambleshwari, karma masuri		half to two times • Sowing of rabi crops	harvested rain water of WHS
		Rice	Lentil		Lentil	adopting zero tillage	in crop
		Rice	Gram		Gram	technique	production by
		Rice	Linseed		Linseed		adopting drip
		Rice	Safflower		Fieldpea/ Coriander (leaf)/ toria		system or sprinklers that may be converged from micro irrigation scheme of Agriculture Department
	Bahra lowland Vertisols (Kanhar-clayey)	Rice- Swarna, Swarna sub1, Jaldubi, Bamleshwari, MTU 1001, IGKV R 1244	Fallow	Rice- Mahamaya, swarna, Sampda, IGKV R1, IGKV R2, IGKV R 1244	Fallow		
			Lathyrus/ linseed/gram/ mung (relay)				
			Wheat		Wheat		
			Mung		Mung/ Fieldpea		
					/Coriander (leaf)/ toria		

Normal onset of monsoon, mid season-vegetative stage and terminal drought

Condition	Major Farming	Normal Crop /	Suggested Contingency measures		
	situation ^a	Cropping	Crop management	Soil nutrient & moisture	Remarks on
		system ^b		conservation measues ^d	Implementation ^e
Normal onset	Unbunded upland	Mungbean (Pusa Vishal,HUM 1,	 Gap filling 	• Inter tilling for soil	 Linkage with
followed by 15-20	Bharri	HUM-16, BM 4, HUM 12) /	 Resowing in line 	mulch	RKVY / NFSM /
days dry spell		Urdbean (TU 94-2, TAU-2, KU 96-	when very poor	• Mulching with paddy	state seed
after sowing		3, Indira Urd 1)	population	straw or use plastic	corporation for
leading to poor		Pigeonpea (ICPL87, JKM189,			-

Condition	Major Farming	Normal Crop /	Sugg	gested Contingency measure	s
	situation ^a	Cropping	Crop management	Soil nutrient & moisture	Remarks on
		system ^b		conservation measues ^d	Implementation ^e
germination/crop		UPAS 120, BDN 2, Rajivlochan)		mulch or other locally	timely supply of
stand etc.		Mung /Urid and rabi Hoursegram/		available material	seed of suitable
		Niger		 Compartmental 	varieties of upland
		Groundnut /Sesamum		bunding, Ridge and	crops and rice
	Bundeded upland	Rice- Purnima, Danteshwari,		Furrows, Tied ridges	
	Bharri	Samleshwari, Annada	-	to conserve rainwater	
		Rice and rabi Hoursegram/		during kharif for	
		Niger	-	regular sowing of rabi	
		Mung (pusa vishal, Hum1)		crops	
	Midland	Rice MTU1010, IR64, IR 36, Indira	•Gap filling or		
	Inceptisol	Barani Dhan 1, Chandrahasni,	• Resowing of dry seed		
	(Matasi-Sandy	Samleshwari			
	loam)				
	Shallow Lowland	Rice-Mahamaya, s	•Gap filling		
	Alfisols	swarna, Sampda, IGKV R1, IGKV	• Sowing of sprouted		
	(Dorsa-clay loam)	R2, Bamleshwari, Indira Sona	seed (lai-		
	or	Rice- Lathyrus/ linseed/gram/	chaupa)adopting lehi		
	Vertisols	mung (relay)	method of rice		
	(Kanhar-clayey)	Rice-lentil/gram/linseed/ safflower/	cultivation		
		fieldpea	• Sowing of relatively		
			early varieties like		
			IR64, Chandrahasni		
			Bambleshwari, karma		
	D 1 1 1 1		masuri	-	
	Bahra lowland	Rice- Swarna, Swarna sub1,	•Gap filling		
	Vertisols	Jaldubi, Bamleshwari, MTU 1001, IGKV R 1244	• Sowing of sprouted		
	(Kanhar-clayey)	Rice- Lathyrus/ linseed/gram/	seed (<i>lai</i> -		
		mung (relay)	<i>chaupa</i>)adopting lehi method of rice		
		Rice-wheat/ mung	cultivation		
		Nee-wheat mung	 Sowing of relatively 		
			early varieties like		
			Mahamaya, swarna		
			sub1, Jaldubi, masuri		
Mid season drought	Unbunded upland	Mungbean (Pusa Vishal,HUM 1,	Weeding and protection	• Inter tilling for soil	• Linkage with
(long dry spell,	Bharri	HUM-16, BM 4, HUM 12) /	against sucking pests		C C

