

## Agriculture Contingency Plan for District: Gariyabandh

### State: CHHATTISGARH

1.0 District Agriculture profile				
1.1	<b>Agro-Climatic/Ecological Zone</b>			
	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, 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
		20.63 N	82.06 E	340 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	Krishi Vigyan Kendra, Gariyabandh (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):	1035.0	48	17 June 25 <sup>th</sup> SMW, June	30 September 39 <sup>th</sup> SMW, 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	-	-

<b>1.3</b>	<b>Land use pattern of the district</b> (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
	<b>Area ('000 ha)</b>	585.5	161.5	92.3	22.8	24.8	-	0.02	3.4	2.6	3.3

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

<b>1.4</b>	<b>Major Soils (common names like red sandy loam deep soils (etc.,))*</b>	<b>Area ('000 ha)</b>	<b>Percent (%) of total</b>
	1. Entisol (Bhata-gravelly)	-	-
	2. Inceptisol (Matasi-Sandyloam)	-	-
	3. Alfisols (Dorsa-clayloam)	-	-
	4. Vertisols (Kanhar-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

<b>1.5</b>	<b>Agricultural land use</b>	<b>Area ('000 ha)</b>	<b>Cropping intensity %</b>
	Net sown area	135.4	119
	Area sown more than once	26.1	
	Gross cropped area	161.5	

<b>1.6</b>	<b>Irrigation</b>	<b>Area ('000 ha)</b>
	Net irrigated area	<b>56.1</b>

Gross irrigated area	<b>56.2</b>		
Rainfed area	<b>105.3</b>		
<b>Sources of Irrigation</b>	Number	Area ('000 ha)	Percentage of total irrigated area
Canals	60	39.3	
Tanks	1737	0.5	
Open wells	6906	0.7	
Bore wells			
Lift irrigation schemes			
Micro-irrigation			
Other sources (please specify)		1.7	
Total Irrigated Area		<b>56.2</b>	
Pump sets			
No. of Tractors			
<b>Groundwater availability and use* (Data source: State/Central Ground water Department /Board)</b>	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	<b>Potable and suitable for irrigation as well</b>		
*over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%			

Source: Agriculture statistic 2013, 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) (2008-09)

1.7	S.No.	Major field crops cultivated	Area ('000 ha)							
			Kharif			Rabi			Summer	Grand total
			Irrigated	Rainfed	Total	Irrigated	Rainfed	Total		
1	Rice	-	-	-	-	-	-	-	131.879	
2	Wheat	-	-	-	-	-	-	-	0.431	
3	Jowar	-	-	-	-	-	-	-	0.087	
4	Maize	-	-	-	-	-	-	-	8.314	
5	Millets	-	-	-	-	-	-	-	1.664	
6.	<b>Total Cereals</b>	-	-	-	-	-	-	-	<b>142.692</b>	
7.	Pigeonpea	-	-	-	-	-	-	-	0.751	
8.	Gram	-	-	-	-	-	-	-	0.795	
9.	GreenGram	-	-	-	-	-	-	-	3.265	
10.	BlackGram	-	-	-	-	-	-	-	1.911	
11.	HorseGram	-	-	-	-	-	-	-	0.839	
12.	Pea	-	-	-	-	-	-	-	0.495	
13.	Lentil	-	-	-	-	-	-	-	0.203	
14.	Lathyrus	-	-	-	-	-	-	-	5.476	
15.	<b>Total Pulses</b>	-	-	-	-	-	-	-	<b>14.037</b>	
16.	Rapeseed-mustard	-	-	-	-	-	-	-	0.301	
17.	Linseed	-	-	-	-	-	-	-	0.491	
18.	Groundnut	-	-	-	-	-	-	-	0.528	
19.	Sesame	-	-	-	-	-	-	-	1.159	
20.	Soybean	-	-	-	-	-	-	-	0.0	
21.	Sunflower	-	-	-	-	-	-	-	0.003	
22.	Safflower	-	-	-	-	-	-	-		
23.	<b>Total Oilseeds</b>	-	-	-	-	-	-	-	<b>2.504</b>	
24.	Vegetables	-	-	-	-	-	-	-		
25.	Sugarcane	-	-	-	-	-	-	-	0.128	
26	<b>All Crops</b>	-	-	-	-	-	-	-		

