

Agriculture Contingency Plan for District: Balrampur State: CHHATTISGARH

1.0 District Agriculture profile				
1.1	Agro-Climatic/Ecological Zone			
	Agro Ecological Sub Region (ICAR)	Sub Humid Region		
	Agro-Climatic Zone (Planning Commission)	Eastern Plateau and hill Region		
	Agro Climatic Zone (NARP)	Northern hill zone of chhattisgarh (AZ-72)		
	List all the districts falling under the NARP Zone* (*>50% area falling in the zone)	Surguja		
	Geographic coordinates of district headquarters	Latitude	Longitude	Altitude
		23.60 N	83.62 E	619m.
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	RMD,College of Agriculture and Research Station -Ambikapur(C.G.)		
	Mention the KVK located in the district with address	Krishi vigyan Kendra , Balrampur		
	Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro-advisories in the Zone	AMFU -RMD,College of Agriculture and Research Station -Ambikapur(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):	1056.8	64	17 June 25 th SMW, June	30 September 39 th SMW, September
	NE Monsoon(Oct-Dec):	48.4	4	Post monsoon (October-December)	-
	Winter (Jan- March)	37.0	4	Winter rains	-
	Summer (Apr-May)	50.1	3	-	-
	Annual	1192.3	75	-	-

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)	601.6	177.9	72.8	30.5	86.4	-	0.03	1.6	23.7	23.7

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-gravelly)	-	-
	2. Inceptisol (Matasi-Sandyloam)	-	-
	3. Alfisols (Dorsa-clayloam)	-	-
	4. Vertisols (Kanhar-clayey)	-	-
	5. Others (Sandy)	-	-
	Total	-	-

* 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: Directorate of Agriculture, Govt. of Chhattisgarh

1.5	Agricultural land use	Area ('000 ha)	Cropping intensity %
	Net sown area	152.3	117
	Area sown more than once	25.7	
	Gross cropped area	177.9	

1.6	Irrigation	Area ('000 ha)
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Net irrigated area	13.0		
Gross irrigated area	13.7		
Rainfed area	164.2		
Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
Canals	47	2.4	
Tanks	807	0.9	
Open wells	11666	3.1	
Bore wells	1280	0.3	
Lift irrigation schemes			
Micro-irrigation			
Other sources (please specify)			
Total Irrigated Area			
Pump sets			
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	NIL		
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: Agricultural Statistics, 2013, Commissioner of land records, Govt. of Chhattisgarh

1.7 Area under major field crops & horticulture (as per latest figures) (Specify year 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	0.4	78.2	78.6	-	-	-	-	78.6	
2	Wheat	-	-	-	8.7	0.5	9.2	-	9.2	
3	Jowar	-	-	0.7	-	-	-	-	0.7	
4	Maize	-	-	19.7	-	-	-	-	19.7	
5	Millets	-	-	1.7	-	-	-	-	1.7	
6.	Total Cereals	-	-	100.6	-	-	-	-	100.6	
7.	Pigeonpea	-	-	8.6	-	-	-	-	8.6	
8.	Gram	-	-	-	-	-	1.0	-	1.0	
9.	GreenGram	-	-	0.1	-	-	-	-	0.1	
10.	BlackGram	-	-	4.9	-	-	-	-	4.9	
11.	HorseGram	-	-	2.7	-	-	-	-	2.7	
12.	Pea	-	-	-	-	-	0.6	-	0.6	
13.	Lentil	-	-	-	-	-	0.5	-	0.5	
14.	Lathyrus	-	-	-	-	-	0	-	0	
15.	Total Pulses	-	-	18.3	-	-	-	-	18.3	
16.	Rapeseed-mustard	-	-	-	-	-	0.4	-	0.4	
17.	Linseed	-	-	-	-	-	0	-	0	
18.	Groundnut	-	-	0	-	-	-	-	0	
19.	Sesame	-	-	0	-	-	-	-	0	
20.	Soybean	-	-	0	-	-	-	-	0	
21.	Sunflower	-	-	0	-	-	-	-	0	
22.	Niger/Safflower	-	-	0	-	-	-	-	0	
23.	Total Oilseeds	-	-	0.4	-	-	-	-	0.4	
24.	Vegetables	-	-	4.5	-	-	-	-	4.5	
25.	Sugarcane	-	-	0.5	-	-	-	-	0.5	
26	All Crops	-	-	-	-	-	-	-	-	

