State: Jharkhand

Agriculture Contingency Plan for District: West Singhbhum

1.0 District Agriculture profile				
1.1	**Agro-Climatic/Ecological Zone**			
	Agro Ecological Sub Region (ICAR)	Eastern plateau (chotanagpur) And Eastern Ghats, Hot Subhumid Eco-Region (12.3)		
	Agro-Climatic Zone (Planning Commission)	Eastern Plateau And Hills Region (VII)		
	Agro Climatic Zone (NARP)	South Eastern Plateau Zone (BI-6)		
	List all the districts falling under the NARP Zone* (*>50% area falling in the zone)	Khunti, East Singhbhum, Ranchi, Sareikela		
	Geographic coordinates of district headquarters	Latitude	Longitude	Altitude
		21.97°N to 23.60°N	85.00°E to 86.90°E	244m
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Zonal Research Station (ZRS), Darisai, Birsa Agricultural University, Ranchi		
	Mention the KVK located in the district with address	Krishi Vigyan Kendra, Darisai, Vill-Barakhurshi, PO. Giridhi, Distt. East Singhbhum-832 304		
	Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro-advisories in the Zone	ZRS, Darisai		

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)	1092		3rd week of June	4th week of September
	NE Monsoon(Oct-Dec)	102			
	Winter (Jan- Feb)	35		-	-
	Summer (Mar-May)	147		-	-
	Annual	1376		-	-

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)	519.8	59	109.7							

1. 4	Major Soils	Area ('000 ha)	Percent (%) of total
	1.		
	2.		
	3.		

1.5	Agricultural land use	Area ('000 ha)	Cropping intensity %
	Net sown area	59	
	Area sown more than once		
	Gross cropped area		

1.6	Irrigation	Area ('000 ha)
	Net irrigated area	14.7

	Gross irrigated area			
	Rainfed area			
	Sources of Irrigation	Number	Area (‘000 ha)	Percentage of total irrigated area
	Canals		9.1	
	Tanks			
	Open wells		3.5	
	Bore wells			
	Lift irrigation schemes			
	Micro-irrigation			
	Other sources		2.1	
	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			
	Critical			
	Semi- critical			
	Safe			
	Wastewater availability and use			
	Ground water quality			
*over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%				

1.7 Area under major field crops & horticulture (2008-09)

1.7	**Major field crops cultivated**	**Area (‘000 ha)**							
		Kharif			***Rabi***				
		Irrigated	**Rainfed**	**Total**	**Irrigated**	**Rainfed**	**Total**	**Summer**	**Grand total**
	Maize								5.2
	Pulses								14.8
	Wheat								2.1

	Oilseeds								0.7
	Sorghum								0.5
	Marua								0.5

	Horticulture crops - Fruits	**Area ('000 ha)**		
		Total	**Irrigated**	**Rainfed**
	Medicinal and Aromatic crops			
	Plantation crops			
	Fodder crops			
	Total fodder crop area			
	Grazing land			
	Sericulture etc			

1.8	**Livestock**	**Male ('000)**	**Female ('000)**	**Total ('000)**
	Non descriptive Cattle (local low yielding)			
	Improved cattle			
	Crossbred cattle			
	Non descriptive Buffaloes (local low yielding)			
	Descript Buffaloes			
	Goat			
	Sheep			
	Others (Camel, Pig, Yak etc.)			
	Commercial dairy farms (Number)			
1.9	**Poultry**	**No. of farms**	**Total No. of birds ('000)**	
	Commercial			
	Backyard			
1.10	**Fisheries** (Data source: Chief Planning Officer)			

	A. Capture						
	i) Marine (Data Source: Fisheries Department)	**No. of fishermen**	**Boats**		**Nets**		**Storage facilities (Ice plants etc.)**
			Mechanized	Non-mechanized	Mechanized (Trawl nets, Gill nets)	Non-mechanized (Shore Seines, Stake & trap nets)	
	ii) Inland (Data Source: Fisheries Department)	**No. Farmer owned ponds**		**No. of Reservoirs**		**No. of village tanks**	
	B. Culture						
				Water Spread Area (ha)		**Yield (t/ha)**	**Production ('000 tons)**
	i) **Brackish water** (Data Source: MPEDA/ Fisheries Department)						
	ii) **Fresh water** (Data Source: Fisheries Department)						