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

S.No.	Horticulture crops - Fruits	Area (' 000 ha)		
		Total	Irrigated	Rainfed
1	Mango	0.176	-	-
2	Banana	0.017	-	-
3	Papaya	0.0	-	-
4	Gauva	0.016	-	-
5	Lemon	0.0	-	-
6	Water melon	0.0	-	-
7	Musk melon	0.017	-	-
8	Ber	-	-	-
9	Aonla	-	-	-
10	Others	-	-	-
Total	All fruits	0.226		
	Horticulture crops - Vegetables	Total	Irrigated	Rainfed
1	Cauliflower	0.076	-	-
2	Cabbage	0.060	-	-
3	Brinjol	0.251	-	-
4	Tomato	0.216	-	-
5	Bhindi	0.136	-	-
6	Potato	0.024	-	-
7	Green Pea	0.010	-	-
8	Leafy Vegetables	-	-	-
9.	Onion	0.056	-	-
10	Cucumber	-	-	-
11	Bottel guard	-	-	-
12	Others	1.361	-	-
13	Spices	-	-	-
14.	All vegetables	1.489	-	-
	Medicinal and Aromatic crops	Total	Irrigated	Rainfed
1	Lemon grass	0.138	-	-
2	Khush	0.100	-	-
3	E-citridora	0.100	-	-
4	Pam.+Jam.Rosa	0.154	-	-

Source: Agriculture statistic, 2013, Govt. of Chhattisgarh

<b>1.8</b>	<b>Livestock</b>	<b>Male ('000)</b>	<b>Female ('000)</b>	<b>Total ('000)</b>
	<b>All kinds of cattle</b>	-	-	273.231
	Non descriptive Cattle (local low yielding)	-	-	-
	Improved cattle	-	-	-
	Crossbred cattle	-	-	-
	Non descriptive Buffaloes (local low yielding)	-	-	-
	Descript Buffaloes	-	-	173.747
	Goat	-	-	151.635
	Sheep	-	-	26.207
	Pig	-	-	13.307
	Commercial dairy farms (Number)			
<b>1.9</b>	<b>Poultry</b>	<b>No. of farms</b>	<b>Total No. of birds ('000)</b>	
	Commercial	-	79.446	
	Backyard	-	-	

<b>1.10</b>	<b>Fisheries</b> (Data source: Chief Planning Officer)						
	<b>A. Capture</b>						
	<b>i) Marine</b> (Data Source: Fisheries Department)	<b>No. of fishermen</b>	<b>Boats</b>		<b>Nets</b>		<b>Storage facilities (Ice plants etc.)</b>
			Mechanized	Non-mechanized	Mechanized (Trawl nets, Gill nets)	Non-mechanized (Shore Seines, Stake & trap nets)	
	<b>ii) Inland</b> (Data Source: Fisheries Department)	<b>No. Farmer owned ponds</b>		<b>No. of Reservoirs</b>		<b>No. of village tanks</b>	
2364		177		7228			

<b>B. Culture</b>			
	<b>Water Spread Area (ha)</b>	<b>Yield (t/ha)</b>	<b>Production ('000 tons)</b>
i) <b>Brackish water</b> (Data Source: MPEDA/ Fisheries Department)	Nil	Nil	Nil
ii) <b>Fresh water</b> (Data Source: Fisheries Department)	11552.0	3.8	35.9