Condition	Major Farming	Normal Crop /	Sugg	gested Contingency measure	
	situation ^a	Cropping	Crop management	Soil nutrient & moisture	Remarks on
		system ^b		conservation measues ^d	Implementation ^e
consecutive 2		Urdbean (TU 94-2, TAU-2, KU 96-		mulch	Agriculture
weeks rainless		3, Indira Urd 1)		• Mulching with paddy	Department
(>2.5 mm) period):		Pigeonpea (ICPL87, JKM189,		straw or use plastic	/RKVY for supply
At vegetative stage		UPAS 120, BDN 2, Rajivlochan)		mulch or other locally	of interculture
		Mung /Urid and rabi Hoursegram/	Weeding and protection	available material	implements for
		Niger	against sucking pests		interculture in
		Groundnut /Sesamum	Avoid top dressing of		upland crops
	Bundeded upland	Rice- Purnima, Danteshwari,	urea		
	Bharri	Samleshwari, Annada			
		Maize- Hishell, P 3785, Bio 9681,			
		900M, Seedtech 2324, Pro 4640,			
		DMH 117, Pro Agro- 4212 PEM 1,			
		VH -9,17HQPM-1 NMH-731NK-			
		30, NMH-803KMH-3426	-		
		Rice and rabi Hoursegram/			
		Niger			
		Mung(pusa vishal, Hum1)	Weeding and protection		
	AC 11 1		against insect and pests	~	~
	Midland	Rice- MTU1010, IR64, IR 36,	• Weeding and	•Compartmental bunding,	• Linkage with
	Inceptisol	Indira Barani Dhan 1,	protection against	Ridge and Furrows,	micro irrigation
	(Matasi-Sandy	Chandrahasni, Samleshwari	insect and pests	Tied ridges to conserve	scheme of
	loam) Shallow Lowland	Rice-Mahamaya, s	• Avoid top dressing of	rainwater during kharif	Agriculture
	Alfisols	swarna, Sampda, IGKV R1, IGKV	urea	for regular sowing of rabi crops	Department for supply of drip
	(Dorsa-clay loam)	R2, Bamleshwari, Indira Sona	• Supplemental irrigation	1	supply of unp system and
	(Dorsa-ciay loani) or	Rice- Lathyrus/ linseed/gram/	from water harvesting	• Sowing of rabi crops	sprinklers
	Vertisols	fieldpea	structures using micro	adopting zero tillage technique	sprinklers
	(Kanhar-clayey)	mung (relay)	irrigation i.e. drip and sprinklers	technique	
	(Rumar engey)	Rice-lentil/ gram/ linseed/ safflower	sprinklers		
	Bahra lowland	Rice-Swarna, Swarna sub1,	-		
	Vertisols	Jaldubi, Bamleshwari, MTU 1001,			
	(Kanhar-clayey)	IGKV R 1244			
	(Italiliai olajoj)	Rice- Lathyrus/ linseed/gram/			
		mung (relay)			
		Rice- wheat/ mung			
Mid season	Unbunded upland	Mungbean (Pusa Vishal,HUM 1,	Weeding and protection	Mulching	• Linkage with