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

S.No.	Horticulture crops - Fruits	Area (' 000 ha)	
			Total
1	Cashew nut		0
2	Mango		0.2
3	Jack fruit		0
4	Gauva		0
5	Lemon		0
6	Banana		0
7	Ber		0
8	Others		
Total	All fruits		
	Horticulture crops - Vegetables		Total
1	Tomato		0.5
2	Potato		1.6
3	Brinjal		0.3
4	Bhindi		0.1
5	Onion		0.5
6	Cabbage		0.2
7	Leafy Veg.		0
8	Cauliflower		0.2
9.	Bottle guard		0
10	Green pea		0
11	Cow pea		0
12	Beans		0
13	Radish		0
14	Others		0.4
15	All vegetables		
	Medicinal and Aromatic crops		Total
1	Black chilli		0
2	Chilli		0.3
3	Garlic		0.2
4	Ginger		0.3
5	turmeric		0.1

Source: Directorate of Horticulture, Govt. of Chhattisgarh

1.11 Production and Productivity of major crops (Year 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	153.0	1951	-	-	-	-	153.0	1951	-
Crop 2	BlackGram	1.7	347	-	-	-	-	1.7	347	-
Crop 3	Groundnut	1.8	-	-	-	-	-	1.8	-	-
Crop 4	Pigeonpea	5.7	668	-	-	-	-	5.7	668	-
Crop 5	Sesame	0.9	-	-	-	-	-	0.9	-	-
Crop 6	HorseGram	0.8	279	-	-	-	-	0.8	279	-
Crop 8	Sunflower	-	-	0.001	-	-	-	0.001	-	-
Crop 9	Rap-mustard	-	-	4.6	-	-	-	4.6	-	-
Crop 10	Wheat	-	-	19.1	2065	-	-	19.1	2065	-
Crop 11	Lathyrus	-	-	0.2	-	-	-	0.2	-	-
Crop 12	Green Gram	-	-	0.01	197	-	-	0.01	197	-
	All crops	-	-	-	-	-	-	-	-	-
Major Horticultural crops (Crops to be identified based on total acreage) – Fruits & Vegetables										
Crop 1	Cashew nut	-	-	-	-	-	-	-	-	-
Crop 2	Mango	-	-	-	-	-	-	-	-	-
Crop 3	Jack fruit	-	-	-	-	-	-	-	-	-
Crop 4	Gauva	-	-	-	-	-	-	-	-	-
Crop 5	Lemon	-	-	-	-	-	-	-	-	-
Crop 6	Banana	0.149	-	-	-	-	-	0.149	-	-
Crop 7	Ber	-	-	-	-	-	-	-	-	-
Crop 8	Tomato	-	-	-	-	-	-	-	-	-
Crop 9	Potato	11.2	6886	-	-	-	-	11.2	6886	-
Crop 10	Brinjol	-	-	-	-	-	-	-	-	-
Crop 11	Bhindi	-	-	-	-	-	-	-	-	-
Crop 12	Onion	1.6	3250	-	-	-	-	1.6	3250	-