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

**1.11 Production and Productivity of major crops** (Average of last 5 years: 2004, 05, 06, 07, 08; 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)	
<b>Major Field crops (Crops to be identified based on total acreage)</b>										
Crop 1	Rice	-	-	-	-	-	-	206.342	1560	-
Crop 2	Black Gram	0.778	410	-	-	-	-	0.778	410	-
Crop 3	Maize	12.384	1490	-	-	-	-	12.384	1490	-
Crop 4	Pigeonpea	0.235	310	-	-	-	-	0.235	310	-
Crop 5	Sesame	-	-	-	-	-	-	-	-	-
Crop 6	Wheat	-	-	0.821	1900	-	-	0.821	1900	-
Crop 7	Lathyrus	-	-	2.320	420	-	-	2.320	420	-
Crop 8	Linseed	-	-	-	-	-	-	-	-	-
Crop 9	Gram	-	-	0.899	1130	-	-	0.899	1130	-
Crop 10	Greengram	-	-	-	-	-	-	-	-	-
	<b>All crops</b>	-	-	-	-	-	-	<b>228.268</b>	-	-
<b>Major Horticultural crops (Crops to be identified based on total acreage) – Fruits &amp; Vegetables</b>										
Crop 1	Papaya	-	-	-	-	-	-	0.0	-	-
Crop 2	Banana	-	-	-	-	-	-	0.219	-	-

<b>1.12</b>	<b>Sowing window for 5 major field crops</b> (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 <sup>nd</sup> wk to July 1 <sup>st</sup> wk	June 2 <sup>nd</sup> wk to July 3 <sup>rd</sup> wk	-	-	-
	Kharif-Irrigated	June 2 <sup>nd</sup> wk to July 2 <sup>nd</sup> wk	-	-	-	-
	Rabi- Rainfed	-	-	4 <sup>th</sup> wk Oct. to 2 <sup>nd</sup> wk Nov.	2 <sup>nd</sup> wk Oct. to 2 <sup>nd</sup> wk Nov.	2 <sup>nd</sup> wk Oct. to 2 <sup>nd</sup> wk Nov.
	Rabi-Irrigated	-	-	1 <sup>st</sup> wk Nov. to 2 <sup>nd</sup> wk Dec.	1 <sup>st</sup> wk Nov. to 4 <sup>th</sup> wk Nov.	1 <sup>st</sup> wk Nov. to 2 <sup>nd</sup> wk Dec.

