

Agriculture Contingency Plan for District: Bemetara

State: CHHATTISGARH

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 region		
	Agro Climatic Zone (NARP)	Chhattisgarh plain zone		
	List all the districts falling under the NARP Zone* (*>50% area falling in the zone)	Raipur, Baloda bazaar, Gariyabandh, Bilaspur, Korba, Raigarh, Janjgir-champa, Kabirdham, Rajnandgaon, Durg, balod, bemetara, Dhamtari, Mahasamund, Korba (15 districts)		
	Geographic coordinates of district headquarters	Latitude	Longitude	Altitude
		21.70 N	81.53E	277 m
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	ZARS, Raipur		
	Mention the KVK located in the district with address	Krishi Vigyan Kendra, Kabirdham (C.G.)		
	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.)		

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):	923.0	47	17 June 25 th SMW, June	30 September 39 th SMW, September
	NE Monsoon(Oct-Dec):	66.4	4	Post monsoon (October-December)	-
	Winter (Jan- March)	18.2	4	Winter rains	-
	Summer (Apr-May)	20.4	3	-	-
	Annual	1027.9	58	-	-

Source: Agricultural Statistics, 2013, Commissioner of land records, Raipur, Govt. of Chhattisgarh

1.3	Land use pattern of the district (latest statistics)	Geographical area	Cultivable area	Forest area	Land under non-agricultural use	Permanent pastures	Cultivable wasteland	Land under Misc. tree crops and groves	Barren and uncultivable land	Current fallows	Other fallows
	Area ('000 ha)	285.5	342.4	0.04	24.9	23.3	-	0.01	0.01	2.5	24.0

Source: *Agricultural statistic Chhattisgarh 2013

1.4	Major Soils (common names like red sandy loam deep soils (etc.))*	Area ('000 ha)	Percent (%) of total
	1. Entisol (Bhata-gravely)	-	-
	2. Inceptisol (Matasi-Sandyloam)	-	-
	3. Alfisols (Dorsa-clayloam)	-	-
	4. Vertisols (Kanhari-clayey)	-	-
	5. Bharri	-	-
	Total	-	-
	Others (specify):	-	-

* mention colour, depth and texture (heavy, light, sandy, loamy, clayey etc) and give vernacular name, if any, in brackets (data source: Soil Resource Maps of NBSS & LUP) Source: Agricultural Statistics, 2013, Directorate of Agriculture, Govt. of Chhattisgarh

1.5	Agricultural land use	Area ('000 ha)	Cropping intensity %
	Net sown area	224.7	152
	Area sown more than once	117.7	
	Gross cropped area	342.4	

1.6	Irrigation	Area ('000 ha)
	Net irrigated area	71.6
	Gross irrigated area	126.0

Rainfed area	216.4		
Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
Canals	27	12.8	
Tanks	167	1.2	
Open wells	2013	0.1	
Bore wells	21218	108.7	
Lift irrigation schemes		-	
Micro-irrigation			
Other sources (please specify)		3.02	
Total Irrigated Area		125.9	
Pump sets	16877		
No. of Tractors			
Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	No. of blocks/ Tehsils	(%) area	Quality of water (specify the problem such as high levels of arsenic, fluoride, saline etc)
Over exploited	Nil		
Critical	Nil		
Semi- critical	Nil		
Safe	15	100	
Wastewater availability and use	Nil		
Ground water quality	Potable and suitable for irrigation as well		
*over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%			

Source: Directorate of Agriculture, Govt. of Chhattisgarh

Source: Agricultural Statistics, 2013, Commissioner of land records, Govt. of Chhattisgarh