Condition	Major Farming	Normal Crop /	Sugg	gested Contingency measure	S
	situation ^a	Cropping	Crop management	Soil nutrient & moisture	Remarks on
		system ^b		conservation measues ^d	Implementation ^e
drought (long dry	Bharri	HUM-16, BM 4, HUM 12) /	against insect and pests	Inter tilling	Agriculture
spell, consecutive		Urdbean (TU 94-2, TAU-2, KU 96-			Department
2 weeks rainless		3, Indira Urd 1)			/RKVY for supply
(>2.5 mm)		Pigeonpea (ICPL87, JKM189,			of interculture
period): At		UPAS 120, BDN 2, Rajivlochan)			implements for
flowering/ fruiting		Mung /Urid and rabi Hoursegram/			interculture in
stage		Niger			upland crops
		Groundnut /Sesamum			
	Bundeded upland	Rice- Purnima, Danteshwari,			
	Bharri	Samleshwari, Annada			
		Maize- Hishell, P 3785, Bio 9681,			
		900M, Seedtech 2324, Pro 4640,			
		DMH 117, Pro Agro- 4212 PEM 1,			
		VH -9,17HQPM-1 NMH-731NK-			
		30, NMH-803KMH-3426			
		Rice and rabi Hoursegram/			
		Niger			
		Mung(pusa vishal, Hum1)			
	Midland	Rice- MTU1010, IR64, IR 36,	•Weeding and protection	•Compartmental bunding,	 Linkage with
	Inceptisol	Indira Barani Dhan 1,	against insect and pests	Ridge and Furrows,	micro irrigation
	(Matasi-Sandy	Chandrahasni, Samleshwari	• Supplemental	Tied ridges to conserve	scheme of
	loam)		irrigation from water	rainwater during kharif	Agriculture
	Shallow Lowland	Rice-Mahamaya, s	harvesting structures	for regular sowing of	Department for
	Alfisols	swarna, Sampda, IGKV R1, IGKV	using micro irrigation	rabi crops	supply of drip
	(Dorsa-clay loam)	R2, Bamleshwari, Indira Sona	i.e. drip and sprinklers	•Increase 25percent seed	system and
	or	Rice- Lathyrus/ linseed/gram/		rate of rabi crops.	sprinklers
	Vertisols	fieldpea		•Seed rate of wheat	
	(Kanhar-clayey)	mung (relay)		increased from one-and	
		Rice-lentil/ gram/ linseed/ safflower		half to two times	
	Bahra lowland	Rice- Swarna, Swarna sub1,		• Sowing of rabi crops	
	Vertisols	Jaldubi, Bamleshwari, MTU 1001,		adopting zero tillage	
	(Kanhar-clayey)	IGKV R 1244		technique	
		Rice- Lathyrus/ linseed/gram/			
		mung (relay)			
		Rice- wheat/ mung			
Terminal drought	Unbunded upland	Mungbean (Pusa Vishal, HUM 1,	Harvest mature plants	Mulching	 Linkage with

