State: Jharkhand

Agriculture Contingency Plan for District: Saraikela

1.0 District Agriculture profile				
1.1	**Agro-Climatic/Ecological Zones**			
	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
		21^0 51' - 23^0 56'N	85^0 - 86^0E	250-1000 m
	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 Vignan Kendra,Seed Multiplication Farm, Gamharia, Distt. Saraikela-Kharsawan		
	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)	207	--	3^{nd} week of June	1^{st} week of October
	NE Monsoon(Oct-Dec)	262	-	2^{nd} week of October	3^{rd} week of December-
	Winter (Jan- Feb)	493	-	-	-
	Summer (Apr-May)	313	-	-	-

	Annual	1275	-	-	-

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)	281.5	79.8	60.7	55.5	-	-	-	-	60.8	23

1. 4	**Major Soils**	**Area ('000 ha)**	**Percent (%) of total**
	Red lateritic soils		
	Loam soils		
	Fine Loam soils		
	Fine mixed Loam soils		

1.5	**Agricultural land use**	Area ('000 ha)	Cropping intensity %
	Net sown area	79.8	109%
	Area sown more than once	6.31	
	Gross cropped area	86.1	

1.6	**Irrigation**	Area ('000 ha)		
	Net irrigated area	7.3		
	Gross irrigated area			
	Rainfed area			
	Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
	Canals		1.8	
	Tanks			

	Open wells		1.5	
	Bore wells			
	Lift irrigation schemes			
	Micro-irrigation		0.4	
	Other sources (Check Dam)		3.8	
	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 crops

1.7	**Major field crops cultivated**	**Area ('000 ha)**							
		Kharif			***Rabi***				
		Irrigated	**Rainfed**	**Total**	**Irrigated**	**Rainfed**	**Total**	**Summer**	**Grand total**
	Rice			77.3					77.3
	Maize			1.9			0.3		2.2
	Pigeonpea			3.3					3.3
	Blackgram			7.8					7.8
	Greengram			0.9					0.9
	Wheat						0.8		0.8
	Chick pea						0.4		0.4
	Pea						0.2		0.2

	Lentil						0.2		0.2

	Horticulture crops - Fruits	**Area ('000 ha)**		
		Total	**Irrigated**	**Rainfed**
	Horticulture crops - Vegetables			
	Cauliflower	1.4		
	Cabbage	1.2		
	Tomato	1.2		
	Brinjal	0.5		
	Chilli	0.1		
	Ladies finger	0.4		
	Bottle gourd	0.5		
	Bitter gourd	0.6		
	Cucumber	0.1		
	Ridge gourd	0.3		
	Sponge gourd	0.5		
	French Bean	0.1		
	Medicinal and Aromatic crops	**Total**	**Irrigated**	**Rainfed**
	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)			222.8
	Improved cattle			
	Crossbred cattle			
	Non descriptive Buffaloes (local low yielding)			
	Descript Buffaloes			28.9
	Goat			191.8
	Sheep			62.5

	Others (Camel, Pig, Yak etc.)			9.8
	Duckery			
	Commercial dairy farms (Number)			
1.9	**Poultry**	**No. of farms**	**Total No. of birds ('000)**	
	Commercial			
	Backyard		830	

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 (2004-09)

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	116.9	1513					116.9	1513	
	Maize	2.6	1290	0.6	1350			3.2	1320	
	Pigeonpea	1.7	500					1.7	500	
	Blackgram	3.5	445					3.5	445	
	Greengram	0.4	415					0.4	415	
	Wheat			1.4	1600			1.4	1600	
	Chick pea			0.5	1400			0.5	1400	
	Pea			0.2	1500			0.2	1500	
	Lentil			0.1	750			0.1	750	
Major Horticultural crops (Crops identified based on total acreage)										
	Cauliflower	36.4	0.3					36.4	0.3	
	Cabbage	31.8	0.3					31.8	0.3	
	Tomato	26.31	0.3					26.31	0.3	
	Brinjal	14.3	0.3					14.3	0.3	