1.11 Production and Productivity of major crops

1.11	Name of crop	**Kharif**		**Rabi**		**Summer**		**Total**		**Crop residue as fodder** ('000 tons)
		Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	
Major Field crops (Crops identified based on total acreage)										
	Rice							285.7	1648	
	Maize							7.8	1501	
	Pulses							5.4	366	
	Wheat							2.1	937	
	Oilseeds							0.2	304	

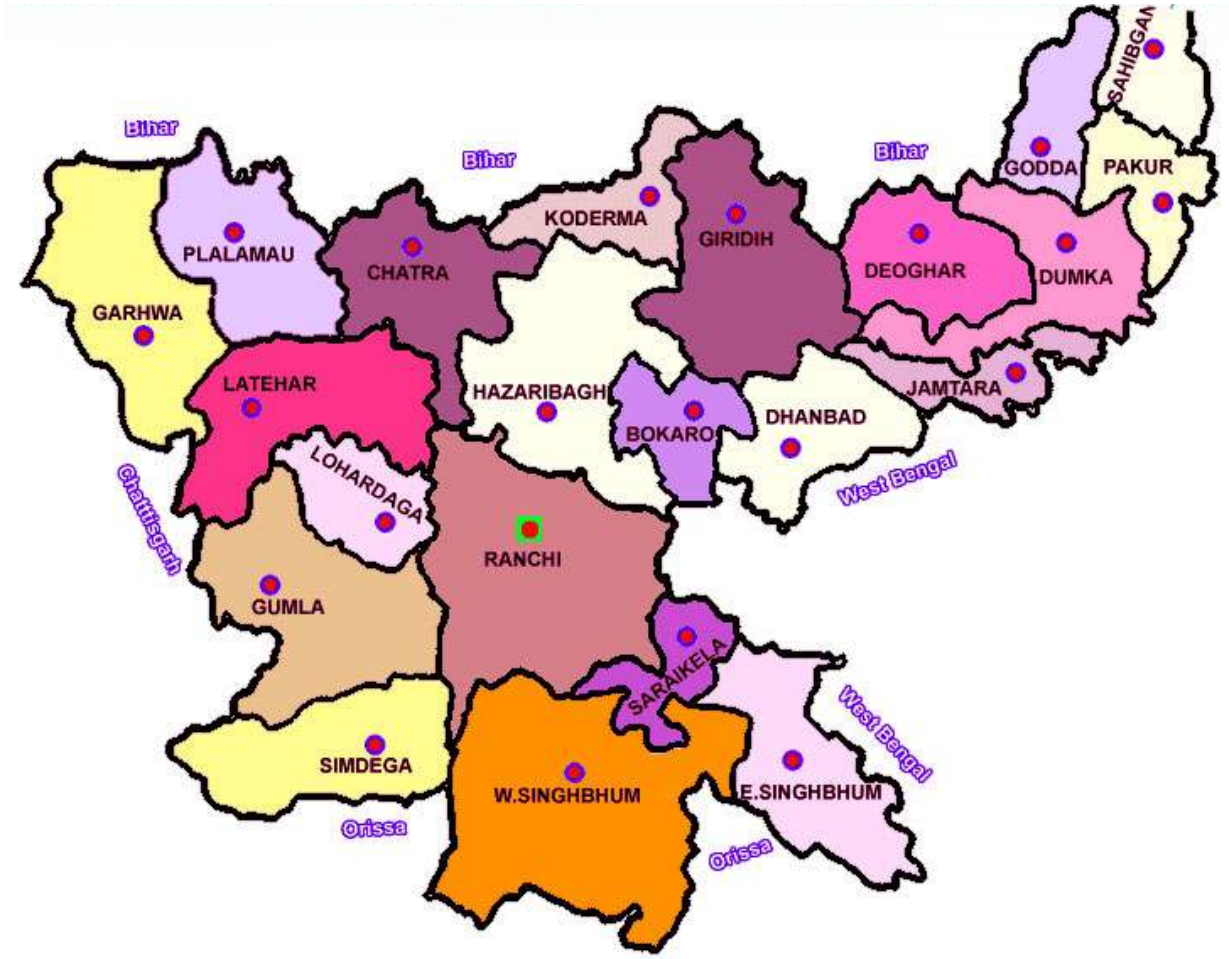
	Sorghum							0.2	230	
Major Horticultural crops (Crops identified based on total acreage)										