Condition	Major Farming	Normal Crop /	Suggested Contingency measures			
	situation ^a	Cropping	Crop management	Soil nutrient & moisture	Remarks on	
		system ^b		conservation measues ^d	Implementation ^e	
(Early withdrawal	Bharri	HUM-16, BM 4, HUM 12) /	Thin out plant	Inter tilling	Agriculture	
of monsoon)		Urdbean (TU 94-2, TAU-2, KU 96-	population		Department	
		3, Indira Urd 1)			/RKVY for supply	
		Pigeonpea (ICPL87, JKM189,			of interculture	
		UPAS 120, BDN 2, Rajivlochan)			implements for	
		Mung /Urid and rabi Hoursegram/			interculture in	
		Niger			upland crops	
		Groundnut /Sesamum				
	Bundeded upland	Rice- Purnima, Danteshwari,	Life saving irrigation if			
	Bharri	Samleshwari, Annada	available			
		Maize- Hishell, P 3785, Bio 9681,				
		900M, Seedtech 2324, Pro 4640,				
		DMH 117, Pro Agro- 4212 PEM 1,				
		VH -9,17HQPM-1 NMH-731NK-				
		30, NMH-803KMH-3426	-			
		Rice and rabi Hoursegram/				
		Niger		4		
		Mung(pusa vishal, Hum1)	Harvest mature plants Thin out plant			
			population			
			population			
	Midland	Rice- MTU1010, IR64, IR 36,	•Weeding and protection	•Compartmental bunding,	• Linkage with	
	Inceptisol	Indira Barani Dhan 1,	against insect and pests	Ridge and Furrows,	micro irrigation	
	(Matasi-Sandy	Chandrahasni, Samleshwari	Supplemental	Tied ridges to conserve	scheme of	
	loam)		irrigation from water	rainwater during kharif	Agriculture	
	Shallow Lowland	Rice-Mahamaya, s	harvesting structures	for regular sowing of	Department for	
	Alfisols	swarna, Sampda, IGKV R1, IGKV	using micro irrigation	rabi crops	supply of drip	
	(Dorsa-clay loam)	R2, Bamleshwari, Indira Sona	i.e. drip and sprinklers	• Seed rate of wheat	system and	
	to	Rice- Lathyrus/ linseed/gram/		increased from one-and	sprinklers	
	Vertisols	fieldpea		half to two times		
	(Kanhar-clayey)	mung (relay)	-	• Sowing of rabi crops		
	Dahas la 1 al	Rice-lentil/ gram/ linseed/ safflower	4	adopting zero tillage		
	Bahra lowland Vertisols	Rice- Swarna, Swarna sub1,		technique		
	(Kanhar-clayey)	Jaldubi, Bamleshwari, MTU 1001, IGKV R 1244				
	(Kainai-Ciayey)	Rice- Lathyrus/ linseed/gram/	-			
		Kice- Lauryrus/ miseeu/gram/				

Condition	Major Farming	Normal Crop /	Suggested Contingency measures			
	situation ^a	Cropping	Crop management Soil nutrient & moisture Remarks on			
		system ^b	conservation measues ^d Implementation ^e			
		mung (relay)				
		Rice- wheat/ mung				

2.1.2 Drought - Irrigated situation

Condition	Major Farming	Normal Crop /	Sugg	gested Contingency measure	25
	situation ^a	Cropping	Change in	Agronomic measures ⁱ	Remarks on
		system ^b	crop/cropping system ^h		Implementation ^e
Delayed release of water in canals due to low rainfall	Unbunded upland Bharri	Mungbean (Pusa Vishal,HUM 1, HUM-16, BM 4, HUM 12) / Urdbean (TU 94-2, TAU-2, KU 96- 3, Indira Urd 1) Pigeonpea (ICPL87, JKM189, UPAS 120, BDN 2, Rajivlochan) Mung /Urid and rabi Hoursegram/ Niger Groundnut /Sesamum	No change No change No change		• Linkage with RKVY / NFSM / IWMP/ micro irrigation schemes for construction of shallow tube wells and WHS including farm ponds for
	Bundeded upland Bharri	Rice- Purnima, Danteshwari, Samleshwari, Annada Rice and rabi Hoursegram/ Niger	Mung(pusa vishal, pragya, Hum1, pairimung) Pigeonpea(ICPL87, Rajivlochan. Maruti)		 conjunctive use of water in canal command Compartmental bunding, Ridge
	Midland Inceptisol (Matasi-Sandy loam) Shallow Lowland Alfisols (Dorsa-clay loam) or Vertisols (Kanhar-clayey) Bahra lowland Vertisols	Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrahasni, Samleshwari Rice-Mahamaya, s swarna, Sampda, IGKV R1, IGKV R2, Bamleshwari, Indira Sona Rice- Lathyrus/ linseed/gram/ mung (relay) Rice- lentil/gram/linseed/ safflower/ fieldpea Rice- Swarna, Swarna sub1, Jaldubi, Bamleshwari, MTU 1001,		 Direct seeding of rice preferably in line In case of failure of crop or poor crop stand then Sowing of sprouted seed (<i>lai-chaupa</i>)adopting lehi method of rice cultivation If seedlings raised for transplanting then it should be done with 	and Furrows, Tied ridges to conserve rainwater during kharif for regular sowing of rabi crops