1.7 Area under major field crops & horticulture (as per latest figures) (2013)

1.7	S.No.	Major field crops cultivated	Area ('000 ha)							
			<i>Kharif</i>			<i>Rabi</i>			Summer	Grand total
			Irrigated	Rainfed	Total	Irrigated	Rainfed	Total		
1	Rice	60.0	94.4	154.4	-	-	-	-	154.4	
2	Wheat	-	-	-	11.8	3.6	15.4	-	15.4	
3	Jowar	-	0.003	0.003	-	-	-	-	0.003	
4	Maize	-	0.01	0.01	-	-	-	-	0.01	
5	Millets	-	0.9	0.9	-	-	-	-	0.9	
6.	Total Cereals	-	-	155.4	-	-	15.4	-	170.8	
7.	Pigeonpea	-	3.141	3.141	-	-	-	-	3.1	
8.	Gram	-	-	-	-	-	86.7	-	86.7	
9.	GreenGram	-	0.1	0.1	-	-	-	-	0.1	
10.	BlackGram	-	0.4	0.4	-	-	-	-	0.4	
11.	HorseGram	-	0.002	0.002	-	-	-	-	0.002	
12.	Pea	-	-	-	-	0.4	0.4	-	0.4	
13.	Lentil	-	-	-	-	3.2	3.2	-	3.2	
14.	Lathyrus	-	-	-	-	29.2	29.2	-	29.2	
15.	Total Pulses	-	-	-	-	-	-	-	129.1	
16.	Rapeseed-mustard	-	-	-	-	0.2	0.2	-	0.2	
17.	Linseed	-	-	-	-	0.7	0.7	-	0.7	
18.	Groundnut	-	0.3	0.3	-	-	-	-	0.3	
19.	Seasamum	-	0.2	0.2	-	-	-	-	0.2	
20.	Soybean	-	29.3	29.3	-	-	-	-	29.3	
21.	Sunflower	-	-	-	-	0.2	0.2	-	0.2	
22.	Safflower	-	-	-	-	0.01	0.01	-	0.01	
23.	Total Oilseeds	-	-	-	-	-	-	-	30.2	
24.	Vegetables	-	-	-	-	-	-	-	6.9	
25.	Sugarcane	-	-	-	-	-	-	-	2.3	
26	All Crops	-	-	-	-	-	-	-	-	

Source: Agricultural Statistics, 2013, Commissioner of land records, Govt. of Chhattisgarh

S.No.	Horticulture crops - Fruits	Area (' 000 ha)		
		Total	Irrigated	Rainfed
1	Mango	0.172		
2	Banana	0.111		
3	Papaya	0.132		
4	Gauva	0.173		
5	Lemon	-		
6	Water melon	-		
7	Musk melon	-		
8	Ber	-		
9	Aonla	-		
10	Others	0.108		
Total	All fruits	0.696		
	Horticulture crops - Vegetables	Total	Irrigated	Rainfed
1	Cauliflower	0.670		
2	Cabbage	0.191		
3	Brinjal	0.732		
4	Tomato	1.590		
5	Bhindi	0.665		
6	Potato	0.002		
7	Green Pea	0.113		
8	Leafy Vegetables	-		
9.	Onion	0.133		
10	Cucumber	-		
11	Bottel guard	-		
12	Others	2.753		
13	Spices	0.323		
14.	All vegetables	6.971		

Source: Directorate of Horticulture, 2013, Govt. of Chhattisgarh

1.11 Production and Productivity of major crops (2012-13 specify years)

1.11	Name of crop	Kharif		Rabi		Summer		Total		Crop residue as fodder ('000 tons)
		Production ('000 m t)	Productivity (kg/ha)	Production ('000 m t)	Productivity (kg/ha)	Production ('000 m t)	Productivity (kg/ha)	Production ('000 m t)	Productivity (kg/ha)	
Major Field crops (Crops to be identified based on total acreage)										
Crop 1	Rice	366.542	2373	-	-	-	-	366.542	2373	-
Crop 2	Black Gram	0.129	1817	-	-	-	-	0.129	1817	-
Crop 3	Maize	0.016	1600	-	-	-	-	0.016	1600	-
Crop 4	Pigeonpea	1.558	196	-	-	-	-	1.558	196	-
Crop 5	Soybean	2.967	101	-	-	-	-	2.967	101	-
Crop 6	Wheat	-	-	15.384	999	-	-	15.384	999	-
Crop 7	Lathyrus	-	-	11.320	388	-	-	11.320	388	-
Crop 8	Linseed	-	-	0.267	367	-	-	0.267	367	-
Crop 9	Gram	-	-	105.445	1217	-	-	105.445	1217	-
Crop 10	Greengram	0.017	240	-	-	-	-	0.017	240	-
Major Horticultural crops (Crops to be identified based on total acreage) – Fruits & Vegetables										
Crop 1	Papaya	4.193	31765	-	-	-	-	4.193	31765	-
Crop 2	Banana	0.101	910	-	-	-	-	0.101	910	-
Crop 3	Mango	-	-	-	-	-	-	-	-	-
Crop 4	Ber	-	-	-	-	-	-	-	-	-
Crop 5	Gauva	-	-	-	-	-	-	-	-	-
Crop 6	Lemon	-	-	-	-	-	-	-	-	-
Crop 7	Aonla	-	-	-	-	-	-	-	-	-
Crop 8	Brinjal	-	-	-	-	-	-	-	-	-
Crop 9	Tomato	-	-	-	-	-	-	-	-	-
Crop 10	Potato	0.012	-	-	-	-	-	0.012	-	-
Crop 11	Cauliflower	-	-	-	-	-	-	-	-	-
Crop 12	Bhindi	-	-	-	-	-	-	-	-	-
Crop 13	Spices	-	-	-	-	-	-	-	-	-
Crop 14	Cabbage	-	-	-	-	-	-	-	-	-
Crop 15	Onion	0.284	-	-	-	-	-	0.284	-	-