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

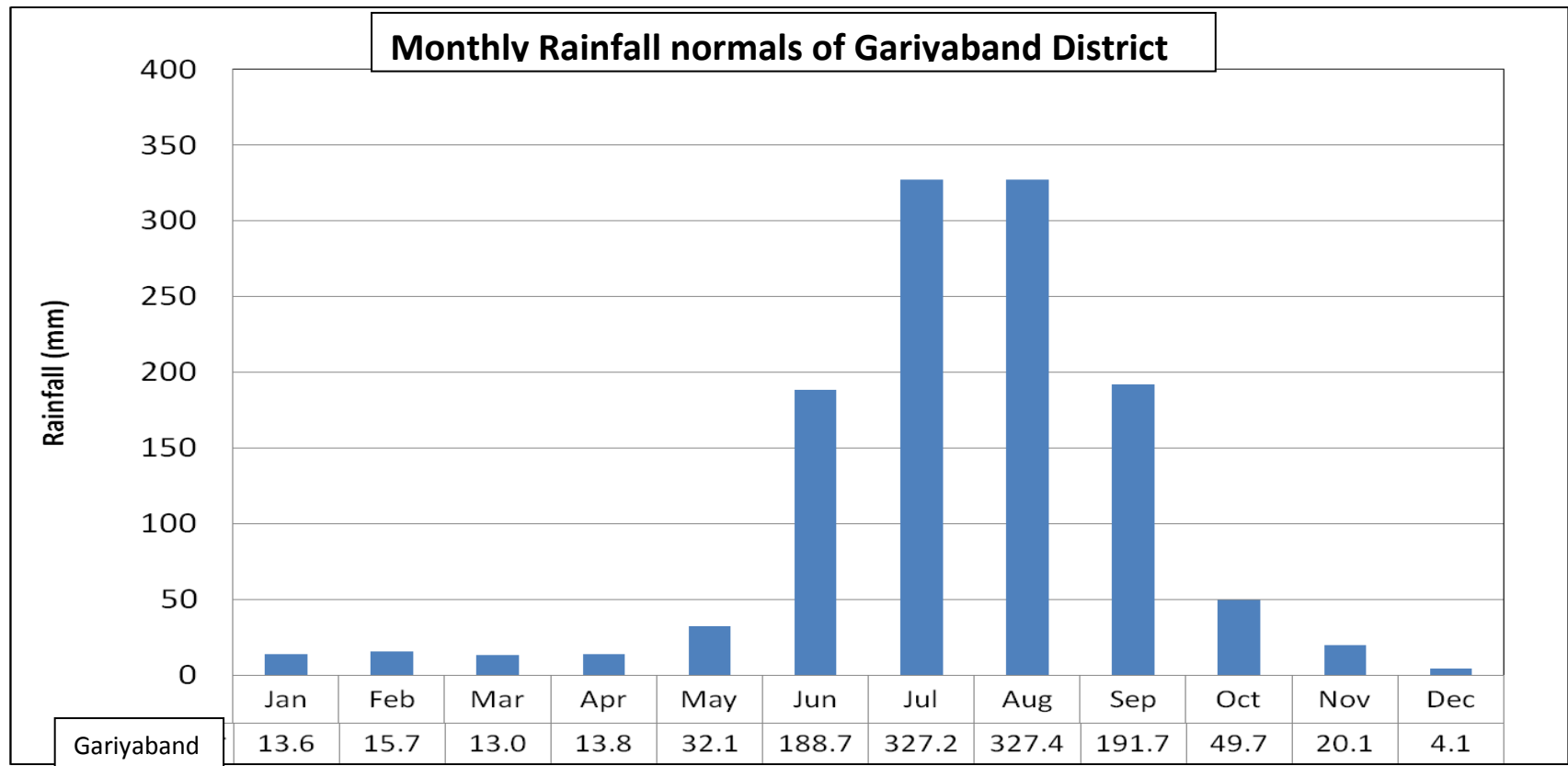
<b>1.14</b>	<b>Include Digital maps of the district for</b>	Location map of district within State as Annexure I	Enclosed: Yes
		Mean annual rainfall as Annexure 2	Enclosed: Yes
		Soil map as Annexure 3	Enclosed: No



Annexure I  
Location map of Gariyaband district in Chhattisgarh state



Annexure 2  
Average month-wise rainfall(mm) in Gariyaband 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		
<b>Early season drought: Delay by 2 weeks (July 1<sup>st</sup> wk)</b>	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	Horsegram/ Niger	No change	-	Normal	-
		Urd	Horsegram/ Niger	No change	-	Normal	-
		Groundnut	-	No change	-	Normal	-
		Sesamum	-	No change	-	Normal	-
		Maize	-	No change	-	Normal	-
	Bunded upland Bharri	Rice- Purnima, Danteshwari,	-	No change	-	Normal	-

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		
		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	Horsegram	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 (Kanhari-clayey)	Rice- Mahamaya, s swarna, Sampda, IGKV R1, IGKV R2, Bamleshwari, Indira Sona	-	No change	-		
		Rice	Lathyrus/	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		
			linseed/gram/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 3 <sup>rd</sup> 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,	-	-	-	25 % higher seed rate -do-	- -

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		
		Rajivlochan)					
		Mung	Horsegram/ Niger	-	-	-do-	-
		Urd	Horsegram/ 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	-	-	-
		Rice	Horsegram	Groundnut	-	-	-
		Rice	Niger	Sesamum/ soybean(Indira soy9, JS93-05, JS335, JS80-21)	-	-	-
	Midland Inceptisol	Rice-	-	Rice- MTU1010,	-	•Direct dry seeding in line	•Linkage with

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		
	(Matasi-Sandy loam)	MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrahasni, Samleshwari		Samleshwari, Danteshwari, Indira barani dhan-1		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	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- Chandrahasni IR64, Mahamaya, Bambleshwari, karma masuri	-		
		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 sub1, Jaldubi		
		-	Lathyrus/ linseed/gram/	-	Coriander (leaf), toria,		