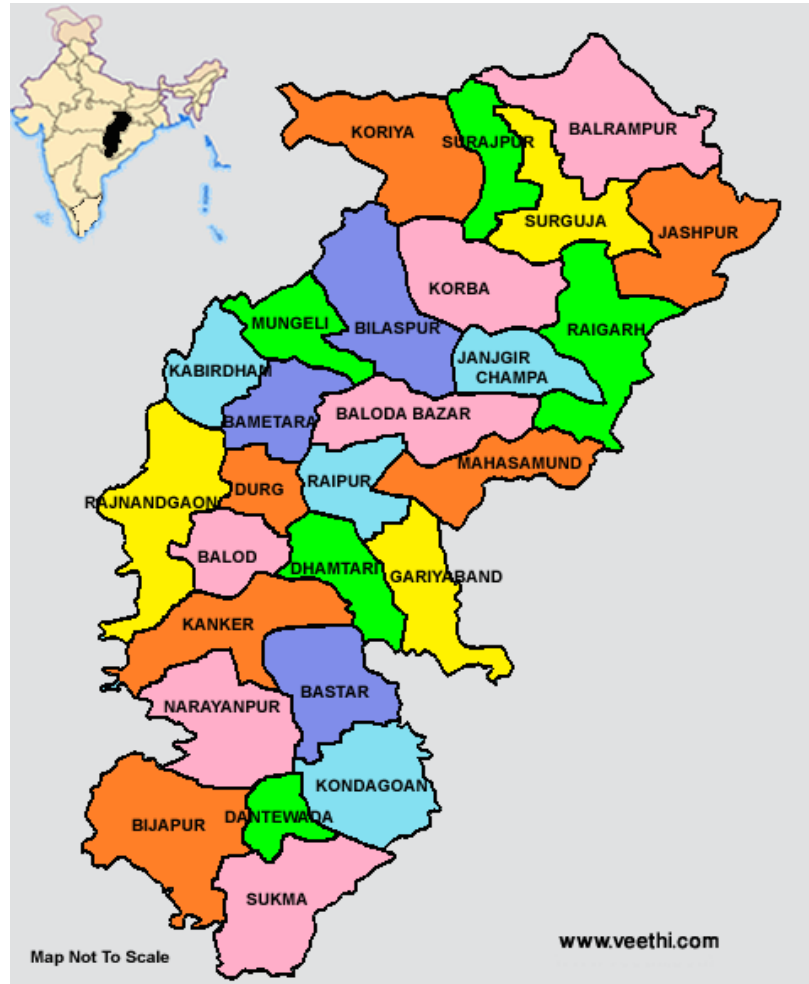
Source: Agricultural Statistics, 2013, Commissioner of land records, Govt. of Chhattisgarh

1.12	Sowing window for 5 major field crops (start and end of normal sowing period)	Rice	Blackgram	Ground nut	Pigeon pea	sesamum
	Kharif- Rainfed					
	Kharif-Irrigated					
	Major Rabi crops	Groundnut	Sunflower	Rapeseed-mustard	Wheat	lathyrus
	Rabi- Rainfed					
	Rabi-Irrigated					

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)			
Others (specify)				

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: No
		Soil map as Annexure 3	Enclosed: No

Annexure I
Location map of Balrampur district in Chhattisgarh state



2.0 Strategies for weather related contingencies for delayed onset of monsoon

2.1 Onset of monsoon between 15 June – 15 July

Major Farming situation	Crops to be sown	Agronomic measures
1) Upland	Rice- Tulsi, Vandana, Aditya, Kalinga-3, Samleshwari, Vanprabha, Indira barani dhan-1, Anjali, Danteshwari	line sowing with recommended dose of fertilizer
	Pigeonpea -UPAS-120, TAG-10, Asha, Rajivlochan, ICPL-151, ICPL-87 Urd - JU-2, JU-3, PDU-1TAU-2, TU-94-2	Proper Spacing with recommended dose of Fertiliser & Seed Inoculation with Rhizobium culture
	Maize- HISHELL , BIO-9681, DHM117, PMH-3, PRO-4640, PIO30-R26, , P-3787, 900M Gold, Seed Tech-2324, Pro- 4212	Line sowing weed management. by Atrazin @ 2 gm./liter. water at (PE)
	Groundnut -SB-11, JL-24, ICGS-11, ICGS-34, ICGS-43 Sesame -Selection-5, TC-25, JT-21	Line sowing & seed Inoculation with Rhizobium culture
2) Midland	Rice -MTU-1010, PA-6444, PHB-71, KRH-1, Indira sona, purnima, Indira barani dhan-1, Samleshwari, IGKV R1	15-20 days old seedling use for transplanting Apply 15-20 kg ZnSo4 before planting or sowing Apply recommended dose of Fertilizer
3) Low land	Rice -Sawarna , Jaldubi, PA-6444, Mahamaya, Danteswari , Bambleswari, karma mahsuri, swarna sub-1, , IGKV R2 (Durgeshwari), IGKV R 1244 (Maheshwari)	