1.12	**Sowing window for 5 major field crops**	**Rice**	**Blackgram**	**Pigeon pea**	**Maize**	**Wheat**
	Kharif- Rainfed	4th week of June to 4th week of July	3rd week of June to 4th week of June	3rd week of June to 2nd week of July	3rd week of June to 4th week of July	
	Kharif-Irrigated	2nd week of June to 3rd week of June				
	Rabi-Rainfed					3rd week of October to 4th week of October
	Rabi-Irrigated					3rd week of November to 4th week of December

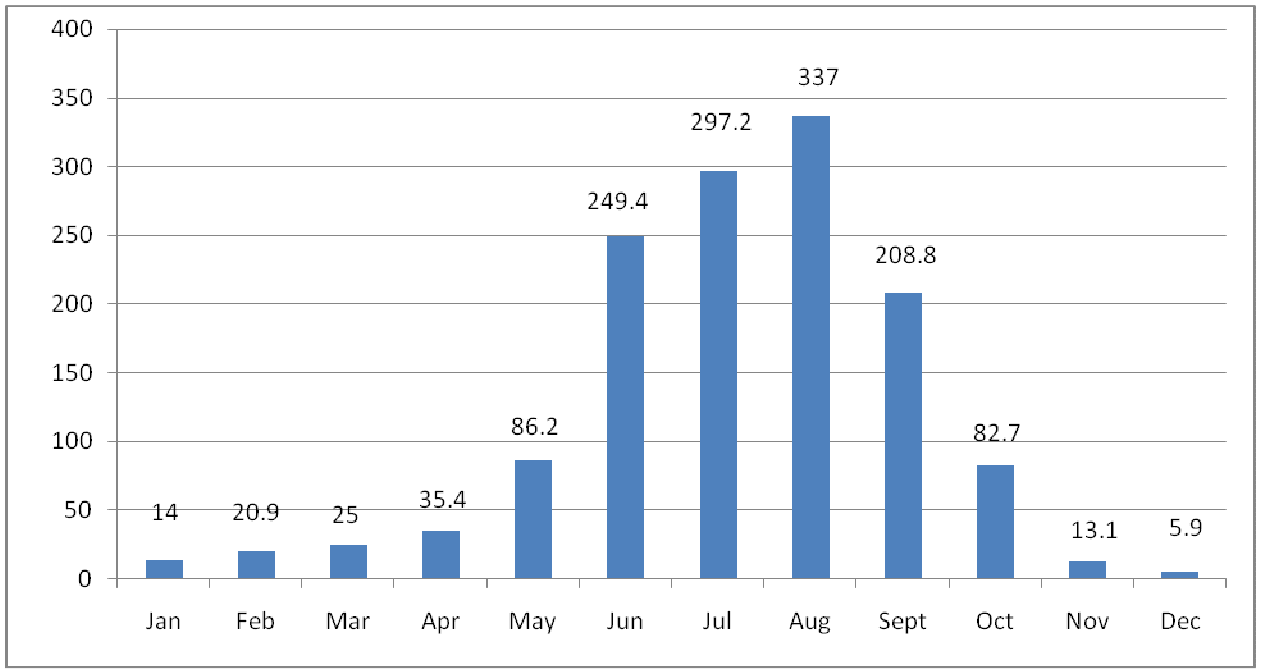
1.13	**What is the major contingency the district is prone to?** (Tick mark)	**Regular**	**Occasional**	**None**
	Drought		√	
	Flood			√
	Cyclone			√
	Hail storm			√
	Heat wave		√	
	Cold wave		√	
	Frost		√	
	Sea water intrusion			√
	Pests and disease outbreak	√		

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 II	Enclosed: Yes
		Soil map as Annexure III	Enclosed: Yes

Annexure I



Annexure II



Mean annual rainfall(mm)