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		
			mung (relay)		Lathyrus/ linseed/ mung (relay)		
		-	Wheat	-	Wheat		
		-	Mung	-	Mung		
Early season drought: <b>Delay by 6 weeks (Aug. 1<sup>st</sup> wk)</b>	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)	-	Horsegram/ Niger	-	25 % higher seed rate	-
		Pigeonpea (ICPL87, JKM189, UPAS 120, BDN 2, Rajivlochan)	-	Horsegram/ Niger	-	-do-	-
		Mung	Horsegram/ Niger	Mung/ Urd	-	-do-	-
		Urd	Horsegram/ Niger	Mung	-	-do-	-
		Groundnut	-	Urd(PTU4, TU94-2, pant-U31, KU96-3, TAU2)	-	-do-	-
		Sesamum	-	Mung		-do-	
		Bunded upland	Rice- Purnima,	-	Rice- Purnima,		Sowing of sprouted seed



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		
	Bharri	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		Tulsi, Indira barani dhan-1, Aditya		( <i>lai-chaupa</i> )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)	-
				Groundnut		-do-	
	Midland Inceptisol (Matasi-Sandy loam)	Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrahasni, Samleshwari	-	Rice- Indira barani dhan-1, Samleshwari, Danteshwari, MTU1010, purnima	-	<ul style="list-style-type: none"> <li>•Direct dry seeding in line technique suggested for better crop yield and double cropping</li> <li>•Promote direct seeding or rice and discourage transplanting</li> </ul>	<ul style="list-style-type: none"> <li>•Linkage with RKVY for supply of tractor and animal drawn seed drill for line sowing</li> </ul>
	Shallow Lowland Alfisols (Dorsa-clay loam) or Vertisols	Rice- Mahamaya, s swarna, Sampda, IGKV R1, IGKV R2,	-	Rice- IR64, Chandrahasni Bambleshwari, karma masuri	-	<ul style="list-style-type: none"> <li>•Sowing of sprouted seed (<i>lai-chaupa</i>)adopting lehi method of rice cultivation</li> <li>•Line sowing to avoid</li> </ul>	<ul style="list-style-type: none"> <li>•Linkage with MNREGA for WC measures: Digging of</li> </ul>

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			
	(Kanhra-clayey)	Bamleshwari, Indira Sona				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	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	
		Rice	Lathyrus/ linseed/gram/ mung (relay)	Rice- IR64, Chandrahasni, Bamleshwari, 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 (Kanhra-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: <b>Delay by 8 weeks (Aug. 3<sup>rd</sup> wk)</b>	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)	-	-	Horsegram/ Niger	Sowing in line or broadcasting in September	
					Horsegram/ Niger	Sowing in line or broadcasting in September	-
		Mung	Horsegram/ Niger	Mung	-	25 % higher seed rate	-
		Urd	Horsegram/ Niger	Mung	-	25 % higher seed rate	-
		Groundnut	-	Mung	-	25 % higher seed rate	-
		Sesamum	-	Mung	-	25 % higher seed rate	-
	Bunded upland Bharri	Rice- Purnima, Danteshwari, Samleshwari, Annada Maize- Hishell, P 3785, Bio 9681, 900M, Seedtech 2324,		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)	