2.2 Onset of monsoon between 16 – 31 July

Major Farming situation	Crops to be sown	Agronomic measures
1) Upland	Rice- Anjali, Purnima, Annda	Direct Seeding of Sprouted rice seed under puddled condition Increase seedrate by 20 %
	Pigeonpea -UPAS120, TAG10, Asha, Rajivlochan, ICPL151, ICPL-87	Proper Spacing with recommended dose of fertilizer & seed Inoculation with Rhizobium culture

	Urd- JU-2,JU-3,PDU-1TAU-2,TU-94-2 Maize- Early- Extra Early- Prakash, Pro- 4212, Pusa Early MaKKa-1 Vivek hybrid- 9,17	Proper Spacing with recommended dose of fertilizer & seed Inoculation with Rhizobium culture
	Moong- Pusa Vishal,BM-4,HUM-12	Proper Spacing with recommended dose of fertilizer & seed Inoculation with Rhizobium culture
	Sesame- selection-5,TC-25,JT-21	
2) Midland	Rice- Sawarna,MTU-1010 PA-6444,PHB-71,KRH-1,Indira sona	Grow short and medium duration variety Direct Seeding of Sprouted rice seed under puddled condition
3) Low land	Rice- Sawarna,sawarna ,MTU-1010 PA-6444,PHB-71,KRH-1,Indira sona	Grow short and medium duration variety Direct Seeding of Sprouted rice seed under puddled condition

2.3 Onset of monsoon between 1 – 15 August

Major Farming situation	Crops to be sown	Agronomic measures
1) Upland	Sesame- selection-5,TC-25,JT-21	line sowing
	Urd- JU-2,JU-3,PDU-1TAU-2,TU-94-2	Proper Spacing with recommended dose of fertilizer & seed Inoculation with Rhizobium culture
	Moong- Pusa Vishal,BM-4,HUM-12	Proper Spacing with recommended dose of fertilizer & seed Inoculation with Rhizobium culture
	Fingermillet,- KM68,VL148,km-68,vl-48	line sowing
	Niger - IGP-76,GA-10,JNS-1, JNS-6	line sowing

	Horse Gram- K42,Birsa kulthi-1, pk-1	line sowing
2) Midland	Rice- Early variety	Grow short duration variety Direct Seeding of Sprouted rice seed under puddled condition If already sown then weed mulching, biasi and foliar application of urea
3) Low land Yellow soil	Rice- Purnima, MTU-1010 Early + Midearly duration varieties	Grow short duration variety Direct Seeding of Sprouted rice seed under puddled condition If already sown then weed mulching, biasi and foliar application of urea

2.4 Onset of monsoon between 16 – 31 August

Conserve moisture for early planting of rabi crops

2.5 Onset of monsoon between 1 – 15 September

Major Farming situation	Crops to be sown	Agronomic measures
1) Upland	Niger - IGP-76,GA-10,JNS-1, JNS-6	line sowing
	Horse Gram- K42,Birsa kulthi-1, pk-1	line sowing
2) Midland	Mustard Toria Safflower	Recommended package and practice should be followed Line sowing Moderate dose of fertilizer Weeding (Intercultural operation)
3) Low land	Sunflower Linseed Pea	

Common Weed associated in Upland and Low land crops

Upland crops weeds	Ageratum conyzoides, Celosia argentea, Echinochloa Spp., Euphorbia hirta, Eclipta alba, panicum spp., Cyperus spp., cynodon dactylon, Achyranthes aspera, Amaranthus spp., Anagallis Arvensis, Argemone mexicana, Avena fatua, Dactyloctenium aegyptium, Saccharum Spontaneum, Tribulus terrestris
Lowland crops weeds	Echinochloa, Cyperus, Eichhornia crassipes, Oxylis