	Chilli	0.5	0.1					0.5	0.1	
	Ladies finger	7.1	0.2					7.1	0.2	
	Bottle gourd	78.4	0.2					78.4	0.2	
	Bitter gourd	86.0	0.1					86.0	0.1	
	Cucumber	25.1	0.2					25.1	0.2	
	Ridge gourd	38.2	0.2					38.2	0.2	
	Sponge gourd	6.8	0.5					6.8	0.5	
	French bean	15.3	0.1					15.3	0.1	

1.12	**Sowing window for 5 major field crops** (start and end of normal sowing period)	**Rice**	**Black gram**	**Pigeonpea**	**Maize**	**Wheat**
	Kharif- Rainfed	4th week of June to 4th week of July	3rd week of June to 4th week of July	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

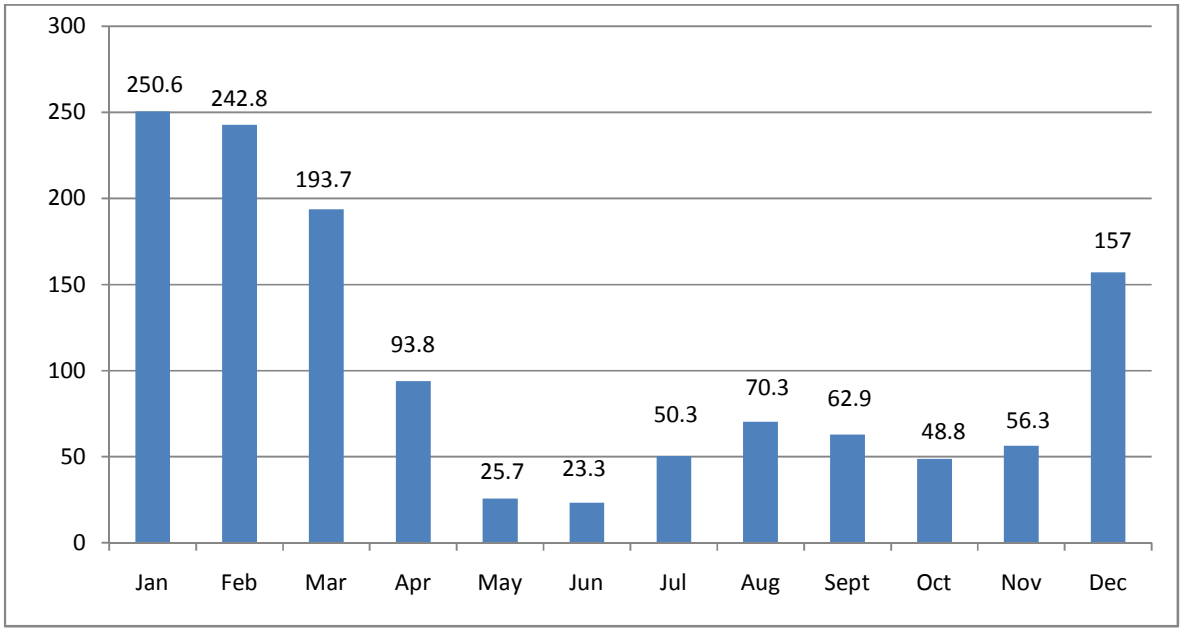
1.13	**What is the major contingency the district is prone to?**	**Regular**	**Occasional**	**None**
	Drought	✓		
	Flood			✓
	Cyclone			✓
	Hail storm			✓
	Heat wave		✓	
	Cold wave		✓	
	Frost		✓	
	Sea water intrusion			✓
	Pests and disease outbreak		✓	