		Pro 4640, DMH 117, Pro Agro- 4212 PEM 1 , VH - 9,17HQPM-1 NMH-731NK- 30, NMH- 803KMH-3426					
		Rice	Horsegram	-	Horsegram	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, Chandahasni, Samleshwari	-	Rice- Indira barani dhan-1, Samleshwari, Danteshwari, purnima	-	<ul style="list-style-type: none"> <li>•Promote direct Line seeding of rice and discourage transplanting</li> <li>•Sowing of sprouted seed (<i>lai-chaupa</i>)adopting lehi method of rice cultivation</li> <li>•Promote application of post emergence herbicide for timely weed management and avoiding biasi operation</li> <li>•Increase 25percent seed rate of rabi crops.</li> <li>•Seed rate of wheat increased from one-and half to two times</li> <li>•Sowing of rabi crops adopting zero tillage technique</li> </ul>	<ul style="list-style-type: none"> <li>•Linkage with RKVY for supply of tractor and animal drawn seed drill for line sowing</li> <li>•Linkage with MNREGA for WC measures: Digging of shallow dug wells and renovation of existing WHSs</li> <li>•Utilize harvested rain water of WHS in crop production by adopting drip system or sprinklers</li> </ul>
Shallow Lowland Alfisols (Dorsa-clay loam) or Vertisols (Kanhar-clayey)		Rice- Mahamaya, s swarna, Sampda, IGKV R1, IGKV R2, Bamleshwari, Indira Sona	-	Rice- IR64, Chandahasni Bambleshwari, karma masuri	-		
		Rice	Lathyrus/ linseed/gram/ mung (relay)	Rice- IR64, Chandahasni Bambleshwari, karma masuri	-		
		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 sub1, Jaldubi, masuri	Fallow		that may be converged from micro irrigation scheme of Agriculture Department
		-	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	Normal Crop / Cropping system	Suggested Contingency measures		
			Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
<b>Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.</b>	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"> <li>▪ Gap filling</li> <li>▪ Resowing in line when very poor population</li> </ul>	<ul style="list-style-type: none"> <li>• Inter tilling for soil mulch</li> <li>• Mulching with paddy straw or use plastic mulch or other locally available material</li> <li>• Compartmental bunding, Ridge and Furrows, Tied ridges to conserve rainwater during kharif for regular sowing of rabi crops</li> </ul>	<ul style="list-style-type: none"> <li>• Linkage with RKVY / NFSM / state seed corporation for timely supply of seed of suitable varieties of upland crops and rice</li> </ul>
		Mung /Urd and rabi Horsegram/ Niger			
		Groundnut /Sesamum			
	Bunded 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 Horsegram/ Niger			

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures		
			Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
		Mung(pusa vishal, Hum1)			
	Midland Inceptisol (Matasi-Sandy loam)	Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrahasni, Samleshwari	<ul style="list-style-type: none"> <li>• Gap filling or</li> <li>• Resowing of dry seed</li> </ul>		
	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	<ul style="list-style-type: none"> <li>• Gap filling</li> <li>• Sowing of sprouted seed (<i>lai-chaupa</i>)adopting lehi method of rice cultivation</li> <li>• Sowing of relatively early varieties like IR64, Chandrahasni Bamleshwari, karma masuri</li> </ul>		
	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	<ul style="list-style-type: none"> <li>• Gap filling</li> <li>• Sowing of sprouted seed (<i>lai-chaupa</i>)adopting lehi method of rice cultivation</li> <li>• Sowing of relatively early varieties like Mahamaya, swarna sub1, Jaldubi, masuri</li> </ul>		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period): <b>At vegetative stage</b>	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 /Urd and rabi Horsegram/	Weeding and protection against sucking pests  Weeding and protection	<ul style="list-style-type: none"> <li>• Inter tilling for soil mulch</li> <li>• Mulching with paddy straw or use plastic mulch or other locally available material</li> </ul>	<ul style="list-style-type: none"> <li>• Linkage with Agriculture Department /RKVY for supply of interculture implements for interculture in</li> </ul>

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures		
			Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
	Bundeded upland Bharri	Niger	against sucking pests		upland crops
		Groundnut /Sesamum	Avoid top dressing of urea		
		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 Horsegram/ 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	<ul style="list-style-type: none"> <li>Weeding and protection against insect and pests</li> <li>Avoid top dressing of urea</li> <li>Supplemental irrigation from water harvesting structures using micro irrigation i.e. drip and sprinklers</li> </ul>	<ul style="list-style-type: none"> <li>Compartmental bunding, Ridge and Furrows, Tied ridges to conserve rainwater during kharif for regular sowing of rabi crops</li> <li>Sowing of rabi crops adopting zero tillage technique</li> </ul>	<ul style="list-style-type: none"> <li>Linkage with micro irrigation scheme of Agriculture Department for supply of drip system and sprinklers</li> </ul>
	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					
<b>Mid season drought (long dry spell, consecutive 2 weeks rainless</b>	Unbundded 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)	Weeding and protection against insect and pests	Mulching Inter tilling	<ul style="list-style-type: none"> <li>Linkage with Agriculture Department</li> </ul>