Weed control measures

Crops	Pre emergence	Post emergence
Rice	Pyzerosulfuron @ 20g/ha	Fenoxy prop ethyl @ 80 ml/ha Almix @ 4 g ai/ha
Maize	Atrazine @ 1.5 kg/ha Pendimethalin @ 1 L/ha	-
Pigeon pea	Pendimethalin @ 1 L/ha Fluchloralin @ 0.75 to 1 L/ha	Imazathapyr
Urd	Pendimethalin @ 1 L/ha Fluchloralin @ 0.75 to 1 L/ha	-
Horse gram	Pendimethalin @ 1 L/ha Fluchloralin @ 0.75 to 1 L/ha	-
Til	Pendimethalin @ 1 L/ha Fluchloralin @ 0.75 to 1 L/ha	-
Ramtil	Pendimethalin @ 1 L/ha Fluchloralin @ 0.75 to 1 L/ha	-
Groundnut	Pendimethalin @ 1 L/ha Fluchloralin @ 0.75 to 1 L/ha	-

Sugarcane	Atrazine @1.5 kg/ha Pendimethalin @1 L/ha	2,4-D @ 1 kg/ha Atrazine @
Horticulture		
Potato	Pendimethalin @ 1 L/ha Fluchloralin @ 0.75 to 1 L/ha	Fenoxo prop ethyl + chlorimuron Ethyl @ 80 + 4 g/ha
Tomato	Pendimethalin @ 1 L/ha Fluchloralin @ 0.75 to 1 L/ha	-

Outbreak of diseases and control measures

Outbreak of diseases and control measures	Vegetative stage	Flowering stage¹	Crop maturity stage	Post harvest
Rice	Leaf blast (Spray Propiconazole @ 1 ml/liter of water)	Sheath blight (Spray Validamycin @ 3 g/liter)	Neck blast (Spray Propiconazole 1 ml/liter of water)	-
Maize	Leaf blight (Hexaconazole @ 1 ml/liter)	Banded leaf and sheath blight (Validamycin 3 g/liter)	Banded leaf and sheath blight (Validamycin 3 g/liter)	-
Pigeon pea	Sterility mosaic	Wilt of pigeon pea	-	-
Urd	Yellow mosaic (Imedachlopid 4 ml/15liter)	Yellow mosaic (Imedachlopid 4 ml/15liter)	-	-
Groundnut	Tikka disease of groundnut (Carbendazim 1 gm/liter)	Bud necrosis of groundnut (Imedachlopid 4 ml/15liter)	-	Aspergillus rotting of seeds
Sugarcane	Whip Smut of sugarcane (Healthy sugarcane sets)	Red rot of sugarcane (Healthy sugarcane sets)	Red rot of sugarcane (Healthy sugarcane sets)	-
Horticulture				
Potato	Late blight of potato (Metalaxyl 500 ppm)	Late blight of potato (Metalaxyl 500 ppm)	Bacterial wilt of potato (IDM)	-
Tomato	-do-	-do-	-do-	-

3.0 Conditional dry spell

3.1 Condition: Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.

Major Farming situation ^a	Normal Crop/cropping system ^b	Suggested Contingency measures		
		Crop management ^c	Soil nutrient & moisture conservation measures ^d	Remarks on Implementation ^e
1) Upland	Rice-Fallow Vr. Local	*Thinning and gap filling the existing crops *Re-Sowing	Life saving Irrigation In situ SWC measures	Supply of inter cultural implements through RKVY
	Pigeonpea -Fallow: variety - Mainpat local			
	Maize-Fallow: variety. hybrid & local			
	Fallow- Horse Gram/Niger/Toriya Vr. Local			
	Groundnut -Fallow Variety- local			
2) Midland	Rice-Fallow vr.MTU-1010,PA-6444,PHB-71,	*Thinning and gap filling the existing crops *Re-Sowing *Sprouted seed should be sown if nursery is not available	Life saving Irrigation In situ SWC measures	-
	Rice-Wheat/Pea/			
3) Low land	Rice-Fallow			
	Rice-Lathyrus/linseed/lentil/pea			