Annexure III

Source: SAMETI, Jharkhand

Legend Information:-

20-Shallow excessively drained, loamy soils

36-Very deep well drained fine loamy soils

44- Very deep poorly drained fine soils

48-Shallow excessively drained gravelly loam soils

49- Deep, well drained fine loamy soils

50- Shallow well drained, loamy soils

18- Shallow well drained loamy soils

52- Shallow well drained gravelly loam soils

53- Deep moderately well drained fine loamy soils

54- Shallow moderately well drained loamy soil

55- Shallow well drained loamy soils

56- Very deep moderately well drained fine soils

57-Very deep imperfectly drained fine soils

58- Deep moderately well drained fine soils

59- Very deep poorly drained fine soils

64- Shallow well drained loamy soils

67-Very deep well drained coarse loamy soils

70-Very deep well drained fine loamy soils

71-Very deep poorly drained fine soils

73 - Deep poorly drained fine soils

75- Very deep moderately well drained fine soils

2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop / Cropping system**	**Change in crop / cropping system including variety**	**Agronomic measures**	**Remarks on Implementation**
Delay by 2 weeks 1st week of July	UPLAND High rainfall, shallow light textured sandy soils	Upland Rice (Sole), Finger millet (Sole), Pigeonpea + Sorghum, Pigeonpea + Maize,	Upland Rice (Sole), Finger millet (sole), Groundnut, Soybean, Rice + Pigeonpea, Rice + Okra, Rice + Maize, Pigeonpea + Groundnut, Pigeonpea + Maize, Pigeonpea + Sorghum	Dry seeding with 15% to 20% higher seed rate Seed treatment with Rhizobium in pulse Seed treatment with Azotobacter in Rice & Okra. Maximum use of organic manure	
	Less rainfall, shallow depth red light textured sandy soils	Upland Rice (Sole), Pigeonpea (Sole) , Maize (Sole), Pigeonpea + Maize	Upland Rice (Sole), Soybean , Groundnut, Rice + Pigeonpea, Rice + Okra, Rice + Maize Pigeonpea + Groundnut, Pigeonpea + Maize, Pigeonpea + Sorghum **Upland Rice var**. BVD-109, BVD-110, Bandana, Anjali, **Pigeonpea var.** Bahar, BR-65 **Maize var.** Suwan-1, HQPM-1 **Sorghum var.** CSV-1616 **Finger millet var.** A-404 **S. bean var.** Birsa soya-1, JS-	Dry seeding with 15% to 20% higher seed rate. Seed treatment with Rhizobium in pulses. Maximum use of organic manure	

			335, Birsa Safed soya.-2 **Groundnut var.** BG-2, BG-3, B bold **Okra var.** Arka Anamika		

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop / Cropping system**	**Change in crop / cropping system including variety**	**Agronomic measures**	**Remarks on Implementation**
Delay by 4 weeks 3rd week of July	High rainfall, shallow light textured sandy soils	Upland Rice (Sole), Finger millet (Sole), Pigeonpea + Sorghum, Pigeonpea + Maize,	Upland Rice (Sole), Finger millet (sole), Groundnut, Soybean, Rice + Pigeonpea, Rice + Okra, Rice + Maize, Pigeonpea + Groundnut, Pigeonpea + Maize, Pigeonpea + Sorghum	Dry seeding with 15% to 20% higher seed rate Seed treatment with Rhizobium in pulse Seed treatment with Azotobacter in Rice & Okra. Maximum use of organic manure	Supply of seed through NFSM
	Less rainfall, shallow depth red light textured sandy soils	Upland Rice (Sole), Pigeonpea (Sole) , Maize (Sole), Pigeonpea + Maize	Upland Rice (Sole), Soybean , Groundnut, Rice + Pigeonpea, Rice + Okra, Rice + Maize Pigeonpea + Groundnut, Pigeonpea + Maize, Pigeonpea + Sorghum		

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop / Cropping system**	**Change in crop / cropping system including variety**	**Agronomic measures**	**Remarks on Implementation[e]**
Delay by 6 weeks 1st week of August	High rainfall, shallow light textured sandy soils	Upland Rice (Sole), Finger millet (Sole), Pigeonpea + Sorghum, Pigeonpea + Maize,	Upland Rice (Sole), Finger millet (sole), Groundnut, Soybean, Rice + Pigeonpea, Rice + Okra, Rice + Maize, Pigeonpea + Groundnut, Pigeonpea + Maize, Pigeonpea + Sorghum	Dry seeding with 15% to 20% higher seed rate Seed treatment with Rhizobium in pulse Seed treatment with Azotobacter in Rice & Okra, Maximum use of organic manure	Supply of seed through NFSM
	Less rainfall, shallow depth red light textured sandy soils	Upland Rice (Sole), Pigeonpea (Sole) , Maize (Sole), Pigeonpea + Maize	Upland Rice (Sole), Soybean , Groundnut, Rice + Pigeonpea, Rice + Okra, Rice + Maize Pigeonpea + Groundnut, Pigeonpea + Maize, Pigeonpea + Sorghum		