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures					
			Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation			
(>2.5 mm period): At flowering/ fruiting stage		Pigeonpea (ICPL87, JKM189, UPAS 120, BDN 2, Rajivlochan)			/RKVY for supply of interculture implements for interculture in upland crops			
		Mung /Urd and rabi Horsegram/ Niger						
		Groundnut /Sesamum						
	Bunded upland Bharri	Rice- Purnima, Danteshwari, Samleshwari, Annada						
		Rice and rabi Horsegram/ Niger						
		Mung(pusa vishal, pragya, Hum1, pairimung) /Pigeonpea(ICPL87, Rajivlochan. Maruti)						
	Midland Inceptisol (Matasi-Sandy loam)	Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrahasni, Samleshwari				<ul style="list-style-type: none"> <li>• Weeding and protection against insect and pests</li> <li>• Supplemental irrigation from water harvesting structures using micro irrigation i.e. drip and sprinklers</li> </ul>	<ul style="list-style-type: none"> <li>• Compartmental bunding, Ridge and Furrows, Tied ridges to conserve rainwater during kharif for regular sowing of rabi crops</li> <li>• Increase 25percent seed rate of rabi crops.</li> <li>• Sowing of rabi crops adopting zero tillage technique</li> </ul>	<ul style="list-style-type: none"> <li>• Linkage with micro irrigation scheme of Agriculture Department for supply of drip system and sprinklers</li> </ul>
	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							
<b>Terminal drought</b> (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,	Harvest mature plants Thin out plant population	Mulching Inter tilling	<ul style="list-style-type: none"> <li>• Linkage with Agriculture Department /RKVY for supply</li> </ul>			



Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures		
			Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
		UPAS 120, BDN 2, Rajivlochan)			of interculture implements for interculture in upland crops
		Mung /Urd and rabi Horsegram/ Niger			
		Groundnut /Sesamum			
	Bunded upland Bharri	Rice- Purnima, Danteshwari, Samleshwari, Annada	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, Chandrahasni, Samleshwari	<ul style="list-style-type: none"> <li>• Weeding and protection against insect and pests</li> <li>• Supplemental irrigation from water harvesting structures using micro irrigation i.e. drip and sprinklers</li> </ul>	<ul style="list-style-type: none"> <li>• Compartmental bunding, Ridge and Furrows, Tied ridges to conserve rainwater during kharif for regular sowing of rabi crops</li> <li>• Seed rate of wheat increased from one-and half to two times</li> <li>• Sowing of rabi crops adopting zero tillage technique</li> </ul>	<ul style="list-style-type: none"> <li>• Linkage with micro irrigation scheme of Agriculture Department for supply of drip system and sprinklers</li> </ul>
	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/ 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"> <li>• 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</li> <li>• Compartmental bunding, Ridge and Furrows, Tied ridges to conserve rainwater during kharif for regular sowing of rabi crops</li> </ul>
		Mung /Urd and rabi Horsegram/ Niger	No change	-	
		Groundnut /Sesamum	No change	-	
	Bunded upland Bharri	Rice- Purnima, Danteshwari, Samleshwari, Annada	Mung(pusa vishal, pragya, Hum1, pairimung)	-	
		Rice and rabi Horsegram/ Niger	Pigeonpea(ICPL87, Rajivlochan. Maruti)	-	
	Midland Inceptisol (Matasi-Sandy loam)	Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrahasni, Samleshwari	-	<ul style="list-style-type: none"> <li>• Direct seeding of rice preferably in line</li> <li>• 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</li> <li>• If seedlings raised for transplanting then it should be done with rainwater or from other sources of water</li> <li>• Weed control by</li> </ul>	
	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)					