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

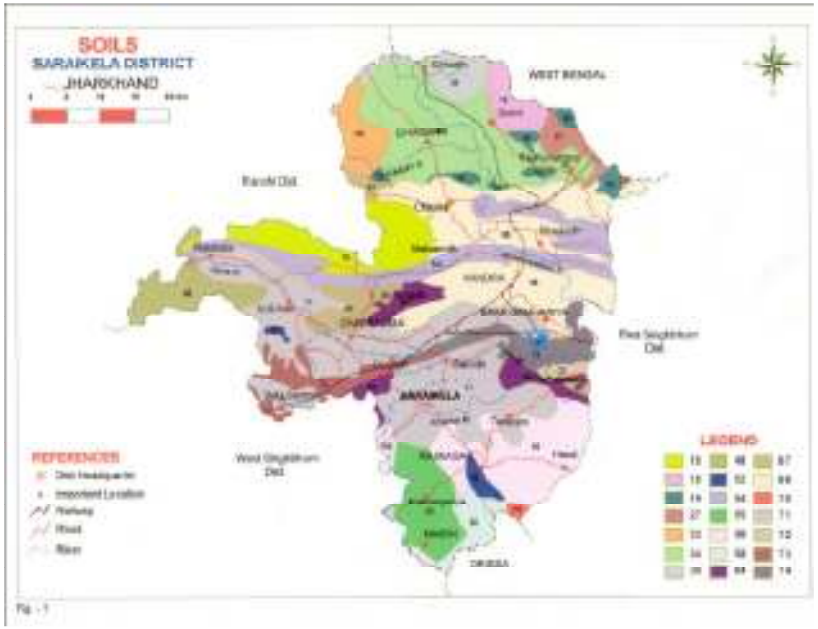
Annexure I


Bihar
Bihar
Bihar
SAHIBGAN
GODDA
PAKUR
KODERMA
GIRIDIH
PLALAMAU
CHATRA
DEOGHAR
DUMKA
GARHWA
LATEHAR
HAZARIBAGH
JAMTARA
BOKARO
DHANBAD
West Bengal
LOHARDAGA
Chattisgarh
RANCHI
GUMLA
SARAIKELA
West Bengal
SIMDEGA
W.SINGHBHUM
E.SINGHBHUM
Orissa
Orissa

Annexure II


300
250
200
150
100
50
0
250.6
242.8
193.7
93.8
25.7
23.3
50.3
70.3
62.9
48.8
56.3
157
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sept
Oct
Nov
Dec

Annexure III



Legend Information:-

15- Shallow excessively drained gravelly loamy soils

18- Shallow well drained loamy soils

19-Shallow, excessively drained, gravelly loamy soils

27-Deep, moderately well drained, fine loamy soils.

33-Very Deep moderately well drained fine loamy soils

34- Very deep, well drained, fine loamy soils

36- Very deep moderately well drained fine soils

48-Shallow excessively drained gravelly loam soils

52- Shallow well drained gravelly loam soils

54- Shallow moderately well drained loamy soils

55-Shallow well drained loamy soils

56- Very deep moderately well drained fine soils

58- Deep moderately well drained fine soils

64- Shallow well drained loamy soils

67-Very deep well drained coarse loamy soils

68-Moderately deep well drained fine loamy soils

70-Very deep well drained fine loamy soils

71-Very deep poorly drained fine soils

72- Deep well drained fine loamy soils

73 -Very deep poorly drained fine soils

74- Deep poorly drained fine loamy soils

Source: SAMETI, Jharkhand

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 red sandy soil	Upland Rice (Sole), Finger millet (Sole), Pigeonpea + Sorghum, Pigeonpea + Maize	Upland Rice (Sole), Finger millet (sole), Groundnut, Soybean Pigeonpea + Sorghum Pigeonpea + Maize, Rice + Pigeonpea, Rice + Okra, Rice + Maize Pigeonpea + Groundnut	Dry seeding with 15% to 20% higher seed rate Seed treatment with Rhizobium (pulse) Seed treatment with Azotobacter in Rice & okra. Maximum use of organic manure	
	High rainfall, shallow sandy soil	Upland Rice (sole), Pigeonpea (Sole), Maize (Sole), Pigeonpea + Maize, Pigeonpea + Sorghum	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 **Soybean var.** Birsa soya-1, JS-335, Birsa Safed soya.-2	Dry seeding with 15% to 20% higher seed rate. Seed treatment with Rhizobium (pulse) Maximum use of organic manure	