3.2 Condition: Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period) at vegetative stage

Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures			
		Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation	
1) Upland	Rice-Fallow Vr. Local	1) Thinning (Lower the plant population per unit area) 2) Life saving irrigation 3) .Protection against diseases and pests	1)Inter cultivation (soil Mulching) Conservation furrow 2. Life saving Irrigation 3. Opening of conservation furrows	1)Supply of Inter cultural Implements through RKVY 2) Farm pond through IWSM programme 3) Seed supply through seed corporation	
	Pigeonpea -Fallow: variety - Mainpat local				
	Maize-Fallow: variety. hybrid & local				
	Fallow- Horse Gram/Niger/Toriya Vr. Local				
	Groundnut -Fallow Variety- local				
2) Midland	Rice-Fallow	1)Conserve water in crop field	4. Spray of 2% urea in paddy.		
3) Low land	Rice-Fallow	2)Life saving irrigation if facility available			
	Rice-linseed/Lathyrus/pea/lentil				

3.3 Condition: Mid season drought (long dry spell at flowering/ fruiting stage)

Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
		Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
1) Upland	Rice-Fallow Vr. Local	1) Weeding and Weed mulching 2) Life saving irrigation & weeding and weed mulching 3) Could be harvested for fodder purpose 4) Protection against diseases and pests 5) Earthing and inter cultural operation	1. Life saving Irrigation 2. Rainwater conserve during kharif	1) Farm pond through IWSM programme
	Pigeonpea -Fallow: variety - Mainpat local			
	Maize-Fallow: variety. hybrid & local			
	Fallow- Horse Gram/Niger/Toriya Vr. Local			
	Groundnut -Fallow Variety- local			
2) Midland	Rice-Fallow	1) Life saving irrigation &weeding and weed mulching		
3) Low land	Rice-Fallow	2)Could be harvested for fodder pupose		
	Rice-linseed/Lathyrus/pea/lentil			

3.4 Condition: Terminal drought (Early withdrawal of monsoon)

Major Farming situation	Normal Crop/cropping system	Crop management	Rabi Crop planning	Remarks on Implementation
1) Upland shallow red soils	Rice-Fallow Vr. Local	For precautionary measures use early and medium variety	1)Make a plan for Early sowing of Ramtil ,Kulthi(Hourse gram), Toria	
	Pigeonpea -Fallow: variety - Mainpat local			
	Maize-Fallow: variety. hybrid & local			
	Fallow- Horse Gram/Niger/Toriya Vr. Local			

	Groundnut -Fallow Variety- local			
2) Midland Yellow Red soil	Rice-Fallow	1. Life saving Irrigation 2. Rainwater conserve during kharif for rabi	1)Make plan for Utera cultivation of linseed,Lathyrus,lentil, Toriam, Batri, Dhaniam	
	Rice-Wheat			
3) Low land Yellow soil	Rice-linseed/Lathyrus/pea/lentil			

4.0 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				
Pigeon pea	*Provide Drainage *Need based plant protection IPDM for pulses *Earthing up to 6 inch both side of plant	Provide Drainage	Drain out excess water ,	Shift to safer place Safe storage against pest and disease dry in shade and turn frequently
Groundnut	*Provide Drainage *Need based plant protection IPDM for pulses	Provide Drainage	Drain out excess water , Harvesting at Physiological maturity stage	Shift to safer place, dry in shade and turn frequently Safe storage against pest and disease
Urd	*Provide Drainage *Need based plant protection IPDM for pulses	Provide Drainage	Drain out excess water , Harvesting at Physiological maturity stage	Shift to safer place, Dry in shade and turn frequently
Wheat	Provide Drainage	Provide Drainage	Drain out excess water	Shift to safer place, dry in shade and turn frequently
Rice			Harvesting at Physiological maturity stage	Shift to safer place,