State: CHHATTISGARH

Agriculture Contingency Plan for District: Mahasamund

1.0 District Agriculture profile				
1.1	**Agro-Climatic/Ecological Zone**			
	Agro Ecological Sub Region (ICAR)	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, Raigarh, Janjgir-champa, Kabirdham, Rajnandgaon, Durg, Dhamtari, Mahasamund, Kanker (11 districts)		
	Geographic coordinates of district headquarters	Latitude	Longitude	Altitude
		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.)		

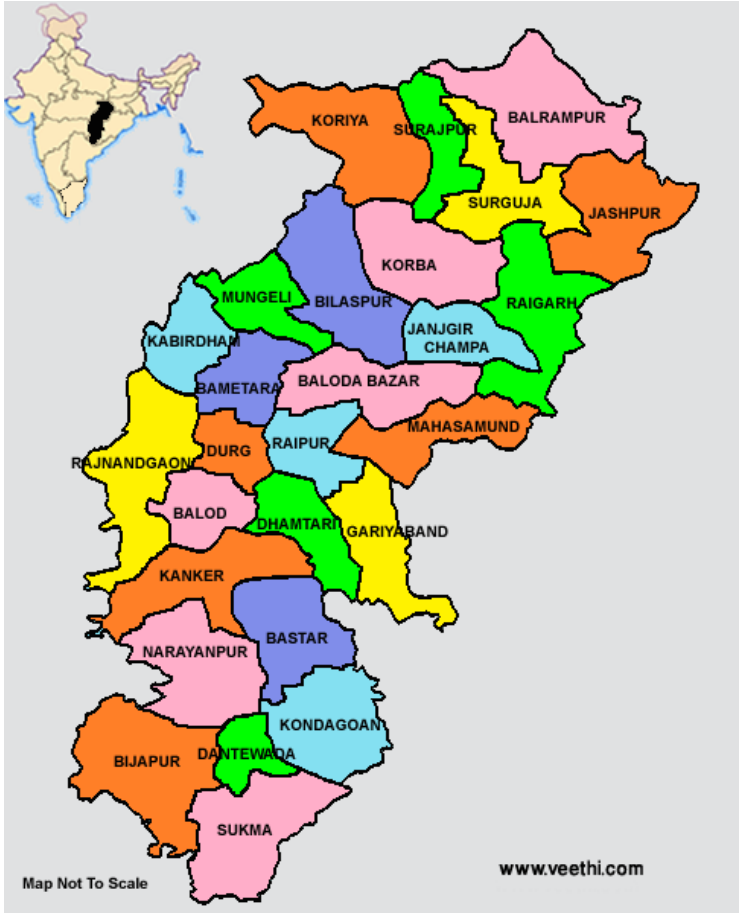
District	**Total Geographic Area (000' ha.)**	**Sole Cropped Area (000' ha.)**	**Double Cropped Area (000' ha.)**	**Total Irrigated Area (000' ha.)**	**Irrigated percentage with total cropped area**	**Total Cropped Area (000' ha.)**
Mahasamund	496.3	267.6	34.4	108.2	36%	302.1

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	3rd week of June	4th 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