			Groundnut var. BG-2, BG-3, B bold **Okra var**. Arka Anamika		
	Less rainfall, shallow red light textured sandy & acidic soil	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	Dry seeding with 15% to 20% higher seed rate. Seed treatment with Rhizobium (pulse) Maximum use of 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 4 weeks 3rd week of July	High rainfall, shallow red sandy soil	Upland Rice (Sole), Finger millet (Sole), Pigeonpea + Sorghum, Pigeonpea + Maize	Upland Rice (Sole) Finger millet (sole) 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 (pulse) Seed treatment with Azotobacter in Rice & okra. Maximum use of organic manure	Supply of seed through NFSM
	High rainfall, shallow sandy soil	Upland Rice (sole), Pigeonpea (Sole), Maize (Sole), Pigeonpea + Maize, Pigeonpea + Sorghum	Upland Rice (Sole) Finger millet (sole) 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 (pulse) Maximum use of organic manure	
	Less rainfall,	Upland Rice (Sole),	Upland Rice (Sole),	Dry seeding with 15% to 20%	Supply of seed

	shallow red light textured sandy & acidic soil	Pigeonpea (Sole), Maize (Sole), Pigeonpea + Maize	Soybean, Groundnut, Rice + Pigeonpea, Rice + Okra, Rice + Maize Pigeonpea + Groundnut, Pigeonpea + Maize, Pigeonpea + Sorghum	higher seed rate. Seed treatment with Rhizobium (pulse) Maximum use of organic manure	through NFSM

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, shallow red sandy soil	Upland Rice (Sole), Finger millet (Sole), Pigeonpea + Sorghum, Pigeonpea + Maize	Upland Rice (Sole), Finger millet (sole), Greengram, Blackgram Rice + Pigeonpea, Rice + Okra, Rice + Maize Pigeonpea + Groundnut, Pigeonpea + Maize, Pigeonpea + Sorghum **Upland Rice var**. Birsa Dhan-108, BVD 109, Bandana, Anjali, **Pigeonpea var.** Birsa Pigeonpea-1 **Maize var.** Birsa Maize-1, BVM-2, Kanchan **Sorghum var.** CSV-1616 **Finger millet var.** A-404 **Groundnut var.** BG-2, BG-3, B bold **Okra var**. Arka Anamika **Greengram var**. K-851, Pusa vishal	Seeding behind plough in furrow with 15-20% higher seed rate, Seed treatment with Rhizobium in pulses Seed treatment with Azotobacter in Rice & okra. Maximum use of organic manure	Supply of seed through NFSM

			Black gram var. Birsa urd-1, T-9, PU-19		

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 red sandy soil	Upland Rice (Sole), Finger millet (Sole), Pigeonpea + Sorghum, Pigeonpea + Maize	Finger millet, Niger, Blackgram Maize, Maize+Sorghum	Seeding behind plough in furrow with 15-20% higher seed rate, Seed treatment with rhizobium in pulse, Sulphur application in oilseeds Maximum use of organic manure	Supply of seed through NFSM
	High rainfall, shallow sandy soil	Upland Rice (sole) Pigeonpea (Sole) Maize (Sole) Pigeonpea + Maize Pigeonpea + Sorghum	Finger millet, Niger, Blackgram Maize, Maize+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	MID LAND High rainfall, slightly deep yellow loamy to sandy loam soil.	Rice, Finger millet, Pigeonpea, Sorghum, Maize, Pigeonpea + Sorghum, Pigeonpea + Maize	Rice, Finger millet, Groundnut, Soybean, Maize Rice + Green manure	Seedling raise through mat method in Rice, Seed treatment with Rhizobium in pulses, Seed treatment with Azotobacter in Rice, Maximum use of organic manure	
	High rainfall, shallow sandy soil	Rice, Pigeonpea, Maize, Pigeonpea + Maize Pigeonpea + Sorghum	Rice, Soybean, Groundnut, Maize Rice + Green manure		
	Less rainfall, shallow red light textured sandy & acidic soil	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]**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 4 weeks 3rd week of July	High rainfall, slightly deep yellow loamy to sandy loam soil.	Rice, Finger millet, Pigeonpea, Sorghum, Maize, Pigeonpea + Sorghum,	Rice, Finger millet, Groundnut, Soybean, Maize Rice + Green manure	Seedling raise through mat method in Rice, Seed treatment with Rhizobium in pulses, Maximum use of	Supply of seed through NFSM