Condition	Major Farming	Normal Crop /	Suggested Contingency measures			
	situation ^a	Cropping	Change in	Agronomic measures ⁱ	Remarks on	
		system ^b	crop/cropping system ^h		Implementation ^e	
	(Kanhar-clayey)	IGKV R 1244		rainwater or from other sources of water		
		Rice- Lathyrus/ linseed/gram/		• Weed control by		
		mung (relay)		herbicide and avoid		
		Rice-wheat/ mung		biasi operation		
Limited release of water in canals due to low rainfall	Unbunded upland Bharri	Mungbean (Pusa Vishal,HUM 1, HUM-16, BM 4, HUM 12) / Urdbean (TU 94-2, TAU-2, KU 96- 3, Indira Urd 1) Pigeonpea (ICPL87, JKM189, UPAS 120, BDN 2, Rajivlochan)	No change		• Linkage with RKVY / NFSM / IWMP/ micro irrigation schemes for construction of shallow tube wells	
		Mung /Urid and rabi Hoursegram/ Niger	No change		and WHS including farm	
		Groundnut /Sesamum	No change		ponds for	
	Bundeded upland Bharri	Rice- Purnima, Danteshwari, Samleshwari, Annada Rice and rabi Hoursegram/ Niger	Mung(pusa vishal, pragya, Hum1, pairimung) Pigeonpea(ICPL87,		conjunctive use of water in canal commandLinkage with	
	Midland Inceptisol (Matasi-Sandy loam) Shallow Lowland Alfisols (Dorsa-clay loam) or Vertisols (Kanhar-clayey)	Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrahasni, Samleshwari Rice-Mahamaya, s swarna, Sampda, IGKV R1, IGKV R2, Bamleshwari, Indira Sona Rice- Lathyrus/ linseed/gram/ mung (relay) Rice- lentil/gram/linseed/ safflower/ fieldpea	Rajivlochan. Maruti) Rice- Indira barani dhan- 1, Samleshwari, Danteshwari, purnima Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrahasni, Samleshwari	 Direct seeding of rice preferably dry seeding in line In case of failure of crop or poor crop stand then Sowing of sprouted seed (<i>lai- chaupa</i>)adopting lehi method of rice cultivation Avoid transplanting of rice 	RKVY / NFSM / IWMP/ micro irrigation schemes for supply of micro irrigation systems	
	Bahra lowland Vertisols (Kanhar-clayey)	Rice- Swarna, Swarna sub1, Jaldubi, Bamleshwari, MTU 1001, IGKV R 1244 Rice- Lathyrus/ linseed/gram/ mung (relay)	Mahamaya, swarna, Sampda, IGKV R1, IGKV R2, IGKV R 1244	 Weed control by herbicide and avoid biasi operation 		