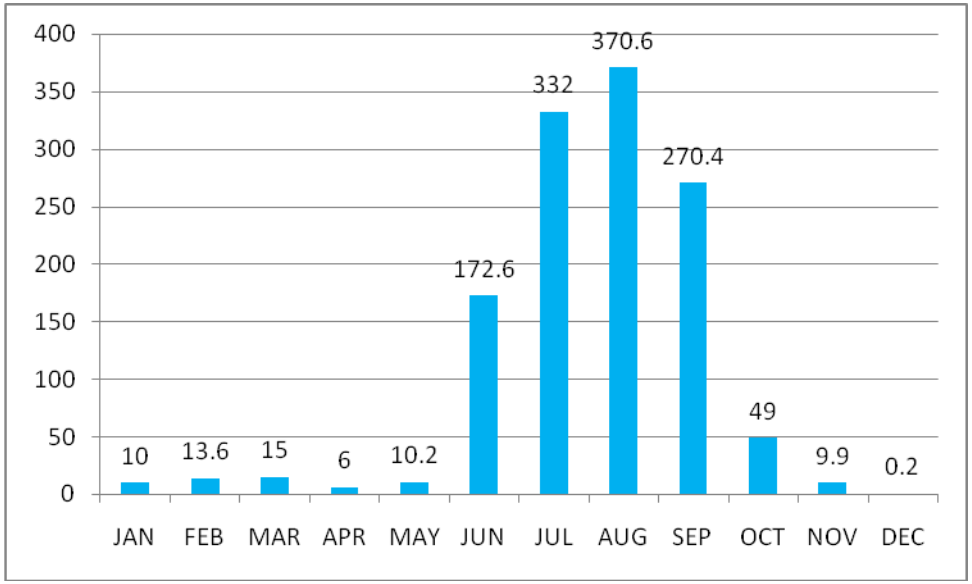
Annexure I

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 1st wk)	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		Normal	
				No change		Normal	
		Mung	Hoursegram/ Niger	No change		Normal	
		Urid	Hoursegram/ Niger	No change		Normal	
		Groundnut		No change		Normal	
		Sesamum		No change		Normal	
		Maize- Hishell, P 3785, Bio 9681, 900M, Seedtech		No change		Normal	

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**		
		2324, Pro 4640, DMH 117, Pro Agro- 4212 PEM 1 , VH - 9,17HQPM-1 NMH-731NK-30, NMH-803KMH-3426					
	Bundeded upland Bharri	Rice-Purnima, Danteshwari, Samleshwari, Annada		No change		Normal	
		Rice	Hoursegram	No change		Normal	
		Rice	Niger	No change		Normal	
	Midland Inceptisol (Matasi-Sandy loam)	Rice-MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrahasni, Samleshwari		No change		1. Direct dry seeding in line technique suggested for better crop yield and double cropping 2. Line sowing to avoid mortality of germinating seed in case drought follows after scanty rainfall events 3. Promote application of post emergence herbicide for timely weed management and avoiding biasi operation	Linkage with RKVY for supply of tractor and animal drawn seed drill for line sowing
				No change			
	Shallow Lowland Alfisols (Dorsa-clayloam or Vertisols (Kanhar-clayey)	Rice-Mahamaya, s swarna, Sampda, IGKV R1, IGKV R2, Bamleshwari, Indira Sona		No change			
		Rice	Lathyrus/ linseed/gram/	No change			

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		
			mung (relay)				
		Rice	Lentil	No change			
		Rice	Gram	No change			
		Rice	Linseed	No change			
		Rice	Safflower	No change			
	Bahra lowland Vertisols (Kanhar-clayey)	Rice- Swarna, Swarna sub1, Jaldubi, Bamleshwari, MTU 1001, IGKV R 1244	Fallow	No change			
		Rice	Lathyrus/ linseed/gram/ mung (relay)	No change			
		Rice	Wheat	No change			
		Rice	Mung	No change			
Early season drought: **Delay by 4 weeks (July 3rd wk)**	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)				25 % higher seed rate	
						-do-	

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		
		Mung	Hoursegram/ Niger			-do-	
		Urid	Hoursegram/ Niger			-do-	
		Groundnut		Erect variety GG-5/G-20		-do-	
		Sesamum				-do-	
	Bundeded upland Bharri	Rice - Purnima, Danteshwari, 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- Tulsi, Indira barani dhan-1, Annda, Anjali			
		Rice	Hoursegram	Groundnut			
		Rice	Niger	Sesamum/ soybean(Indira soy9, JS93-05, JS335, JS80-21)			
	Midland Inceptisol (Matasi-Sandy loam)	Rice- MTU1010, IR64, IR 36,		Rice Purnima, Danteshwari, Samleshwari,		• Direct dry seeding in line technique suggested for	• Linkage with RKVY for