		Pigeonpea + Maize		organic manure	
	High rainfall, shallow sandy soil	Rice, Pigeonpea, Maize, Pigeonpea + Maize Pigeonpea + Sorghum	Rice, Groundnut, Soybean, Maize, Sunflower, Rice + Green manure		
	Less rainfall, shallow red light textured sandy & acidic soil	Rice, Pigeonpea, Maize, Pigeonpea + Maize Pigeonpea + Sorghum	Rice, Groundnut, Soybean, Maize, Sunflower, 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]**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 6 weeks 1st week of August	High rainfall, slightly deep yellow loamy to sandy loam soil. .	Rice, Finger millet, Pigeonpea, Sorghum, Maize, Pigeonpea + Sorghum, Pigeonpea + Maize	Rice, Groundnut, Soybean, Maize, Sunflower, Rice + Green manure	Seedling raise through mat method in Rice, Short duration variety should be select, Seed treatment with Rhizobium in pulses, Maximum use of organic manure	Supply of seed through NFSM
	High rainfall, shallow sandy soil	Rice, Pigeonpea, Maize Pigeonpea + Maize Pigeonpea + Sorghum	Rice, Groundnut, Soybean, Maize, Sunflower Rice + Green manure		

	Less rainfall, shallow red light textured sandy & acidic soil	Rice, Pigeonpea, Maize Pigeonpea + Maize Pigeonpea + Sorghum	Rice, Groundnut, Soybean, Maize, Sunflower 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]**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 8 weeks 3rd week of August	High rainfall, slightly deep yellow loamy to sandy loam soil.	Rice, Finger millet, Pigeonpea, Sorghum, Maize, Pigeonpea + Sorghum, Pigeonpea + Maize	Finger millet, Niger, Blackgam, Maize	Seeding behind plough in furrow with 15-20% higher seed rate, Seed treatment with Rhizobium in pulses Sulphur application in oilseeds Maximum use of organic manure	Supply of seed through NFSM
	High rainfall, shallow sandy soil	Rice, Pigeonpea, Maize, Pigeonpea + Maize, Pigeonpea + Sorghum	Finger millet, Niger, Blackgram, Maize		
	Less rainfall, shallow red light textured sandy & acidic soil	Rice, Pigeonpea, Maize Pigeonpea + Maize Pigeonpea + Sorghum	Finger millet, Niger, Blackgram, Maize		

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	LOWLAND High rainfall, medium depth, grayish heavy textured clay loam soil.	Rice	Rice	Nursery raising through mat method	
	High rainfall, medium depth, yellow to gray, heavy textured, loamy to clay loam soils	Rice	Rice		

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	High rainfall, medium, gray, heavy clay loam soil.	Rice	Rice	Nursery raising through mat method	Supply of seed through NFSM
	High rainfall, medium gray, heavy textured loamy & clay loam soils.	Rice	Rice		
	Less rainfall, medium gray, heavy textured loamy & clay loam soils.	Rice	Rice		

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 1st week of August	High rainfall, medium gray, heavy clay loam	Rice	Rice **Rice var**. Lalat, MTU-1010, Abhishek, Pro agro-6444	Nursery raising through mat method	Supply of seed through NFSM

	soil.				
	High rainfall, medium gray, heavy textured loamy & clay loam soils.	Rice	Rice		
	Less rainfall, medium gray, heavy textured loamy & clay loam soils.	Rice	Rice		