Condition	Major Farming	Normal Crop /	Suggested Contingency measures			
	situation ^a	Cropping	Change in	Agronomic measures ⁱ	Remarks on	
		system ^b	crop/cropping system ^h		Implementation ^e	
		Rice-wheat/ mung				
Non release of water in canals under delayed onset of monsoon in catchment	Unbunded upland Bharri Bundeded upland	Mungbean (Pusa Vishal,HUM 1, HUM-16, BM 4, HUM 12) / Urdbean (TU 94-2, TAU-2, KU 96- 3, Indira Urd 1) Pigeonpea (ICPL87, JKM189, UPAS 120, BDN 2, Rajivlochan) Mung /Urid and rabi Hoursegram/ Niger Groundnut /Sesamum Rice Purnima, Danteshwari,	No change No change No change Mung(pusa vishal,		• Linkage with RKVY / NFSM / IWMP/ micro irrigation schemes for construction of shallow tube wells and WHS including farm ponds for conjunctive use of	
	Bharri	Samleshwari, Annada Rice and rabi Hoursegram/ Niger	pragya, Hum1, pairimung) Pigeonpea(ICPL87, Rajivlochan. Maruti)		water in canal command • Linkage with RKVY / NFSM /	
	Midland Inceptisol (Matasi-Sandy loam)	Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrahasni, Samleshwari	Rice- Indira barani dhan- 1, Samleshwari, Danteshwari, purnima	 Direct seeding of rice preferably dry seeding in line Avoid transplanting of 	IWMP/ micro irrigation schemes for supply of micro irrigation	
	Shallow Lowland Alfisols (Dorsa-clay loam) or	Rice-Mahamaya, s swarna, Sampda, IGKV R1, IGKV R2, Bamleshwari, Indira Sona	Rice- IR64, Chandrahasni Bambleshwari, karma masuri	 rice Weed control by herbicide and avoid biasi operation 	systems	
	Vertisols (Kanhar-clayey)	Rice- Lathyrus/ linseed/gram/ mung (relay) Rice- lentil/gram/linseed/ safflower/ fieldpea	-	 Supplemental irrigation from WHS using drip and sprinklers 		
	Bahra lowland Vertisols (Kanhar-clayey)	Rice- Swarna, Swarna sub1, Jaldubi, Bamleshwari, MTU 1001, IGKV R 1244 Rice- Lathyrus/ linseed/gram/ mung (relay) Rice-wheat/ mung	Rice- Mahamaya, swarna sub1, Jaldubi, masuri	 Adopt zero tillage technique for sowing of rabi crops 		
Lack of inflows into tanks due to insufficient	Unbunded upland Bharri	Mungbean (Pusa Vishal,HUM 1, HUM-16, BM 4, HUM 12) / Urdbean (TU 94-2, TAU-2, KU 96-	No change		• Linkage with RKVY / NFSM /	

Condition	Major Farming	Normal Crop /	Sugg	gested Contingency measure	S
	situation ^a	Cropping system ^b	Change in crop/cropping system ^h	Agronomic measures ⁱ	Remarks on Implementation ^e
/delayed onset of monsoon		3, Indira Urd 1) Pigeonpea (ICPL87, JKM189, UPAS 120, BDN 2, Rajivlochan) Mung /Urid and rabi Hoursegram/ Niger	No change		IWMP/ micro irrigation schemes for construction of shallow tube wells and WHS
	Bundeded upland Bharri	Rice- Purnima, Danteshwari, Samleshwari, Annada Rice and rabi Hoursegram/ Niger	Mung(pusa vishal, pragya, Hum1, pairimung) Pigeonpea(ICPL87, Rajivlochan. Maruti)		including farm ponds for conjunctive use of water in canal command
	Midland Inceptisol (Matasi-Sandy loam)	Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrahasni, Samleshwari	Rice- Indira barani dhan- 1, Samleshwari, Danteshwari, purnima	 Direct seeding of rice preferably dry seeding in line Avoid transplanting of 	• Linkage with RKVY / NFSM / IWMP/ micro irrigation schemes
	Shallow Lowland Alfisols (Dorsa-clay loam) or	Rice-Mahamaya, s swarna, Sampda, IGKV R1, IGKV R2, Bamleshwari, Indira Sona	Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrahasni, Samleshwari	 rice Weed control by herbicide and avoid biasi operation 	for supply of micro irrigation systems
	Vertisols (Kanhar-clayey) Bahra lowland	Rice- Lathyrus/ linseed/gram/ mung (relay) Rice- Swarna, Swarna sub1,	Rice- Mahamaya,	• Supplemental irrigation from WHS using drip and	
	Vertisols (Kanhar-clayey)	Jaldubi, Bamleshwari, MTU 1001, IGKV R 1244 Rice- Lathyrus/ linseed/gram/ mung (relay)	swarna, Sampda, IGKV R1, IGKV R2, IGKV R 1244	 sprinklers Adopt zero tillage technique for sowing of rabi crops 	
Insufficient groundwater recharge due to low rainfall	Unbunded upland Bharri	Mungbean (Pusa Vishal,HUM 1, HUM-16, BM 4, HUM 12) / Urdbean (TU 94-2, TAU-2, KU 96- 3, Indira Urd 1) Pigeonpea (ICPL87, JKM189, UPAS 120, BDN 2, Rajivlochan)	No change		• Linkage with RKVY / NFSM / IWMP/ micro irrigation schemes for construction of shallow tube wells
	Mu Nij	Mung /Urid and rabi Hoursegram/ Niger Groundnut /Sesamum	No change No change		and WHS including farm
	Bundeded upland Bharri	Rice- Purnima, Danteshwari, Samleshwari, Annada	Pigeonpea(ICPL87, Rajivlochan. Maruti)		ponds for conjunctive use of water in canal

