State: Jharkhand

Agriculture Contingency Plan for District: JAMTARA

1.0 District Agriculture profile				
1.1	**Agro-Climatic/Ecological Zone**			
	Agro Ecological Sub Region (ICAR)	Central North Eastern Plateau		
	Agro-Climatic Zone (Planning Commission)	Eastern Plateau And Hills Region (VII)		
	Agro Climatic Zone (NARP)	Central And North Eastern Plateau Zone (BI-4)		
	List all the districts falling under the NARP Zone* (*>50% area falling in the zone)	Bokaro, Chatra, Deogarh, Dhanbagh, Giridh, Godda, Hazaribagh, Jamtara, Khunthi		
	Geographic coordinates of district headquarters	Latitude	Longitude	Altitude
		23^0-10' to 24^0-5' N	86^0-30' to 87^0-15' E	
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Zonal Research Station (ZRS), Dumka, Birsa Agricultural University, Ranchi		
	Mention the KVK located in the district with address	Krishi Vigyan Kendra, Agricultural Farm, Bena,Distt. Jamtara		
	Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro-advisories in the Zone	Birsa Agricultural University, Ranchi		

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)	1202		3^{rd} week of June	3^{rd} week of September
	NE Monsoon(Oct-Dec)	132			
	Winter (Jan- Feb)	30		-	-
	Summer (Mar-May)	134		-	-
	Annual	1498		-	-

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)	180	56.3	30.2	10.8	-	-	-	-	-	-

1. 4	**Major Soils**	**Area ('000 ha)**	**Percent (%) of total**
	1. Red lateritic (Ultic Paleustalfs) soils		
	2. Loam (Haplustalfs) soils		
	3. Fine Loam (Rhodustlafs) soils		
	4. Fine mixed Loam (Paleustalfs) soils		

1.5	**Agricultural land use**	Area ('000 ha)	Cropping intensity %
	Net sown area	56.3	105.6%
	Area sown more than once	2.8	
	Gross cropped area	59.1	

1.6	**Irrigation**	Area ('000 ha)		
	Net irrigated area	11.4		
	Gross irrigated area			
	Rainfed area			
	Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
	Canals	2	0.3	
	Tanks			
	Open wells	2542	4.5	
	Bore wells	102		
	Lift irrigation schemes			
	Micro-irrigation			
	Other sources (Check Dam)		6.6	
	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 (as per latest figures)

1.7	**Major field crops cultivated**	**Area ('000 ha)**							
		Kharif			***Rabi***				
		Irrigated	**Rainfed**	**Total**	**Irrigated**	**Rainfed**	**Total**	**Summer**	**Grand total**
	Rice			41.1					41.1
	Maize			11.4			0.65		12.1
	Pigeonpea			2.9					2.9
	Blackgram			1.6					1.6
	Greengram			0.08					0.08
	Wheat						2.4		2.4
	Chick pea						0.8		0.8
	Pea						0.8		0.8
	Lentil						0.3		0.3

	Horticulture crops - Vegetables	**Total**	**Irrigated**	**Rainfed**
	Cauliflower	1.5		
	Cabbage	1.2		
	Tomato	1.3		
	Brinjal	0.5		
	Chilli	0.07		
	Ladies finger	0.3		
	Bottle gourd	0.4		

	Bitter gourd	0.7		
	Cucumber	0.1		
	Ridge gourd	0.3		
	Sponge gourd	0.4		
	French bean	0.1		
	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)			277.6
	Improved cattle			
	Crossbred cattle			
	Non descriptive Buffaloes (local low yielding)			
	Descript Buffaloes			26.4
	Goat			155.3
	Sheep			50.9
	Others (Camel, Pig, Yak etc.)			50.4
	Duckery			
	Commercial dairy farms (Number)			
1.9	**Poultry**	**No. of farms**	**Total No. of birds ('000)**	
	Commercial			
	Backyard		440.3	
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	75.9	1647					75.9	1647	
	Maize	12.1	1060	0.4	1205			12.6	1132.5	
	Pigeonpea	2.1	745					2.1	745	
	Blackgram	0.9	600					0.9	600	
	Greengram	0.05	600					0.05	600	
	Wheat			4.8	2000			4.8	2000	
	Chick pea			0.8	1060			0.8	1060	
	Pea			1.2	1500			1.2	1500	