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop / Cropping system**	**Change in crop / cropping system including variety**	**Agronomic measures**	**Remarks on Implementation**
Delay by 8 weeks 3rd week of August	High rainfall, shallow light textured sandy soils	Upland Rice (Sole), Finger millet (Sole), Pigeonpea + Sorghum, Pigeonpea + Maize,	Upland Rice (Sole), Finger millet (sole), Groundnut, Soybean, Rice + Pigeonpea, Rice + Okra, Rice + Maize, Pigeonpea + Groundnut, Pigeonpea + Maize, Pigeonpea + Sorghum	Dry seeding with 15% to 20% higher seed rate Seed treatment with Rhizobium in pulse Seed treatment with Azotobacter in Rice & Okra. Maximum use of organic manure	Supply of seed through NFSM
	Less rainfall,	Upland Rice (Sole),	Upland Rice (Sole),		

	shallow depth red light textured sandy soils	Pigeonpea (Sole) , Maize (Sole), Pigeonpea + Maize	Soybean , Groundnut, Rice + Pigeonpea, Rice + Okra, Rice + Maize Pigeonpea + Groundnut, Pigeonpea + Maize, Pigeonpea + Sorghum		

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop / Cropping system**	**Change in crop / cropping system including variety**	**Agronomic measures**	**Remarks on Implementation**
Delay by 2 weeks 1st week of July	High rainfall, slightly deep sandy loam soils MID LAND	Rice, Finger millet, Pigeonpea, Sorghum, Maize, Pigeonpea + Sorghum Pigeonpea + Maize	Rice, Finger millet, Groundnut, Soybean, Maize Rice + Green manure	Raising of Nursery through mat method in Rice Seed treatment with Rhizobium in pulses Seed treatment with Azotobacter in Rice Maximum use of organic manure	-
	Less rainfall, medium depth, light to medium textured sandy loam soils.	Rice, Pigeonpea, Maize Pigeonpea + Maize Pigeonpea + Sorghum	Rice, Soybean, Groundnut, Maize Rice + Green manure		

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop / Cropping system[b]**	**Change in crop / cropping system[c] including variety**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 4 weeks 3rd week of July	High rainfall, slightly deep sandy loam soils	Rice, Finger millet, Pigeonpea, Sorghum, Maize, Pigeonpea + Sorghum Pigeonpea + Maize	Rice, Finger millet, Groundnut, Soybean, Maize Rice + Green manure	Raising of Nursery through mat method in Rice Seed treatment with Rhizobium in pulses Seed treatment with Azotobacter in Rice Maximum use of	Supply of seed through NFSM

	Less rainfall, medium depth, light to medium textured sandy loam soils.	Rice, Pigeonpea, Maize Pigeonpea + Maize Pigeonpea + Sorghum	Rice, Soybean, Groundnut, Maize Rice + green manure	organic manure	

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop / Cropping system**	**Change in crop / cropping system including variety**	**Agronomic measures**	**Remarks on Implementation**
Delay by 6 weeks 1st week of August	High rainfall, slightly deep sandy loam soils	Rice, Finger millet, Pigeonpea, Sorghum, Maize, Pigeonpea + Sorghum Pigeonpea + Maize	Rice, Finger millet, Groundnut, Soybean, Maize Rice + Green manure	Raising of Nursery through mat method in Rice Seed treatment with Rhizobium in pulses, Seed treatment with Azotobacter in Rice , Maximum use of organic manure	Supply of seed through NFSM
	Less rainfall, medium depth, light to medium textured sandy loam soils.	Rice, Pigeonpea, Maize Pigeonpea + Maize Pigeonpea + Sorghum	Rice, Soybean, Groundnut, Maize Rice + Green manure		

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop / Cropping system[b]**	**Change in crop / cropping system[c] including variety**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 8 weeks 3rd week of August	High rainfall, slightly deep sandy loam soils	Rice, Finger millet, Pigeonpea, Sorghum, Maize, Pigeonpea + Sorghum Pigeonpea + Maize	Rice, Finger millet, Groundnut, Soybean, Maize Rice + Green manure	Raising of Nursery through mat method in Rice Seed treatment with Rhizobium in pulses, Seed treatment with Azotobacter in Rice , Maximum use of organic manure	Supply of seed through NFSM