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
		Rice-wheat/ mung		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"> <li>• 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</li> <li>• Linkage with RKVY / NFSM / IWMP/ micro irrigation schemes for supply of micro irrigation systems</li> </ul>
		Mung /Urd and rabi Horsegram/ Niger	No change	-	
		Groundnut /Sesamum	No change	-	
	Bunded upland Bharri	Rice- Purnima, Danteshwari, Samleshwari, Annada	Mung(pusa vishal, pragya, Hum1, pairimung) Pigeonpea(ICPL87, Rajivlochan. Maruti)	-	
		Rice and rabi Horsegram/ 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	<ul style="list-style-type: none"> <li>• Direct seeding of rice preferably dry seeding in line</li> <li>• 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</li> <li>• Avoid transplanting of rice</li> <li>• Weed control by herbicide and avoid biasi operation</li> </ul>	
	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)					

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Non release of water in canals under delayed onset of monsoon in catchment	Unbunded upland Bharri	Rice-wheat/ mung			<ul style="list-style-type: none"> <li>• 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</li> <li>• Linkage with RKVY / NFSM / IWMP/ micro irrigation schemes for supply of micro irrigation systems</li> </ul>
		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	-	
		Mung /Urd and rabi Horsegram/ Niger	No change	-	
	Bunded upland Bharri	Rice- Purnima, Danteshwari, Samleshwari, Annada	Mung(pusa vishal, pragya, Hum1, pairimung)	-	
		Rice and rabi Horsegram/ Niger	Pigeonpea(ICPL87, Rajivlochan. Maruti)	-	
	Midland Inceptisol (Matasi-Sandy loam)	Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrahasni, Samleshwari	Rice- Indira barani dhan-1, Samleshwari, Danteshwari, purnima	<ul style="list-style-type: none"> <li>• Direct seeding of rice preferably dry seeding in line</li> <li>• Avoid transplanting of rice</li> </ul>	
	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	<ul style="list-style-type: none"> <li>• Weed control by herbicide and avoid biasi operation</li> <li>• Supplemental irrigation from WHS using drip and sprinklers</li> </ul>	
		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	<ul style="list-style-type: none"> <li>• Adopt zero tillage technique for sowing of rabi crops</li> </ul>	
Rice- Lathyrus/ linseed/gram/ mung (relay)					
Rice-wheat/ mung					
Lack of inflows	Unbunded upland	Mungbean (Pusa Vishal,HUM 1,	No change	-	• Linkage with

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

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures			
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation	
		Mung /Urd and rabi Horsegram/ Niger	No change	-	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 /Sesamum	No change	-		
		Bunded upland Bharri	Rice- Purnima, Danteshwari, Samleshwari, Annada	Pigeonpea(ICPL87, Rajivlochan. Maruti)		-
		Rice and rabi Horsegram/ Niger	-			
	Midland Inceptisol (Matasi-Sandy loam)	Rice- MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrahasni, Samleshwari	-	<ul style="list-style-type: none"> <li>• Direct seeding of rice preferably dry seeding in line</li> <li>• Avoid transplanting</li> <li>• Weed control by herbicide and avoid biasi operation</li> <li>• Supplemental irrigation from WHS using drip and sprinklers</li> </ul>		
	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	Flowering stage	Crop maturity stage	Post harvest
<b>Continuous high rainfall in a short span leading to water logging or heavy rainfall coupled with high speed winds in a short span*</b>				
Urd/ 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
<b>Horticulture</b>				
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

<b>Outbreak of pests and diseases due to unseasonal rains</b>				
Urd/ 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	-	-	-
<b>Horticulture</b>				
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 <sup>o</sup>			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
<b>Transient water logging/ partial inundation<sup>1</sup></b>				
Urd/ 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	-
<b>Horticulture</b>				



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	-
<b>Continuous submergence for more than 2 days<sup>2</sup></b>				
Urd/ 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	-
<b>Horticulture</b>				
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**