	Lentil			0.2	800			0.2	800	
Major Horticultural crops (Crops identified based on total acreage)										
	Cauliflower	15.6	0.07					15.6	0.07	
	Cabbage	17.3	0.2					17.3	0.2	
	Tomato	23.3	0.25					23.3	0.25	
	Brinjal	9.8	0.2					9.8	0.2	
	Chilli	0.46	0.07					0.46	0.07	
	Ladies finger	9.0	0.2					9.0	0.2	
	Bottle gourd	78.0	0.8					78.0	0.8	
	Bitter gourd	79.1	0.1					79.1	0.1	
	Cucumber	19.8	0.1					19.8	0.1	
	Ridge gourd	41.1	0.1					41.1	0.1	
	Sponge gourd	7.4	0.1					7.4	0.1	
	French bean	11.8	0.07					11.8	0.07	

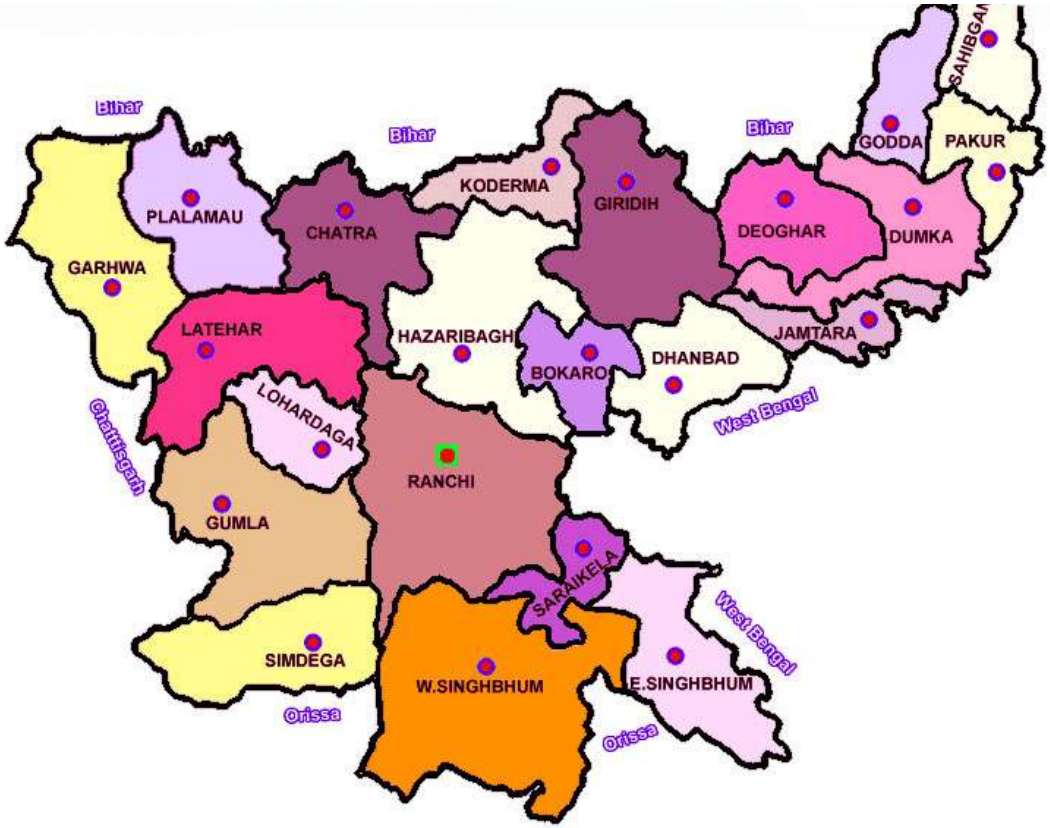
1.12	**Sowing window for 5 major field crops** (start and end of normal sowing period)	**Rice**	**Blackgram**	**Pigeon pea**	**Maize**	**Wheat**