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		
		Indira Barani Dhan 1, Chandrahasni, Samleshwari		Annada Indira barani dhan-1		better crop yield and double cropping • Line sowing to avoid mortality of germinating seed in case drought follows after scanty rainfall events • Promote application of post emergence herbicide for timely weed management and avoiding biasi operation	supply of tractor and animal drawn seed drill for line sowing • Linkage with MNREGA for WC measures: Digging of shallow dug wells and renovation of existing WHSs
	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			
		Rice	Lathyrus/ linseed/gram/ mung (relay)	Rice- Chandrahasni IR64, Mahamaya, Bambleshwari, karma masuri	Coriander (leaf), toria, Lathyrus/ linseed/ mung (relay)		
		Rice	Lentil		Lentil		
		Rice	Gram		Gram		
		Rice	Linseed		Linseed		
		Rice	Safflower		Coriander (leaf), toria		
	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)		Coriander (leaf), toria, Lathyrus/ linseed/ mung (relay)		
			Wheat		Wheat		
			Mung		Mung		

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 6 weeks (Aug. 1st wk)**	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)		Hoursegram/ Niger		25 % higher seed rate	
				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-	
	Bundeded upland Bharri	Rice- Purnima, Danteshwari, Samleshwari, Annada		Rice- Purnima, Tulsi, Indira barani dhan-1, Aditya, Anjali		Sowing of sprouted seed (*lai-chaupa*)adopting lehi method of rice cultivation	
		Rice	Horsegram	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 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		
				Groundnut		-do-	
	Midland Inceptisol (Matasi-Sandy loam)	Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrahasni, Samleshwari		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 • Sowing of sprouted seed (*lai-chaupa*)adopting lehi method of rice cultivation • Line sowing to avoid mortality of germinating seed in case drought follows after scanty rainfall events • 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 may be increased from one- and half to two times • Sowing of rabi crops adopting zero tillage technique	• Linkage with RKVY for supply of tractor and animal drawn seed drill for line sowing • Linkage with MNREGA for WC measures: Digging of shallow dug wells and renovation of existing WHSs • Utilize harvested rain water of WHS in crop production by adopting drip system or sprinklers that may be converged from micro irrigation scheme of Agriculture Department
	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			
		Rice	Lathyrus/ linseed/gram/ mung (relay)	Rice- IR64, Chandrahasni Bambleshwari, karma masuri	Coriander (leaf), toria, linseed/ mung (relay)		
		Rice	Lentil		Lentil		
		Rice	Gram		Gram		
		Rice	Linseed		Linseed		
		Rice	Safflower		Coriander (leaf), toria		
	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)		Coriander (leaf), toria, Lathyrus/ linseed/		

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**		
					mung (relay)		
			Wheat		Wheat		
			Mung		Mung		
Early season drought: **Delay by 8 weeks (Aug. 3rd wk)**	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)			Hoursegram/ Niger	Sowing in line or broadcasting in September	
					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 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		
		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	Hoursegram		Hoursegram	Sowing in line or broadcasting in September	
		Rice	Niger		Niger/mung	Sowing in line or 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 (*lai-chaupa*)adopting lehi method of rice cultivation • 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 increased from one-and	• Linkage with RKVY for supply of tractor and animal drawn seed drill for line sowing • Linkage with MNREGA for WC measures: Digging of shallow dug wells and renovation of existing WHSs • Utilize
	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			
		Rice	Lathyrus/ linseed/gram/	Rice- IR64, Chandrahasni			

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		
			mung (relay)	Bambleshwari, karma masuri		half to two times • Sowing of rabi crops adopting zero tillage technique	harvested rain water of WHS in crop production by adopting drip system or sprinklers that may be converged from micro irrigation scheme of Agriculture Department
		Rice	Lentil		Lentil		
		Rice	Gram		Gram		
		Rice	Linseed		Linseed		
		Rice	Safflower		Fieldpea/ Coriander (leaf)/ toria		
	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 situation[a]	Normal Crop / Cropping system[b]	Suggested Contingency measures		
			Crop management	Soil nutrient & moisture conservation measues[d]	Remarks on Implementation[e]
Normal onset followed by 15-20 days dry spell after sowing leading to poor	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,	▪ Gap filling ▪ Resowing in line when very poor population	• Inter tilling for soil mulch • Mulching with paddy straw or use plastic	• Linkage with RKVY / NFSM / state seed corporation for