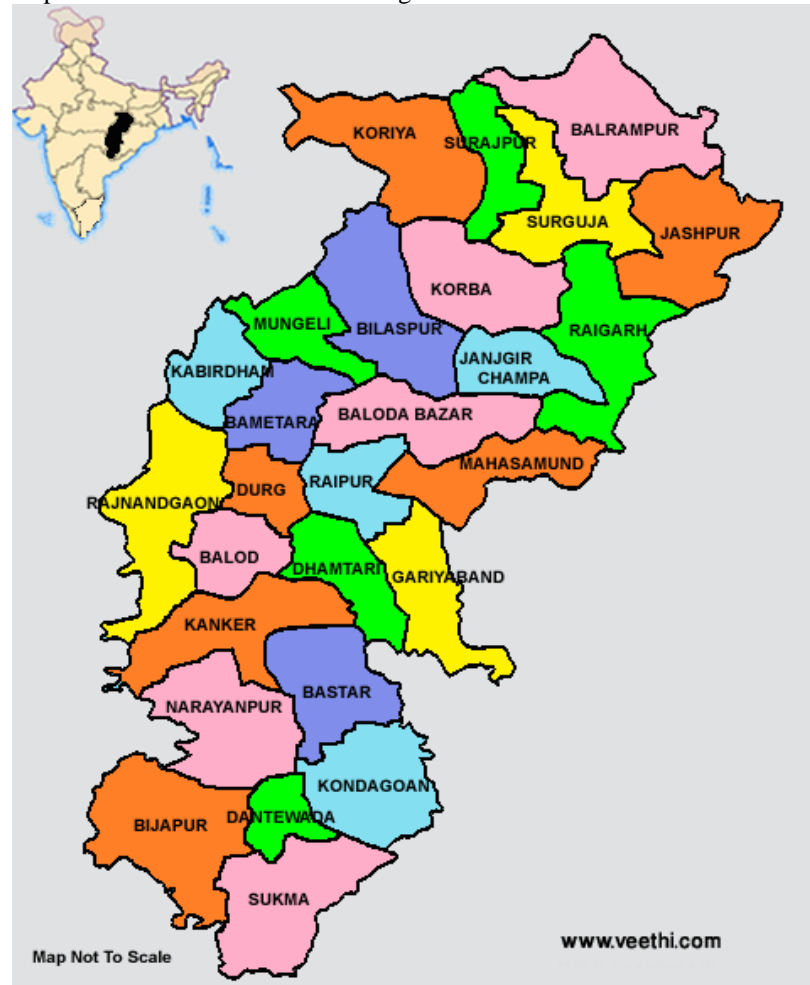
1.12	Sowing window for 5 major field crops (start and end of normal sowing period)	Crop 1: Rice	Crop 2:upland crops i.e. maize, sesamum, Urd, mung	Crop 3: Wheat	Crop 4: Pulses	Crop 5: oilseed
	Kharif- Rainfed	June 2 nd wk to July 1 st wk	June 2 nd wk to July 3 rd wk			
	Kharif-Irrigated	June 2 nd wk to July 2 nd wk				
	Rabi- Rainfed			4 th wk Oct. to 2 nd wk Nov.	2 nd wk Oct. to 2 nd wk Nov.	2 nd wk Oct. to 2 nd wk Nov.
	Rabi-Irrigated			1 st wk Nov. to 2 nd wk Dec.	1 st wk Nov. to 4 th wk Nov.	1 st wk Nov. to 2 nd wk Dec.