	Kharif- Rainfed	4th week of June to 4th week of July	3rd week of June to 4th week of June	3rd week of June to 2nd week of July	3rd week of June to 4th week 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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Bihar
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SAHIBGANJ
GODDA
PAKUR
KODERMA
GIRIDIH
DEOGHAR
DUMKA
PLALAMAU
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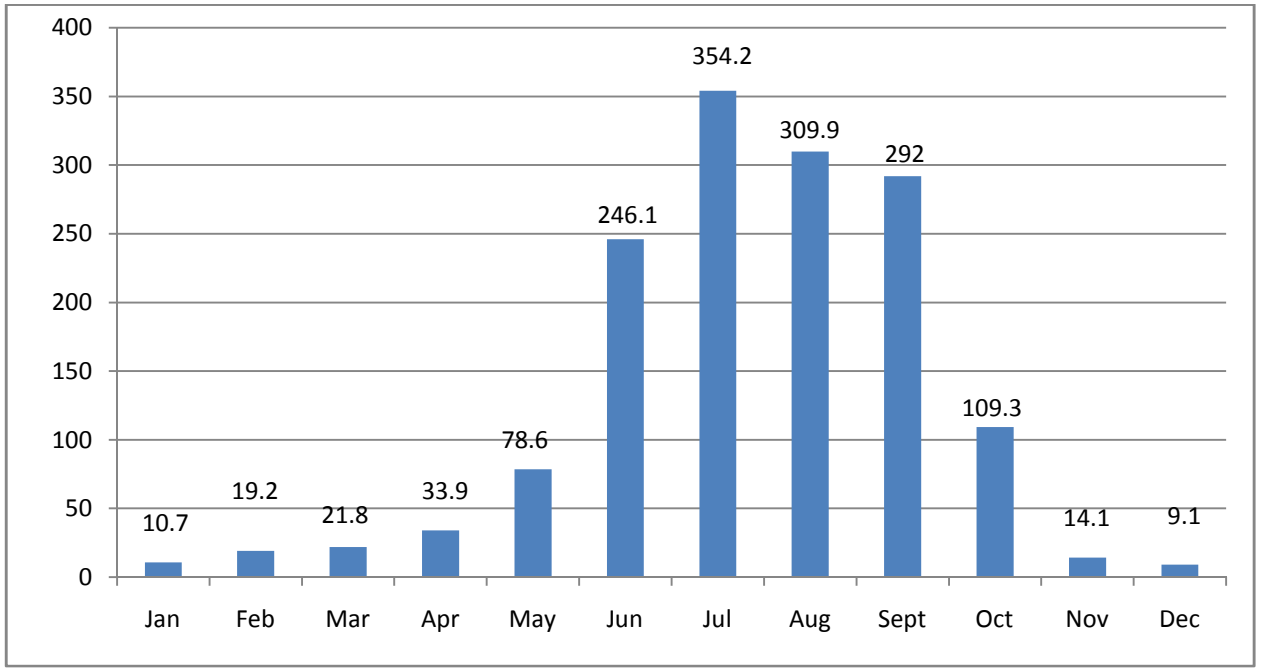
GARHWA
LATEHAR
HAZARIBAGH
BOKARO
DHANBAD
JAMTARA
West Bengal
Chattisgarh
LOHARDAGA
RANCHI
GUMLA
SARAIKELA
West Bengal
SIMDEGA
W.SINGHBHUM
E.SINGHBHUM
Orissa
Orissa