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation[e]**
Delay by 8 weeks 3rd week of August	High rainfall, medium, gray, heavy clay loam soil.	Rice	Rice **Rice var**. Lalat, MTU-1010, Abhishek, Pro agro-6444	Short to medium duration variety .	Supply of seed through NFSM
	High rainfall, medium gray, heavy textured loamy & clay loam soils.	Rice	Rice		
	Less rainfall, medium gray, heavy textured loamy & clay loam soils.	Rice	Rice		

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 measures[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 MID LAND High rainfall, shallow red light sandy soils.	Rice, Finger millet, Pigeonpea, Blackgram, Sorghum, Niger, Greengram Pigeonpea + Sorghum Pigeonpea + Maize	Gap filling Re sowing	Maximum use of compost, Contour bunding, Terracing, Construction of percolation tank	Construction of percolation tank through IWSM

Condition			**Suggested Contingency measures**		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation[e]**
At vegetative stage	High rainfall, shallow red sandy soil..	Rice, Finger millet, Pigeonpea, Blackgram, Sorghum, Niger, Greengram Pigeonpea + Sorghum Pigeonpea + Maize	Life saving irrigation	Maximum use of compost, Contour bunding, Terracing,	Construction of water conservation structures through IWMP
	Less rainfall, shallow red sandy soil.	Rice, Pigeonpea, Blackgram, Sorghum, Niger, Greengram Pigeonpea + Sorghum Pigeonpea + Maize		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 measures[d]**	**Remarks on Implementation[e]**
At flowering/ fruiting stage	High rainfall, shallow red sandy soil.	Rice, Finger millet, Pigeonpea, Blackgram, Sorghum, Niger, Greengram Pigeonpea + Sorghum Pigeonpea + Maize	Life saving irrigation		Construction of water conservation structures through IWMP

Condition			Suggested Contingency measures		
Terminal drought (Early withdrawal of monsoon)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Rabi Crop planning[d]**	**Remarks on Implementation[e]**
	High rainfall, shallow red sandy soil.	Rice, Finger millet, Pigeonpea, Blackgram, Sorghum, Niger, Greengram Pigeonpea + Sorghum Pigeonpea + Maize	Life saving irrigation, Harvest at physiological maturity stage, Pigeonpea harvested for vegetable purpose	Linseed, Lentil, Horse gram, Cowpea, Field bean	Construction of water conservation structures through IWMP

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**	**Remarks on Implementation[e]**

				measures[d]	
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	LOW LAND High rainfall, shallow, light textured sandy & acidic soil.	Rice	Gap filling Re sowing	Maximum use of compost	Construction of percolation tank through IWSM

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[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measures[d]**	**Remarks on Implementation[e]**
At vegetative stage	High rainfall, shallow, light textured sandy& acidic soil.	Rice	Life saving irrigation	Maximum use of compost	Construction of water conservation structures through IWMP

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	High rainfall, shallow, light textured sandy & acidic soil.	Rice	Life saving irrigation		Construction of water conservation structures through IWMP

Condition			**Suggested Contingency measures**		
Terminal drought (Early withdrawal	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Rabi Crop planning[d]**	**Remarks on Implementation[e]**

of monsoon)					
	High rainfall, shallow light textured sandy & acidic soil.	Rice	Life saving irrigation, Harvest at physiological maturity stage	Linseed, lentil, Horse gram, cowpea, Field bean, Wheat, Chickpea	Construction of Water conservation structures through IWMP

2.1.2 Drought - Irrigated situation

Condition			**Suggested Contingency measures**		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
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 crops)	Light frequent irrigation may be practiced wherever irrigation facilities are available, mulching, thatching and 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,	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.

	large ponds and lakes		
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 management	Regular vaccination	Vaccination and treatment of diseased one	Disposal of dead birds	

[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