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

Condition	Major Farming situation[a]	**Normal Crop / Cropping system[b]**	**Suggested Contingency measures**		
			Crop management	**Soil nutrient & moisture conservation measues[d]**	**Remarks on Implementation[e]**
consecutive 2 weeks rainless (>2.5 mm) period): **At vegetative stage**		Urdbean (TU 94-2, TAU-2, KU 96-3, Indira Urd 1) Pigeonpea (ICPL87, JKM189, UPAS 120, BDN 2, Rajivlochan)		mulch • Mulching with paddy straw or use plastic mulch or other locally available material	Agriculture Department /RKVY for supply of interculture implements for interculture in upland crops
		Mung /Urid and rabi Hoursegram/ Niger	Weeding and protection against sucking pests		
		Groundnut /Sesamum	Avoid top dressing of urea		
	Bundeded upland Bharri	Rice- Purnima, Danteshwari, 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 against insect and pests		
	Midland Inceptisol (Matasi-Sandy loam)	Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrahasni, Samleshwari	• Weeding and protection against insect and pests • Avoid top dressing of urea • Supplemental irrigation from water harvesting structures using micro irrigation i.e. drip and sprinklers	• Compartmental bunding, Ridge and Furrows, Tied ridges to conserve rainwater during kharif for regular sowing of rabi crops • Sowing of rabi crops adopting zero tillage technique	• Linkage with micro irrigation scheme of Agriculture Department for supply of drip system and sprinklers
	Shallow Lowland Alfisols (Dorsa-clay loam) or Vertisols (Kanhar-clayey)	Rice-Mahamaya, s swarna, Sampda, IGKV R1, IGKV R2, Bamleshwari, Indira Sona			
		Rice- Lathyrus/ linseed/gram/ fieldpea mung (relay)			
		Rice-lentil/ gram/ linseed/ safflower			
	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			
Mid season	Unbunded upland	Mungbean (Pusa Vishal,HUM 1,	Weeding and protection	Mulching	• Linkage with

Condition	Major Farming situation[a]	Normal Crop / Cropping system[b]	Suggested Contingency measures		
			Crop management	Soil nutrient & moisture conservation measues[d]	Remarks on Implementation[e]
drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period): At flowering/ fruiting stage	Bharri	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)	against insect and pests	Inter tilling	Agriculture Department /RKVY for supply of interculture implements for interculture in upland crops
		Mung /Urid and rabi Hoursegram/ Niger			
		Groundnut /Sesamum			
	Bundeded upland Bharri	Rice- Purnima, Danteshwari, 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 Inceptisol (Matasi-Sandy loam)	Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrahasni, Samleshwari	• Weeding and protection against insect and pests • Supplemental irrigation from water harvesting structures using micro irrigation i.e. drip and sprinklers	• Compartmental bunding, Ridge and Furrows, Tied ridges to conserve rainwater during kharif for regular sowing of rabi crops • Increase 25percent seed rate of rabi crops. • Seed rate of wheat increased from one-and half to two times • Sowing of rabi crops adopting zero tillage technique	• Linkage with micro irrigation scheme of Agriculture Department for supply of drip system and sprinklers
	Shallow Lowland Alfisols (Dorsa-clay loam) or Vertisols (Kanhar-clayey)	Rice-Mahamaya, s swarna, Sampda, IGKV R1, IGKV R2, Bamleshwari, Indira Sona			
		Rice- Lathyrus/ linseed/gram/ fieldpea mung (relay)			
		Rice-lentil/ gram/ linseed/ safflower			
	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			
Terminal drought	Unbunded upland	Mungbean (Pusa Vishal,HUM 1,	Harvest mature plants	Mulching	• Linkage with