1.13	What is the major contingency the district is prone to? (Tick mark)	Regular	Occasional	None
	Drought	✓		
	Flood		✓	
	Cyclone			
	Hail storm		✓	
	Heat wave		✓	
	Cold wave		✓	
	Frost			
	Sea water intrusion			
	Pests and disease outbreak (specify)		✓	
	Rice		Stem borer, bacterial leaf blight	

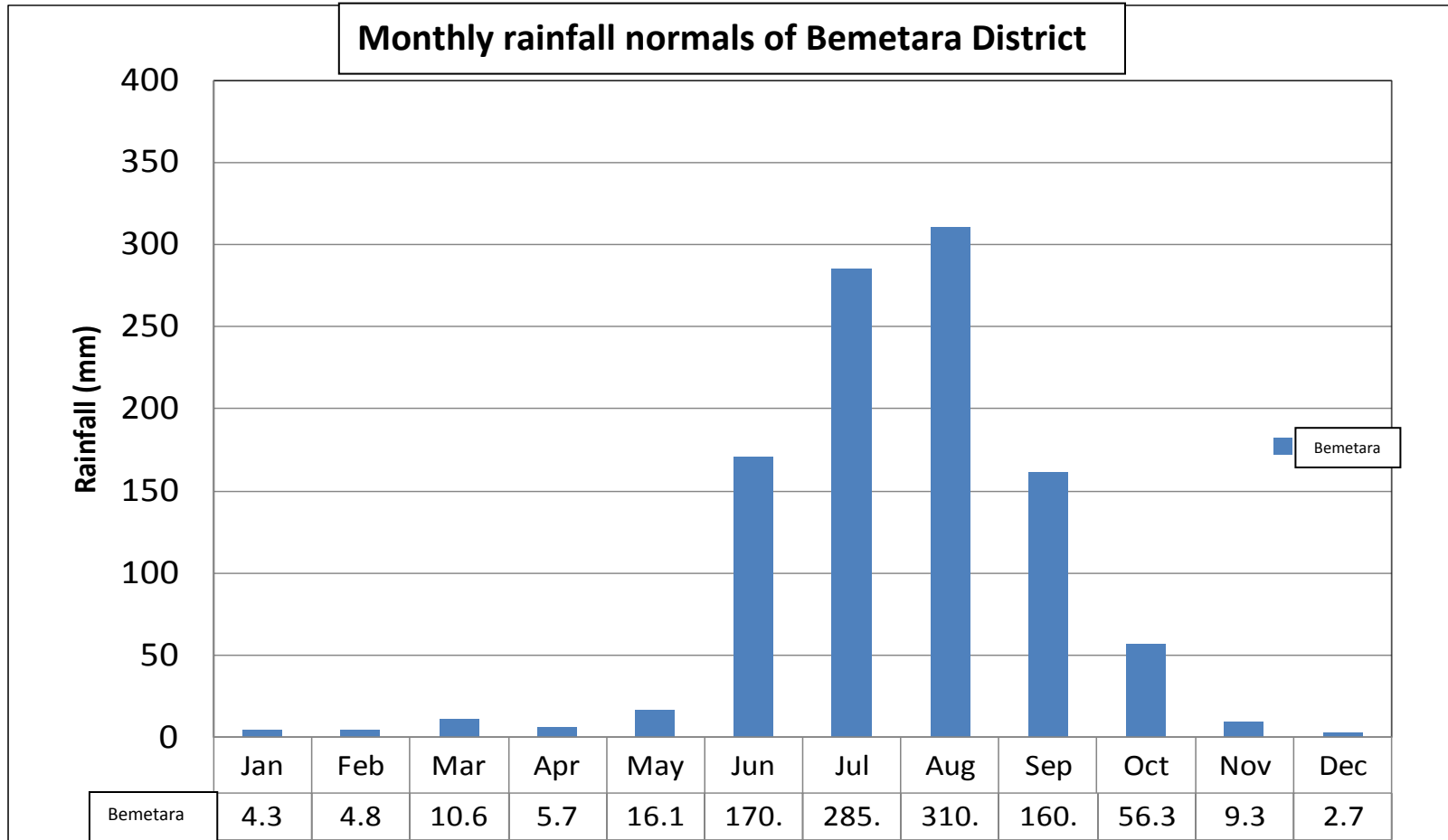
1.14	Include Digital maps of the district for	Location map of district within State as Annexure I	Enclosed: Yes
		Mean annual rainfall as Annexure 2	Enclosed: Yes
		Soil map as Annexure 3	Enclosed: No