Annexure II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350
300
250
200
150
100
50
0
10.7
19.2
21.8
33.9
78.6
246.1
354.2
309.9
292
109.3
14.1
9.1
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sept
Oct
Nov
Dec

Annexure III

Legend Information:-

23- Very deep, moderately well drained fine loamy soils

25- Very deep, imperfectly drained, fine soils

29-- shallow, well drained, loamy soils

30- Deep, well drained gravelly loamy soils

31- Deep, Well Drained, fine loamy soils

32 - Deep, moderately well drained, coarse loamy soils.

34- Very deep, well drained, fine loamy soils with severe erosion

44- Very deep poorly drained fine 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 red sandy loam soils.	Direct sown Rice, Maize , Pigeonpea , Maize + Kudrum, Pigeonpea + Kudrum, Greengram, Cowpea	Direct sown Rice, Maize, Pigeonpea , Maize + Kudrum, Pigeonpea + Kudrum, Greengram (K-851), Cowpea		

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 3nd week of July	Upland red sandy loam soils	Direct sown Rice, Pigeonpea, Maize, Pigeonpea + Blackgram, Cowpea /Dolichos Bean	Direct sown Rice, Pigeonpea (Birsa Pigeonpea-1), Maize (Kanchan, Birsa Makai-1), Pigeonpea + Blackgram (Birsa Blackgram-1) Cowpea /Dolichos Bean	Sowing on Ridges for proper germination, Alternate row irrigation, Use micro irrigation system,	Supply of seed through NFSM & RKVY.

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	Upland rainfed sandy soil	Direct sown rice, Pigeonpea, Maize, Groundnut, Cucurbits/Ladies finger/Cow pea /Dolichos Bean, Pigeonpea + Blackgram, Blackgram + Greengram	Direct sown rice, French Bean, Dolichos Bean, Pigeonpea + Maize Pigeonpea + Horsegram, Pigeonpea + Sesame, Pigeonpea: (UPAS-120) Maize : Kanchan, Birsa Makai-1 Horse gram : Birsa Kulthi-1 Sesame : Kanke Safed, Krishna French Bean: Swarna Priya, Arka Komal Dolichos Bean : Swarna Utkrista	Ridge Furrow method should be followed for proper germination, Conservation of soil moisture, Mechanical weeding, Staking for Dolichos Bean	Supply of seed through NFSM

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**
Delay by 8 weeks 3rd week of August	Upland rainfed sandy soil	Pigeonpea + Horsegram, Pigeonpea + Sesame, Pigeonpea + Maize, French Bean, Dolichos Bean,	Pigeonpea + Horsegram Pigeonpea + Sesame Pigeonpea : UPAS-120 Horse gram : Birsa Kulthi Sesame: Kanke Safed, TC- 25	Sowing on Ridge furrow system, Irrigate in alternate rows Conserve soil moisture Mechanical weeding Micro irrigation system	Supply of seed through NFSM & RKVY,

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	Medium land rainfed loamy soils.	Rice	**Rice** (IR-64, IR-36, Lalat, Naveen, Sahbhagi, Arize-6444, Birsamati))	Rice cultivation through SRI method or plastic drum seeder, Bunding for water retention, Use of cono weeder for weeding	Supply of plastic drum seeder, SRI marker & cono weeder through NFSM & RKVY

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**
Delay by 4 week 3rd week of July	Medium land rainfed loamy soils.	Rice	Rice (IR-64, IR-36, Lalat, Naveen, Sahbhagi, Arize-6444, Birsamati))	Sowing through plastic drum seeder & transplanting by SRI method, Bunding for water retention, Use of cono weeder for weeding	Supply of plastic drum seeder, cono weeder & SRI marker by NFSM & RKVY.

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**
Delay by 6 weeks 1st week of August	Medium land rainfed loamy soils	Rice	Rice (IR-64, IR-36, Lalat, Naveen, Sahbhagi, Arize-6444, Birsamati))	Sowing through plastic drum seeder and transplanting through SRI method, Bunding for water retention, Use of cono weeder for weeding	Plastic drum seeder & for SRI method cono weeder marker can be supplied by NFSM & RKVY scheme.

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**

Delay by 8 weeks 3rd week of August	Medium land rainfed loamy soils.	Rice, Maize, Pigeonpea , Blackgram, Greengram, Finger millet, Brinjal, French Bean, Tomato, Rice Bean, Sweet Potato, Radish, Cauliflower, Chilies	**Direct sowing of rice** – Anjali, Vandana, Birsa Dhan-108, Sahabhagi. **Maize** – HQPM-1, Suwan Composite-1, **Pigeonpea** –Birsa Pigeonpea-1 /UPAS-120. **Black gram** – T-9, Pant U-19 **Green gram** – K-85, Pusa Vishal **Horse gram** – Birsa Kulthi-1 **Brinjal** – Swarna Pratibha, Swarna Abhilamb, Swarna Ajay, Swarna Sobha, Swarna Nilima. **French Bean –** Swarna Priya, Arka Komal, Swarna Lata) **Tomato –** Arka Abha, Swarna Sampada, Swarna Vijay. **Rice Bean** – RBL-1. **Sweet Potato –** Kalmegh. **Radish –** Japaneese White. **Cauliflower –** Early Kunwari, Hajipur extra early. **Chilies –** Pusa Jwala, Capsicum Bharat, Indra**.**	Sowing with fertilizer cum seed drill, Bunding of field in Rice fields Sowing of rice across the slope Sowing of pulses along the slope	Seed cum fertilizer drill supplied by NFSM & RKVY scheme.