	Less rainfall, medium depth, light to medium textured sandy loam soils.	Rice, Pigeonpea, Maize Pigeonpea + Maize Pigeonpea + Sorghum	Rice, Soybean, Groundnut, Maize Rice + Green manure		

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop / Cropping system[b]**	**Change in crop / cropping system[c] including variety**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 2 weeks 1st week of July	**LOW LAND** High rainfall, medium depth, heavy textured clay loam soils	Rice	Rice	Raising of Nursery through mat method in Rice	
	Less rainfall, medium depth, heavy textured clay loam soils	Rice	Rice **Rice var.** MTU-7029, MTU-1001, BPT-5204, Rajendra		

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Change in crop/cropping system[c]**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 4 weeks 3rd week of July	**LOW LAND** High rainfall, medium depth, heavy textured clay loam soils	Rice	Rice	Raising of Nursery through mat method in Rice	Supply of seed through NFSM
	Less rainfall, medium depth, heavy textured clay loam soils	Rice	Rice **Rice var**. Lalat, MTU-1010, Abhishek, Pro agro-6444		

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Change in crop/cropping system[c]**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 6 weeks	**LOW LAND** High rainfall, medium depth,	Rice	Rice	Raising of Nursery through mat method in Rice	Supply of seed through NFSM

1st week of August	heavy textured clay loam soils				
	Less rainfall, medium depth, heavy textured clay loam soils	Rice	Rice **Rice var**. Lalat, MTU-1010, Abhishek, Pro agro-6444		

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Change in crop/cropping system[c]**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 8 weeks 3rd week of August	**LOW LAND** High rainfall, medium depth, heavy textured clay loam soils	Rice	Rice	Short to medium duration variety should be sown behind the plough.	Supply of seed through NFSM
	Less rainfall, medium depth, heavy textured clay loam soils	Rice **Rice var**. MTU-7029, Bhojna	Rice **Rice var**. Lalat, MTU-1010, Abhishek, Pro agro-6444		

Condition			**Suggested Contingency measures**		
Early season drought **(Normal onset)**	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measues[d]**	**Remarks on Implementation[e]**
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	UP LAND and MEDIUM LAND High rainfall, Red shallow light textured sandy soils.	Rice, Finger millet, Pigeonpea, Blackgram, Sorghum, Niger, Green gram Pigeonpea + Sorghum Pigeonpea + Maize	Gap filling Re sowing	Maximum use of compost, Contour bunding, Terracing,	Supply of seed through NFSM Construction of percolation tank through IWSM
	Less rainfall, Red shallow light textured sandy & acidic soil.	Rice, Pigeonpea, Blackgram, Maize, Sorghum, Niger, Green gram Pigeonpea + Maize Pigeonpea + Sorghum			

Condition			**Suggested Contingency measures**		
Mid season drought (long dry	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Soil nutrient & moisture**	**Remarks on Implementati**

spell, consecutive 2 weeks rainless (>2.5 mm) period)				conservation measures[d]	on[e]
At vegetative stage	High rainfall, Red shallow light textured sandy soils.	Rice, Finger millet, Pigeonpea, Blackgram, Sorghum, Niger, Green gram Pigeonpea + Sorghum Pigeonpea + Maize	Life saving irrigation, Clipping of leaf tips Gap filling & postponment of top dressing	Maximum use of compost, Contour bunding, Terracing,	Seed provide through NFSM Construction of Water, conservation structures through IWMP
	Less rainfall, Red shallow light textured sandy & acidic soil.	Rice, Pigeonpea, Blackgram, Maize, Sorghum, Niger, Green gram Pigeonpea + Maize Pigeonpea + Sorghum	Life saving irrigation Clipping of leaf tips Gap filling & postponed top dressing	Maximum use of compost, Strengthening of bund,	

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measues[d]**	**Remarks on Implementation[e]**
At flowering/ fruiting stage	High rainfall, Red shallow light textured sandy soils.	Rice, Finger millet, Pigeonpea, Blackgram, Sorghum, Niger, Green gram Pigeonpea + Sorghum Pigeonpea + Maize	Life saving irrigation	Conservation of water on watershed basis	Construction of Water conservation structures through IWMP
	Less rainfall, Red shallow light textured sandy & acidic soil.	Rice, Pigeonpea, Blackgram, Maize, Sorghum, Niger, Green gram Pigeonpea + Maize Pigeonpea + Sorghum			