Annexure I

Location map of Bemetara district in Chhattisgarh state



Annexure 2
Average month-wise rainfall(mm) in Bemetara district



2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation

Condition	Major Farming situation	Normal Crop / Cropping system		Suggested Contingency measures			
				Change in crop / cropping system including variety		Agronomic measures	Remarks on Implementation
		Kharif	Rabi	Kharif	Rabi		
Early season drought: Delay by 2 weeks (July 1st wk)	Unbunded upland Bharri	Mung	-	Mungbean	-	As recommended	-
		Urd	-	(Pusa	-	As recommended	-
		Pigeonpea	-	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)	-	-	-
		Groundnut	-	No change	-	As recommended	-
	Bunded upland Bharri	Rice- Purnima, Danteshwari, Samleshwari, Annada Maize- Hishell, P 3785, Bio 9681, 900M, Seedtech 2324, Pro 4640, DMH 117, Pro Agro- 4212	-	No change	-	As recommended	-

Condition	Major Farming situation	Normal Crop / Cropping system		Suggested Contingency measures			
				Change in crop / cropping system including variety		Agronomic measures	Remarks on Implementation
		Kharif	Rabi	Kharif	Rabi		
		PEM 1 , VH - 9,17HQPM-1 NMH-731NK-30, NMH-803KMH-3426					
	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	-
	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/ mung (relay)	No change	-		
		Rice	Lentil	No change	-		
		Rice	Gram	No change	-		
		Rice	Linseed	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/	No change	-		

Condition	Major Farming situation	Normal Crop / Cropping system		Suggested Contingency measures			
				Change in crop / cropping system including variety		Agronomic measures	Remarks on Implementation
		Kharif	Rabi	Kharif	Rabi		
		Rice	Wheat	No change	-		
		Rice	Mung	No change	-		
Early season drought: Delay by 4 weeks (July 3 rd wk)	Unbunded upland Bharri	Mung	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	-
		Urd		-	-	-do-	-
		Pigeonpea		-	-	-	-
		Groundnut		-	Erect variety GG-5/G-20	-	-do-
	Bunded upland Bharri	Rice - Purnima, Danteshwari, Samleshwari, Annada Maize- Hishell, P 3785, Bio 9681, 900M, Seedtech 2324, Pro 4640, DMH 117, Pro Agro- 4212	-	Rice- Tulsi, Indira barani dhan-1, Annda, Anjali	-	-	-

Condition	Major Farming situation	Normal Crop / Cropping system		Suggested Contingency measures			
				Change in crop / cropping system including variety		Agronomic measures	Remarks on Implementation
		Kharif	Rabi	Kharif	Rabi		
		PEM 1 , VH - 9,17HQPm-1 NMH-731NK-30, NMH-803KMH-3426					
	Midland Inceptisol (Matasi-Sandy loam)	Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrahasni, Samleshwari	-	Rice- Purnima, Danteshwari, Samleshwari, Annada	-	<ul style="list-style-type: none"> • Direct dry seeding in line technique suggested for 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 	<ul style="list-style-type: none"> • 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
	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- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrahasni, Samleshwari	Coriander (leaf), toria, Lathyrus/ linseed/ mung (relay)		
		Rice	Lentil	-	Lentil		
		Rice	Gram	-	Gram		
		Rice	Linseed	-	Linseed		
	Bahra lowland Vertisols (Kanhar-clayey)	Rice- Swarna, Swarna sub1, Jaldubi, Bamleshwari, MTU 1001,	Fallow	Rice- Mahamaya, swarna, Sampda, IGKV R1, IGKV R2, IGKV R	Fallow		

Condition	Major Farming situation	Normal Crop / Cropping system		Suggested Contingency measures			
				Change in crop / cropping system including variety		Agronomic measures	Remarks on Implementation
		Kharif	Rabi	Kharif	Rabi		
		IGKV R 1244		1244,			
		-	Lathyrus/ linseed/gram/ mung (relay)	-	Coriander (leaf), toria, Lathyrus/ linseed/ mung (relay)		
		-	Wheat	-	Wheat		
		-	Mung	-	Mung		

Early season drought: Delay by 6 weeks (Aug. 1st wk)	Unbunded upland Bharri	Mung	-	Horsegram/ Niger	-	25 % higher seed rate	-
		Urd	-	Horsegram/ Niger	-	-do-	-
		Groundnut	-	Urd (TU94-2, pant-U31, KU96-3, TAU2)	-	-do-	-
	Bunded upland Bharri	Rice- Danteshwari, Samleshwari, Purnima, Annda 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- Purnima, Tulsi, Indira barani dhan-1, Aditya, Anjali	-	Sowing of sprouted seed (<i>lai-chaupa</i>)adopting lehi method of rice cultivation	-