Condition	Major Farming situation[a]	**Normal Crop / Cropping system[b]**	**Suggested Contingency measures**		
			Crop management	**Soil nutrient & moisture conservation measues[d]**	**Remarks on Implementation[e]**
(Early withdrawal of monsoon)	Bharri	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)	Thin out plant population	Inter tilling	Agriculture Department /RKVY for supply of interculture implements for interculture in upland crops
		Mung /Urid and rabi Hoursegram/ Niger			
		Groundnut /Sesamum			
	Bundeded upland Bharri	Rice- Purnima, Danteshwari, 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	Life saving irrigation if available		
		Rice and rabi Hoursegram/ Niger			
		Mung(pusa vishal, Hum1)	Harvest mature plants Thin out plant population		
	Midland Inceptisol (Matasi-Sandy loam)	Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrahasni, Samleshwari	• Weeding and protection against insect and pests • Supplemental irrigation from water harvesting structures using micro irrigation i.e. drip and sprinklers	• Compartmental bunding, Ridge and Furrows, Tied ridges to conserve rainwater during kharif for regular sowing of rabi crops • Seed rate of wheat increased from one-and half to two times • Sowing of rabi crops adopting zero tillage technique	• Linkage with micro irrigation scheme of Agriculture Department for supply of drip system and sprinklers
	Shallow Lowland Alfisols (Dorsa-clay loam) to Vertisols (Kanhar-clayey)	Rice-Mahamaya, s swarna, Sampda, IGKV R1, IGKV R2, Bamleshwari, Indira Sona			
		Rice- Lathyrus/ linseed/gram/ fieldpea mung (relay)			
		Rice-lentil/ gram/ linseed/ safflower			
	Bahra lowland Vertisols (Kanhar-clayey)	Rice- Swarna, Swarna sub1, Jaldubi, Bamleshwari, MTU 1001, IGKV R 1244			
		Rice- Lathyrus/ linseed/gram/			

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

2.1.2 Drought - Irrigated situation

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

Condition	Major Farming situation[a]	Normal Crop / Cropping system[b]	Suggested Contingency measures		
			Change in crop/cropping system[h]	Agronomic measures[i]	Remarks on Implementation[e]
	(Kanhar-clayey)	IGKV R 1244		rainwater or from other sources of water • Weed control by herbicide and avoid biasi operation	
		Rice- Lathyrus/ linseed/gram/ mung (relay)			
		Rice-wheat/ mung			
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 and WHS including farm ponds for conjunctive use of water in canal command • Linkage with RKVY / NFSM / IWMP/ micro irrigation schemes for supply of micro irrigation systems
		Mung /Urid and rabi Hoursegram/ Niger	No change		
		Groundnut /Sesamum	No change		
	Bundeded upland Bharri	Rice- Purnima, Danteshwari, Samleshwari, Annada	Mung(pusa vishal, pragya, Hum1, pairimung) Pigeonpea(ICPL87, Rajivlochan. Maruti)		
		Rice and rabi Hoursegram/ Niger			
	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 • In case of failure of crop or poor crop stand then Sowing of sprouted seed (*lai-chaupa*)adopting lehi method of rice cultivation • Avoid transplanting of rice • Weed control by herbicide and avoid biasi operation	
	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		
		Rice- Lathyrus/ linseed/gram/ mung (relay)			
		Rice- lentil/gram/linseed/ safflower/ fieldpea			
	Bahra lowland Vertisols (Kanhar-clayey)	Rice- Swarna, Swarna sub1, Jaldubi, Bamleshwari, MTU 1001, IGKV R 1244	Mahamaya, swarna, Sampda, IGKV R1, IGKV R2, IGKV R 1244		
		Rice- Lathyrus/ linseed/gram/ mung (relay)			