Condition	Major Farming	Normal Crop /	Suggested Contingency measures		
	situation ^a	Cropping	Change in	Agronomic measures ⁱ	Remarks on
		system ^b	crop/cropping system ^h		Implementation ^e
		Rice and rabi Hoursegram/			command
		Niger			 Linkage with
	Midland	Rice- MTU1010, IR64, IR 36,		• Direct seeding of rice	RKVY / NFSM /
	Inceptisol	Indira Barani Dhan 1,		preferably dry seeding	IWMP/ micro
	(Matasi-Sandy	Chandrahasni, Samleshwari		in line	irrigation schemes
	loam)			Avoid transplanting	for supply of
	Shallow Lowland	Rice-Mahamaya, s		• Weed control by	micro irrigation
	Alfisols	swarna, Sampda, IGKV R1, IGKV		herbicide and avoid	systems
	(Dorsa-clay loam)	R2, Bamleshwari, Indira Sona		biasi operation	
	or	Rice- Lathyrus/ linseed/gram/		Supplemental	
	Vertisols	mung (relay)		irrigation from WHS	
	(Kanhar-clayey)	Rice- lentil/gram/linseed/ safflower/		using drip and	
		fieldpea		sprinklers	
	Bahra lowland	Rice- Swarna, Swarna sub1,		-	
	Vertisols	Jaldubi, Bamleshwari, MTU 1001,			
	(Kanhar-clayey)	IGKV R 1244			
		Rice- Lathyrus/ linseed/gram/			
		mung (relay)			
		Rice-wheat/ mung/ potato			

2.2 Unusual rains (untimely, unseasonal etc.) (for both rainfed and irrigated situations)

Condition	Suggested contingency measure					
	Vegetative stage ^k	Flowering stage ¹	Crop maturity stage ^m	Post harvest ⁿ		
Continuous high rain	Continuous high rainfall in a short span leading to water logging or heavy rainfall coupled with high speed winds in a short span*					
Urid/ mung/ maize	Drain out excess water	Earthing up in maize	Picking of matured pods, Harvesting and drying of cobs	To cover produce with plastic sheet or shift produces to farm shed		
Groundnut/ sesamum/pigeon pea	Drain out excess water	Earthing in groundnut Drain out excess water	Drain out excess water, Harvesting and drying of plants	To cover produce with plastic sheet or shift produces to farm shed		
Rice	Drain excess water	Drain excess water	Drain excess water Harvest the crop and put on bunds	To cover produce with plastic sheet or shift produces to farm shed		
Rabi oilseed and pulses	Drain excess water	Drain excess water	Drain excess water Harvest the crop and put on bunds	To cover produce with plastic sheet or shift produces to farm shed		
Wheat	Surface drainage	Surface drainage	Surface drainage	To cover produce with plastic sheet or shift		