				Groundnut		-do-	
	Midland Inceptisol (Matasi-Sandy loam)	Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Samleshwari	-	Rice- Indira barani dhan-1, Danteshwari, Samleshwari, Purnima, Annda	-	<ul style="list-style-type: none"> • 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 (<i>lai-chaupa</i>) 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. • Sowing of rabi crops adopting zero tillage technique 	<ul style="list-style-type: none"> • 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, Samleshwari	-		
		Rice	Lathyrus/ linseed/gram/ mung (relay)	Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Samleshwari	Coriander (leaf), toria, linseed/ mung (relay)		
		Rice	Lentil	-	Lentil		
		Rice	Gram	-	Gram		
		Rice	Linseed	-	Linseed		
	Bahra lowland Vertisols (Kanhar-clayey)	Rice- Swarna, Swarna sub1, Jaldubi, Bamleshwari, MTU 1001, IGKV R 1244	Fallow	Rice- Mahamaya, swarna sub1, Jaldubi, masuri	Fallow		
		-	Lathyrus/ linseed/gram/ mung (relay)	-	Coriander (leaf), toria, Lathyrus/ linseed/ mung (relay)		
		-	Wheat	-	Wheat		
		-	Mung	-	Mung		
Early season drought: Delay by 8	Unbunded upland Bharri	Mung	-	Mungbean (Pusa Vishal,HUM 1,	Horsegram/ Niger	Sowing in line or broadcasting in September	-

weeks (Aug. 3 rd wk)		Urd	-	HUM-16, BM 4, HUM 12) / Urdbean (TU 94-2, TAU-2, KU 96-3, Indira Urd 1)	Horsegram/ Niger	Sowing in line or broadcasting in September	-
		Pigeonpea	-	Pigeonpea (ICPL87, JKM189, UPAS 120, BDN 2, Rajivlochan)	-	-	-
		Groundnut	-	Mung	-	25 % higher seed rate	-
	Bunded upland Bharri	Rice-Danteshwari, Samleshwari, Purnima, Annda	-	Mung(pusa vishal, Hum1)	-	Mixed or intercropping of pigeonpea and mung (4:2) or sesamum and mung (4:2)	-
	Midland Inceptisol (Matasi-Sandy loam)	Rice-MTU1010, IR64, IR 36, Indira Barani Dhan 1, Samleshwari	-	Rice- Indira barani dhan-1, Danteshwari, Samleshwari, Purnima, Annda	-	<ul style="list-style-type: none"> •Promote direct Line seeding of rice and discourage transplanting •Sowing of sprouted seed (<i>lai-chaupa</i>)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. •Sowing of rabi crops adopting zero tillage technique 	<ul style="list-style-type: none"> •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
	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, Samleshwari	-		
		Rice	Lathyrus/ linseed/gram/ mung (relay)	Rice- IR64, Chandrahasni Bambleshwari, karma masuri	-		
		Rice	Lentil		Lentil		
		Rice	Gram		Gram		
		Rice	Linseed		Linseed		

	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	WHS in crop production by adopting drip system or sprinklers that may be converged from micro irrigation scheme of Agriculture Department
		-	Lathyrus/ linseed/gram/ mung (relay)	-	-	
		-	Wheat	-	Wheat	
		-	Mung	-	Mung/ Fieldpea /Coriander (leaf)/ toria	

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures		
			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.	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)	<ul style="list-style-type: none"> ▪ Gap filling ▪ Resowing in line when very poor population ▪ Increase the seed rate 	<ul style="list-style-type: none"> • Inter tilling for soil mulch • Mulching with paddy straw or use plastic mulch or other locally available material • Compartmental bunding, Ridge and Furrows, Tied ridges to conserve rainwater during kharif for regular sowing of rabi crops 	<ul style="list-style-type: none"> • Linkage with RKVY / NFSM / state seed corporation for timely supply of seed of suitable varieties of upland crops and rice
		Mung /Urd and rabi Horsegram/ Niger			
	Bunded upland Bharri	Rice- Danteshwari, Samleshwari, Purnima, Annda	<ul style="list-style-type: none"> • Gap filling or • Resowing of dry seed 		
		Mung(pusa vishal, Hum1)			
Midland Inceptisol (Matasi-Sandy loam)	Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Samleshwari	<ul style="list-style-type: none"> • Gap filling • Sowing of sprouted seed (<i>lai</i>- 			
Shallow Lowland Alfisols (Dorsa-clay loam) or	Rice-Mahamaya, s swarna, Sampda, IGKV R1, IGKV R2, Bamleshwari, Indira Sona Rice- Lathyrus/ linseed/gram/				