Condition			Suggested Contingency measures		
Terminal drought (Early withdrawal of monsoon)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Rabi Crop planning**	**Remarks on Implementation**
	High rainfall, Red	Rice, Finger millet, Pigeonpea,	Life saving irrigation,	Linseed, Lentil, Horse	Construction of

	shallow light textured sandy soils.	Blackgram, Sorghum, Niger, Green gram Pigeonpea + Sorghum Pigeonpea + Maize	Harvest at physiological maturity stage, Pigeonpea harvested for vegetable purpose	gram, Cow pea, Field bean	Water conservation structures through IWMP
	Less rainfall, Red shallow light textured sandy & acidic soil.	Rice, Pigeonpea, Blackgram, Maize, Sorghum, Niger, Green gram, Pigeonpea + Maize Pigeonpea + Sorghum			

Condition			**Suggested Contingency measures**		
Early season drought **(Normal onset)**	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measues[d]**	**Remarks on Implementation[e]**
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	LOW LAND High rainfall, Red shallow light textured sandy soils.	Rice	Gap filling Re sowing	Maximum use of compost	Supply of seed through NFSM, Construction of percolation tank through IWSM
	Less rainfall, Red shallow light textured sandy & acidic soil.	Rice			

Condition			**Suggested Contingency measures**		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	**Major Farming situation[a]**	**Normal Crop/cropping system**	**Crop management[c]**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation[e]**
At vegetative stage	**LOW LAND** High rainfall, Red shallow light textured sandy soils.	Rice	Life saving irrigation, Gap filling & postponement of top dressing	Maximum use of compost	Construction of Water conservation structures through IWMP

	Less rainfall, Red shallow light textured sandy & acidic soil.	Rice			

Condition			**Suggested Contingency measures**		
Mid season drought (long dry spell)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measures[d]**	**Remarks on Implementation[e]**
At flowering/ fruiting stage	**LOW LAND** High rainfall, Red shallow light textured sandy soils.	Rice	Life saving irrigation		Construction of Water conservation structures through IWMP
	Less rainfall, Red shallow light textured sandy & acidic soil.	Rice			

Condition			**Suggested Contingency measures**		
Terminal drought (Early withdrawal of monsoon)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Rabi Crop planning**	**Remarks on Implementation**
	LOW LAND High rainfall, Red shallow light textured sandy soils.	Rice	Life saving irrigation Harvest at physiological maturity stage	Linseed, Lentil, Horsegram, Cow pea, Fieldbean, Wheat, Chickpea	Construction of Water conservation structures through IWMP
	Less rainfall, Red shallow light textured sandy & acidic soil.	Rice			

2.1.2 Drought - Irrigated situation

Condition			**Suggested Contingency measures**

	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Limited release of water in canals due to low rainfall					
Non release of water in canals under delayed onset of monsoon in catchment					
Lack of inflows into tanks due to insufficient /delayed onset of monsoon					
Insufficient groundwater recharge due to low rainfall					

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

Condition	**Suggested contingency measure**			
Continuous high rainfall in a short span leading to water logging	**Vegetative stage**	**Flowering stage**	**Crop maturity stage**	**Post harvest**
Pigeonpea	Ridge making	Provide drainage		
Blackgram	Ridge making	Provide drainage		
Rice	Bund making	Provide drainage	Provide drainage	
Horticulture				
Cucurbits	Staking	Provide drainage	Provide drainage	
Vegetables	Sowing on ridge			

Outbreak of pests and diseases due to unseasonal rains				
Pulses	Leaf hoper/caterpillar Control- Monocrotophos @ 1 ml/lit			
Maize	Stem borer Control- Phorate 10G@ 20 kg/ha	Sheath blight Control- Hexaconazole1.0 lit in 500 lit water/ha		
Rice		Blast diseases Control- Tricyclazole (0.05 %)	False Smut Control- Propiconazole 0.1 % or Copper oxy chloride -50 (2 kg/ha)	
Bhendi		YVM Control- Carbofuran 3G @ 3 gm/m^2		
French bean	Rust disease Control- Mancozeb 2.5 kg/ ha			