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 week 1st week of July	Low land rainfed clay soils.	Rice	Rice (Rajshree, Arise-6444, MTU-7029)	Direct sowing of rice, Sowing through drum seeder, Proper bunding for water retention	

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**
Delay by 4 weeks 3rd week of July	Low land rainfed clay soils.	Rice	Rice (Arise-6444, Rajshree)	Direct sowing of rice, Sowing through drum seeder, Proper bunding for water retention, Spreading of a layer of organic materials like straw, seedless grass, dry leaves etc in the field to check evaporation of water.	SRI marker and cono weeder under NFSM & RKVY.

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**
Delay by 6 weeks 1st week of August	Low land rainfed clay soils.	Rice	Rice (Lalat, Naveen, Birsamati, IR-64, IR-36)	Direct sowing of rice, Sowing through drum seeder, Proper bunding for water retention, Spreading of a layer of organic materials like straw, seedless grass, dry leaves etc in the field to check evaporation of water.	Supply of SRI marker, cono weeder and drum kit through NFSM & RKVY.

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**

Delay by 8 weeks 3rd week of August	Low land rainfed clay soils.	Rice	Rice (Anjali, Birsa Dhan-201, Birsa Dhan-202, Vandana, Sahbhagi).	Direct sowing of rice, Sowing through drum seeder, Proper bunding for water retention., Spreading of a layer of organic materials like straw, seedless grass, dry leaves etc in the field to check evaporation of water, Life saving irrigation.	Supply of seed & drum seeder through NFSM & RKVY.

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.	Upland rainfed sandy soils. UP LAND	Direct sown rice, Pigeonpea, Maize , Groundnut (AK12-24), Cucurbits/Ladies finger, Pigeonpea + Maize, Maize + Ladies finger, Pigeonpea +Blackgram / Greengram	1. Thinning and gap filling the existing crop. 2. Re sowing. 3. Inter culturing to check evaporation. 4. Strip cropping in re sown crops, 5. Life saving irrigation 6. Trench (1 – 1 ½ ft) making across the slope after 10 – 12 feet intervals.	1. Intercultivation 2. Conservation furrow 3. Thinning 4. Spray of anti transparent.	1. Supply of inter cultural implements through RKVY. 2. Seeds supplied through NFSM & RKVY.

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	Upland rainfed sandy soils.	Direct sown rice, Pigeonpea, Maize , Groundnut (AK12-24), Cucurbits/Ladies finger, Pigeonpea + Maize, Maize + Ladies finger, Pigeonpea +Blackgram / Greengram	1. Thinning 2. Weeding. 3. Postponement of top dressing 5. Life saving irrigation 6. Earthing up in Groundnut, Maize & Pigeonpea.	1. Intercultivation (soil mulching) 2. Conservation furrow 3. Spray of anti transpirants.	1. supply of inter cultural implements through RKVY. 2. Farm ponds through NREGA. .

Condition			**Suggested Contingency measures**		
Mid season drought (long dry spell)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measues**	**Remarks on Implementation**
At flowering/ fruiting stage	Upland rainfed sandy soils.	Direct sown rice, Pigeonpea, Maize , Groundnut (AK12-24), Cucurbits/Ladies finger, Pigeonpea + Maize, Maize + Ladies finger, Pigeonpea +Blackgram / Greengram	1.Life saving irrigation 2.Weed mulching, 3.Postponement of top dressing.	Spray of anti transpirants.	Farm ponds through NREGA.

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]**

Terminal drought	Upland rainfed sandy soils.	Direct sown rice, Pigeonpea, Maize , Groundnut (AK12-24), Cucurbits/ Ladies finger, Pigeonpea + Maize, Maize + Ladies finger, Pigeonpea +Blackgram / Greengram	1.Life saving irrigation 2. Pigeonpea harvested for vegetable purpose 3. Harvest at physiological maturity stage.	Cow pea, French Bean **Irrigated vegetables-** Potato, Cole crops, root crops etc. if irrigation source is available.	1. Farm pond through NREGA. 2. Threshing implements through RKVY. 3. Groundnut digger and plucker through RKVY.