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures		
			Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
	Vertisols (Kanhar-clayey)	mung (relay)	<i>chaupa</i>)adopting lehi method of rice cultivation •Sowing of relatively early varieties like IR64, Chandrahasni Bambleshwari, karma masuri		
		Rice- lentil/gram/linseed			
	Bahra lowland Vertisols (Kanhar-clayey)	Rice- Swarna, Swarna sub1, Jaldubi, Bamleshwari, MTU 1001, IGKV R 1244	•Gap filling •Sowing of sprouted seed (<i>lai-chaupa</i>)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, consecutive 2 weeks rainless (>2.5 mm) period): At vegetative stage	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)		
Groundnut			Avoid top dressing of urea		
Bunded upland Bharri		Rice- Danteshwari, Samleshwari, Purnima, Annda	Weeding and protection against insect and pests		
		Mung(pusa vishal, Hum1)			
Midland Inceptisol (Matasi-Sandy loam)	Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Samleshwari	• Weeding and protection against insect and pests	•Compartmental bunding, Ridge and Furrows, Tied ridges to conserve	•Linkage with micro irrigation scheme of	

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures		
			Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
	Shallow Lowland Alfisols (Dorsa-clay loam) or Vertisols (Kanhar-clayey)	Rice-Mahamaya, s swarna, Sampda, IGKV R1, IGKV R2, Bamleshwari, Indira Sona	<ul style="list-style-type: none"> • Avoid top dressing of urea • Supplemental irrigation from water harvesting structures using micro irrigation i.e. drip and sprinklers 	rainwater during kharif for regular sowing of rabi crops <ul style="list-style-type: none"> • Sowing of rabi crops adopting zero tillage technique 	Agriculture Department for supply of drip system and sprinklers
		Rice- Lathyrus/ linseed/gram/mung (relay)			
		Rice-lentil/ gram/ linseed			
	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 drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period): At flowering/ fruiting stage	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)	Weeding and protection against insect and pests	Mulching Inter tilling	<ul style="list-style-type: none"> • Linkage with Agriculture Department /RKVY for supply of interculture implements for interculture in upland crops
		Groundnut			
	Bunded upland Bharri	Rice- Danteshwari, Samleshwari, Purnima, Annda			
		Mung(pusa vishal, Hum1)			
	Midland Inceptisol (Matasi-Sandy loam)	Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Samleshwari			
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	Rice- Swarna, Swarna sub1, Jaldubi, Bamleshwari, MTU 1001,				

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures				
			Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation		
	(Kanhar-clayey)	IGKV R 1244 Rice- Lathyrus/ linseed/gram/ mung (relay) Rice- wheat/ mung		adopting zero tillage technique			
Terminal drought (Early withdrawal of monsoon)	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)	<ul style="list-style-type: none"> •Harvest mature plants •Thin out plant population 	Mulching Inter tilling	<ul style="list-style-type: none"> •Linkage with Agriculture Department /RKVY for supply of interculture implements for interculture in upland crops 		
		Groundnut					
	Bunded upland Bharri	Rice- Danteshwari, Samleshwari, Purnima, Annda	Life saving irrigation if available				
		Rice and rabi Horsegram/ 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, Samleshwari	<ul style="list-style-type: none"> •Weeding and protection against insect and pests • Supplemental irrigation from water harvesting structures using micro irrigation i.e. drip and sprinklers 			<ul style="list-style-type: none"> •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 	<ul style="list-style-type: none"> •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							
Bahra lowland Vertisols (Kanhar-clayey)	Rice- Swarna, Swarna sub1, Jaldubi, Bamleshwari, MTU 1001, IGKV R 1244						

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures		
			Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
			Rice- Lathyrus/ linseed/gram/ mung (relay)		
Rice- wheat/ mung					

2.1.2 Drought - Irrigated situation

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures			
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation	
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		<ul style="list-style-type: none"> • 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 	
		Groundnut	No change			
	Bunded upland Bharri	Rice- Danteshwari, Samleshwari, Purnima, Annda	Mung(pusa vishal, pragya, Hum1, pairimung) Pigeonpea(ICPL87, Rajivlochan. Maruti)			
		Rice and rabi Horsegram				
	Midland Inceptisol (Matasi-Sandy loam)	Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Samleshwari		<ul style="list-style-type: none"> • 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 		
	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)				
	Bahra lowland Vertisols (Kanhar-clayey)	Rice- Swarna, Swarna sub1, Jaldubi, Bamleshwari, MTU 1001, IGKV R 1244				