Condition	Major Farming situation[a]	**Normal Crop / Cropping system[b]**	**Suggested Contingency measures**		
			Change in crop/cropping system[h]	**Agronomic measures[i]**	**Remarks on Implementation[e]**
		Rice-wheat/ mung			
Non release of water in canals under delayed onset of monsoon in catchment	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 and WHS including farm ponds for conjunctive use of water in canal command • Linkage with RKVY / NFSM / IWMP/ micro irrigation schemes for supply of micro irrigation systems
		Mung /Urid and rabi Hoursegram/ Niger	No change		
		Groundnut /Sesamum	No change		
	Bundeded upland Bharri	Rice Purnima, Danteshwari, Samleshwari, Annada	Mung(pusa vishal, pragya, Hum1, pairimung) Pigeonpea(ICPL87, Rajivlochan. Maruti)		
		Rice and rabi Hoursegram/ Niger			
	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 rice • Weed control by herbicide and avoid biasi operation • Supplemental irrigation from WHS using drip and sprinklers • Adopt zero tillage technique for sowing of rabi crops	
	Shallow Lowland Alfisols (Dorsa-clay loam) or Vertisols (Kanhar-clayey)	Rice-Mahamaya, s swarna, Sampda, IGKV R1, IGKV R2, Bamleshwari, Indira Sona	Rice- IR64, Chandrahasni Bambleshwari, karma masuri		
		Rice- Lathyrus/ linseed/gram/ mung (relay)			
		Rice- lentil/gram/linseed/ safflower/ fieldpea			
	Bahra lowland Vertisols (Kanhar-clayey)	Rice- Swarna, Swarna sub1, Jaldubi, Bamleshwari, MTU 1001, IGKV R 1244	Rice- Mahamaya, swarna sub1, Jaldubi, masuri		
		Rice- Lathyrus/ linseed/gram/ mung (relay)			
		Rice-wheat/ mung			
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 situation[a]	**Normal Crop / Cropping system[b]**	**Suggested Contingency measures**		
			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)			IWMP/ micro irrigation schemes for construction of shallow tube wells and WHS including farm ponds for conjunctive use of water in canal command • Linkage with RKVY / NFSM / IWMP/ micro irrigation schemes for supply of micro irrigation systems
		Mung /Urid and rabi Hoursegram/ Niger	No change		
	Bundeded upland Bharri	Rice- Purnima, Danteshwari, Samleshwari, Annada	Mung(pusa vishal, pragya, Hum1, pairimung) Pigeonpea(ICPL87, Rajivlochan. Maruti)		
		Rice and rabi Hoursegram/ Niger			
	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 rice • Weed control by herbicide and avoid biasi operation • Supplemental irrigation from WHS using drip and sprinklers • Adopt zero tillage technique for sowing of rabi crops	
	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		
		Rice- Lathyrus/ linseed/gram/ mung (relay)			
	Bahra lowland Vertisols (Kanhar-clayey)	Rice- Swarna, Swarna sub1, Jaldubi, Bamleshwari, MTU 1001, IGKV R 1244	Rice- Mahamaya, swarna, Sampda, IGKV R1, IGKV R2, IGKV R 1244		
		Rice- Lathyrus/ linseed/gram/ mung (relay)			
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 and WHS including farm ponds for conjunctive use of water in canal
		Mung /Urid and rabi Hoursegram/ Niger	No change		
		Groundnut /Sesamum	No change		
	Bundeded upland Bharri	Rice- Purnima, Danteshwari, Samleshwari, Annada	Pigeonpea(ICPL87, Rajivlochan. Maruti)		

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

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

Condition	Suggested contingency measure			
	Vegetative stage[k]	Flowering stage[l]	Crop maturity stage[m]	Post harvest[n]
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 Copper Oxy chloride 0.5 % & streptocycline 100 ppm	Control citrus canker by Copper Oxy chloride 0.5 % & streptocycline 100 ppm	Control citrus canker by Copper Oxy chloride 0.5 % & streptocycline 100 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 days[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