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.	Medium land rainfed loamy soils MID LAND	Rice	1. Re sowing or re-transplanting through plastic drum seeder. 2. Life saving irrigation may be given if possible. 3. Replacement of crop with short duration legume crops like Green gram, Black gram, Horse gram, Sesame & Niger. **Green gram** (Pusa Vishal) **Black gram** (Pant U-19, Birsa Blackgram-1) **Horse gram** (Birsa Kulthi-1) **Sesame** (Kanke Safed, TC-25) **Niger** (Birsa Niger-1,2)	1. Weeding 2. Postponement of top dressing 3. To check evaporation from field spread dried leaves (Mulching). 4. Proper bunding 5. Spray of anti transparent.	Supply of SRI marker and cono weeder from RKVY scheme.

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**
At vegetative stage	Medium land rainfed loamy soils.	Rice	1. Life saving irrigation may be given if possible.	1. Weeding 2. Postponement of top dressing 3. To check evaporation from field spread dried leaves (Mulching). 4. Proper bunding 5. Spray of anti transparents.	Supply of SRI marker and cono weeder from RKVY scheme.

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measues**	**Remarks on Implementation**
At flowering/ fruiting stage	Medium land rainfed loamy soils.	Rice	1. Life saving irrigation if available. 2. Postpone of top dressing	1. Spray of anti transparent.	

Condition			Suggested Contingency measures		
Terminal drought (Early withdrawal	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Rabi Crop planning**	**Remarks on Implementation**

of monsoon)					
Terminal drought	Medium land with loamy soils.	Rice	**1.** Harvest at physiological maturity stage. 2. life saving irrigation.	**Chick pea – (**Pant G-114, Radhey, BG-256, KPG-59. **Pea** – (Swarna Rekha/Arkel) **Linseed** – Sweta/T-397) **Lentil** – (PL-406, PL-639). **Mustard** – (Shivani)	

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 rainfed clay soils. LOW LAND	Rice	1. Life saving irrigation may be applied if any water resource is available. 2. Gap filling should be done. 3. Re sowing or re transplanting through plastic drum seeder or SRI method respectively if heavy damage is occurs.	1. Weed mulching. 2. Spreading a layer of dried leaves to check evaporation loss. 3. Proper bunding for water retention.	Supply of seeds, SRI marker & cono weeder and drum seeder through RKVY.

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	Low land rainfed clay soils.	Rice	1. Life saving irrigation. 2. Re sowing or re transplanting through drum seeder or SRI methods respectively.	1. Weed mulching 2. Spraying a layer of dried leaves to check evaporation. 3. Postponement of top dressing. 4. Proper bunding of field.	Supply of SRI marker & cono weeder, plastic drum seeder and seeds through RKVY.

Condition			**Suggested Contingency measures**		
Mid season drought (long dry spell)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**
At flowering/ fruiting stage	Low land rainfed clay soils.	Rice	Life saving irrigation.	1. Spraying of anti transpirants. 2. Postponement of top dressing.	

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]**
Terminal drought	Low land rainfed clay soils.	Rice	Life saving irrigation. Harvesting at physiological maturity stage.	**Chick pea** (Pant G-114) **Linseed** (T-397) **Wheat** (C-306, K-8962, DL-788-2) **Barley** (Ratna)	**1.** Farm pond through NREGA. 2. Threshing implements through RKVY. 3. Seed supply of Rabi crops through NFSM & RKVY.

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					

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]**
Non release of water in canals under delayed onset of monsoon in catchment					

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]**
Lack of inflows into tanks due to insufficient /delayed onset of monsoon					

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]**

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]**
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,	Quick harvesting	Grading, quick disposal for marketing

		care for chilling injury or replanting		
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	Arrangement of feeds and fodder from adjoining areas, exploitation of non conventional feed resources, use of urea	Promotion of fodder seed production, cultivation and storage, establishment of fodder block making machines in fodder

	of molasses to cattle feed plants.	treated straw and feed blocks.	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 deworming	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
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