				produces to farm shed To supply tarpaulin to farmers through RKVY/NFSM
Horticulture				
Tomato/ brinjal	Surface drainage, earthing and fertilizer application after water drain out	Surface drainage, earthing and fertilizer application after water drain out	Surface drainage, picking up matured fruits	
Coriander	Surface drainage	Surface drainage	Surface drainage	To cover produce with plastic sheet or shift produces to farm shed To supply tarpaulin to farmers through RKVY/NFSM
Garlic/ Onion	Surface drainage	Surface drainage	Surface drainage	To cover produce with plastic sheet or shift produces to farm shed To supply tarpaulin to farmers through RKVY/NFSM
Outbreak of pests and diseases due to unseasonal rains				
Urid/ mung/ maize	Spraying of contact insecticide for control of caterpillar/ color rot	Spraying of contact insecticide for control of pest		
Groundnut/ sesamum/pigeon pea	Spraying of contact insecticide for control of caterpillar/ color rot	Spraying of contact insecticide for control of pest		
Rice	Spraying of insecticide for control of stem borer	Spraying of insecticide for control of pest like gundhibug		
Rabi oilseed and pulses	Spraying of insecticide for control of aphid	Spraying of insecticide for control of insect		
Wheat	Spraying of insecticide for control of stem borer			
Horticulture				
Tomato/ brinjal	Spraying of contact insecticide for control of caterpillar Stacking for protecting fungal diseases	Spraying of contact insecticide for control of caterpillar/ fruit borer Stacking for protecting fungal diseases	Harvest the fruit	
Coriander	Harvest the leaves	Harvest the leaves		
Garlic/ Onion				

Mango	-	Spray 0.2% wettable		
		sulphur for protection		
		against PM	Harvest at pre maturity stage	Unripe fruit may be used for pickles.
Citrus	Control citrus canker by	Control citrus canker by	Control citrus canker by Copper	
	Copper Oxy chloride	Copper Oxy chloride 0.5	Oxy chloride 0.5 % &	
	0.5 % & streptocycline	% & streptocycline 100	streptocycline 100 ppm,	
	100 ppm	ppm	collect mature fruits	

2.3 Floods

Condition	Suggested contingency measure ^o				
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest	
Transient water logging/ partial inundation ¹					
Urid/ mung/ maize	Surface drainage	Surface drainage	Surface drainage		
Groundnut/ sesamum/pigeon pea	Surface drainage	Surface drainage	Surface drainage		
Rice	Surface drainage	After draining apply urea	Drain excess water		
Rabi oilseed and pulses	Surface drainage	Surface drainage	Surface drainage		
Wheat	Surface drainage	Surface drainage	Surface drainage		
Horticulture					
Tomato/ brinjal	Surface drainage	Surface drainage	Surface drainage		
Coriander	Surface drainage	Surface drainage	Surface drainage		
Garlic/ Onion	Surface drainage	Surface drainage	Surface drainage		
Mango	Surface drainage	Surface drainage	Surface drainage		
Citrus	Surface drainage	Surface drainage	Surface drainage		
Continuous submergence for more than 2 day	s^2				
Urid/ mung/ maize	Surface drainage	Surface drainage	Surface drainage		
Groundnut/ sesamum/pigeon pea	Surface drainage	Surface drainage	Surface drainage		
Rice	Surface drainage	After draining apply urea	Drain excess water		
Rabi oilseed and pulses	Surface drainage	Surface drainage	Surface drainage		
Wheat	Surface drainage	Surface drainage	Surface drainage		
Horticulture					
Tomato/ brinjal	Surface drainage	Surface drainage	Surface drainage		
Coriander	Surface drainage	Surface drainage	Surface drainage		
Garlic/ Onion	Surface drainage	Surface drainage	Surface drainage		
Mango	Surface drainage	Surface drainage	Surface drainage		
Citrus	Surface drainage	Surface drainage	Surface drainage		

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