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures				
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation		
		Rice- Lathyrus/ linseed/gram/ mung (relay)		rainwater or from other sources of water			
		Rice-wheat/ mung		<ul style="list-style-type: none"> Weed control by herbicide and avoid 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		<ul style="list-style-type: none"> 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 		
		Groundnut	No change				
	Bunded upland Bharri	Rice- Danteshwari, Samleshwari, Purnima, Annda	Mung(pusa vishal, pragya, Hum1, pairimung) Pigeonpea(ICPL87, Rajivlochan. Maruti)				
		Rice and rabi Horsegram					
	Midland Inceptisol (Matasi-Sandy loam)	Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Samleshwari	Rice- Indira barani dhan-1, Danteshwari, Samleshwari, Purnima, Annda	<ul style="list-style-type: none"> 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 			
	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, Samleshwari				
		Rice- Lathyrus/ linseed/gram/ mung (relay)					
		Rice- lentil/gram/linseed/ fieldpea					
	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				<ul style="list-style-type: none"> Avoid transplanting of rice Weed control by herbicide and avoid biasi operation
		Rice- Lathyrus/ linseed/gram/ mung (relay)					
Rice-wheat/ mung							
Non release of	Unbunded upland	Mungbean (Pusa Vishal,HUM 1,	No change		<ul style="list-style-type: none"> Linkage with 		

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures			
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation	
water in canals under delayed onset of monsoon in catchment	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)			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 /Urd and rabi Horsegram	No change			
		Groundnut	No change			
	Bunded upland Bharri	Rice- Danteshwari, Samleshwari, Purnima, Annda	Mung(pusa vishal, pragya, Hum1, pairimung) Pigeonpea(ICPL87, Rajivlochan. Maruti)			
		Rice and rabi Horsegram				
	Midland Inceptisol (Matasi-Sandy loam)	Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Samleshwari	Rice- Indira barani dhan-1, Samleshwari, Danteshwari, purnima	<ul style="list-style-type: none"> • 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 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, Samleshwari			
		Rice- Lathyrus/ linseed/gram/ mung (relay)				
		Rice- lentil/gram/linseed/ fieldpea				
	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)						
Rice-wheat/ mung						
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	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	

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
	Bundeded upland Bharri	Mung /Urd and rabi Horsegram	No change		<ul style="list-style-type: none"> 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
		Rice- Danteshwari, Samleshwari, Purnima, Annda	Mung(pusa vishal, pragya, Hum1, pairimung)		
	Rice and rabi Horsegram	Pigeonpea(ICPL87, Rajivlochan. Maruti)			
	Midland Inceptisol (Matasi-Sandy loam)	Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Samleshwari	Rice- Indira barani dhan-1, Samleshwari, Danteshwari, purnima	<ul style="list-style-type: none"> • Direct seeding of rice preferably dry seeding in line • Avoid transplanting of rice 	
	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, Samleshwari	<ul style="list-style-type: none"> • Weed control by herbicide and avoid biasi operation • Supplemental irrigation from WHS using drip and sprinklers 	
		Rice- Lathyrus/ linseed/gram/ mung (relay)		<ul style="list-style-type: none"> • Adopt zero tillage technique for sowing of rabi crops 	
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	Unbundeded 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		<ul style="list-style-type: none"> • 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
		Mung /Urd and rabi Horsegram	No change		
		Groundnut	No change		
	Bundeded upland Bharri	Rice- Danteshwari, Samleshwari, Purnima, Annda	Pigeonpea(ICPL87, Rajivlochan. Maruti)		
Midland Inceptisol	Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Samleshwari		<ul style="list-style-type: none"> • Direct seeding of rice 		

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
	(Matasi-Sandy loam)			preferably dry seeding in line • Avoid transplanting • Weed control by herbicide and avoid biasi operation • Supplemental irrigation from WHS using drip and sprinklers	RKVY / NFSM / IWMP/ micro irrigation schemes for supply of micro irrigation systems
	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/ 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	Flowering stage	Crop maturity stage	Post harvest
Continuous high rainfall in a short span leading to water logging or heavy rainfall coupled with high speed winds in a short span*				
Urd/ mung	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/ 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	
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				
Urd/ mung	Spraying of contact insecticide for control of caterpillar/ color rot	Spraying of contact insecticide for control of pest	-	-
Groundnut/ 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	
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			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Transient water logging/ partial inundation¹				
Urd/ mung	Surface drainage	Surface drainage	Surface drainage	-
Groundnut/ 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	-
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 days²				
Urd/ mung	Surface drainage	Surface drainage	Surface drainage	-
Groundnut/ 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 and staking of plants	Surface drainage and staking of plants	-
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