2.3 Floods

Condition	**Suggested contingency measure[o]**			
Transient water logging/ partial inundation[1]	**Seedling / nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Continuous submergence for more than 2 days[2]	Not Applicable			
Sea water intrusion[3]				

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

Extreme event type	**Suggested contingency measure**

	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Hailstorm	Not applicable			
Heat Wave				
Wheat	Life saving irrigation	Life saving irrigation	Life saving irrigation (Terminal heat)	
Cold wave				
Wheat	Irrigation Balanced fertilizer application Foliar spray of nutrients	Light irrigation Mulching with crop residue \ weeds Fertilizer application	Irrigation, fertilizer application	
Vegetables	Raising of seedling in Poly house, re sowing if damaged	Light irrigation Mulching with crop residue \ weeds Disease and pest control, care for chilling injury or replanting	Quick harvesting	Grading, quick disposal for marketing
Pigeonpea	-	Light irrigation Mulching with crop residue \ weeds	-	-
Frost				
Wheat	-	Light irrigation Mulching with crop residue \ weeds	-	-
Pigeonpea	Exposure of crop to smoke by burning waste material during night time	Exposure of crop to smoke by burning waste material during night time Light sprinkler irrigation	Exposure of crop to smoke by burning waste material during night time Light sprinkler irrigation	Exposure of crop to smoke by burning waste material during night time
Tomato & Potato	-	Earth up to 15cm ht. Irrigation Intercultivation, Mulching with weeds	-	Harvest in dry weather
Horticultural crops (fruit	Light frequent irrigation may be practiced wherever irrigation facilities are available, mulching, thatching and			

crops)	creating smoke screens and lighting of fire is also practiced where irrigation facilities are not available
Cyclone	Not applicable

2.5 Contingent strategies for Livestock, Poultry & Fisheries

2.5.1 Livestock

	Suggested contingency measures		
	Before the event[s]	**During the event**	**After the event**
Drought			
Feed and fodder availability	Preservation of surplus fodder, encourage fodder cultivation and tree plantation and also encourage supply of molasses to cattle feed plants.	Arrangement of feeds and fodder from adjoining areas, exploitation of non conventional feed resources, use of urea treated straw and feed blocks.	Promotion of fodder seed production, cultivation and storage, establishment of fodder block making machines in fodder surplus areas.
Drinking water	Repairs of tube wells, clear off the sludge in the canals and local water catchments and clean the water tanks, large ponds and lakes	Harnessing water through the existing reservoirs and exploitation of groundwater.	To strengthen reservoirs by promoting recharging of water and rain water harvesting during rainy season.
Health and disease management	Mass vaccination and de worming	Provide shades to animals and water as much as possible. Treatment of diseased animals and proper disposal of carcasses.	Treatment of diseased animals and provide vitamin and mineral supplement to regain strength and vigour.

[s] based on forewarning wherever available

2.5.2 Poultry

	Suggested contingency measures			**Convergence/linkages with ongoing programs, if any**
	Before the event[a]	**During the event**	**After the event**	
Drought				
Shortage of feed ingredients	Storage of feed	Provide non conventional feed, supplement anti oxidant and anti stress		
Drinking water	Storage of water in tanks	Add vit-C and other anti stress ingredients with water		
Health and disease	Regular vaccination	Vaccination and treatment of	Disposal of dead birds	

management		diseased one		

[a] based on forewarning wherever available

2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event[a]	**During the event**	**After the event**
1. Drought			
Aquaculture			
(i) Shallow water in ponds due to insufficient rains/inflow	Plough the pond and apply lime @ 250kg/ha	Reduce the stocking density from 25000 fry (1 inches size) to 10000-15000/ha	Remove the fishes of bigger size(0.5 kg)
(ii) Impact of salt load build up in ponds / change in water quality		Apply lime @ 50 kg on every 15-30 days. Aerate the water as per need	Apply lime as per need @ 50 kg/ha
2. Heat wave and cold wave			
Aquaculture			
(i) Changes in pond environment (water quality)	Reduce application of organic manure and supplementary feeds	Reduce/stop application of feed	Harvest the bigger fishes, reduce/stop application of supplementary feed. Apply lime @ 50 kg/ha and potassium permanganate in perforated plastic ball 5-10g in each ball
(ii) Health and Disease management	Apply lime	Apply lime/salt as per need	Apply lime/salt as per need.

[a] based on forewarning wherever available