State: Jharkhand

Agriculture Contingency Plan for District: Godda 2018 - 19

1.0 District Agriculture profile				
1.1	Agro-Climatic/Ecological Zone			
	Agro Ecological Sub Region (ICAR)	Eastern Plain, Hot Subhumid (moist) Eco-Region (13.1)		
	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
		23.29^0	86.09^0	210
	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, Near Sub-Divisional Agricultural Office, Godda-Pirpaiti Road (Rautara Chowk), Distt. Godda-814133		
	Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro-advisories in the Zone	ZRS, Dumka		

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)	881.30	75	3^{rd} week of June	3^{rd} week of September
	NE Monsoon(Oct-Dec)	84.70	18		

	Winter (Jan- Feb)	30.9	05	-	-
	Summer (Mar-May)	97.9	11	-	-
	Annual	1094.8	109	-	-

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)	231.84	167.40	31.32	18.08	6.33	6.37	3.34	8.71	44.32	35.16

1. 4	Major Soils	Area (‘000 ha)	Percent (%) of total
	Red lateritic (Ultic Paleustalfs) soils	4710	22.32
	Loam (Haplustalfs) soils	11510	54.55
	Fine Loam (Rhodustlafs) soils	210	1.00
	Fine mixed Loam (Paleustalfs) soils	4670	22.13

1.5	Agricultural land use	Area (‘000 ha)	Cropping intensity %
	Net sown area	78.2	108%
	Area sown more than once	6.3	
	Gross cropped area	84.5	

1.6	Irrigation	Area (‘000 ha)		
	Net irrigated area	7.53		
	Gross irrigated area	8.86		
	Rainfed area	158.14		
	Sources of Irrigation	Number	Area (‘000 ha)	Percentage of total irrigated area
	Canals	2	0.71	8.0
	Tanks	4057	3.3	37.16
	Open wells	5483	3.35	37.73
	Bore wells	229	0.52	5.86
	Lift irrigation schemes	10	0.03	0.34
	Micro-irrigation	23	0.38	4.28
	Other sources (Check Dam)	112	0.59	6.64
	Total Irrigated Area		8.88	
	Pump sets	3626		
	No. of Tractors	932		
	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	Data not available		
	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

1.7	Major field crops cultivated	Area (‘000 ha)							
		Kharif			Rabi				
		Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	Summer	Grand total
	Rice			51.5					
	Maize			13.7			1.5		
	Pigeonpea			10.5					
	Blackgram			6.5					
	Greengram							1.2	
	Horsegram			1.2					
	Chick pea						11.0		
	Linseed						3.5		
	Groundnut			1.0					
	Wheat						13.0		
	Pea						2.5		
	Lentil						4.5		
	Mustard						15.0		

	Horticulture crops - Fruits	Area (‘000 ha)		
		Total	Irrigated	Rainfed
	Mango	1.1		
	Guava	0.2		
	Litchi	0.2		
	Lemon	0.2		
	Banana	0.2		
	Horticulture crops - Vegetables	Total	Irrigated	Rainfed
	Cauliflower	0.8		
	Cabbage	0.3		
	Tomato	0.6		
	Brinjal	0.4		
	Chilli	0.3		
	L. Finger	0.4		
	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)			322.6
	Improved cattle			1.34
	Crossbred cattle			1.4
	Non descriptive Buffaloes (local low yielding)			0.0
	Descript Buffaloes			63.7
	Goat			185.2
	Sheep			4.4
	Others (Camel, Pig, Yak etc.)			47.5
	Duckery			45.9
	Commercial dairy farms (Number)			
1.9	Poultry	No. of farms	Total No. of birds (‘000)	
	Commercial			
	Backyard		427.1	

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
		Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	
										('000 tons)
Major Field crops (Crops identified based on total acreage)										
	Rice	156.8	2513					156.8	2513	
	Maize	16.1	1981	0.4	1745			16.5	1863	
	Pigeonpea	2.6	933					2.6	933	
	Blackgram	0.4	454					0.4	454	
	Greengram	0.05	367					0.05	367	
	Groundnut	0.12	610					0.12	610	
	Wheat			0.05	770			0.05	770	
	Chick pea			3.0	962			3.07	962	
	Pea			1.3	1099			1.3	1099	
	Lentil			1.7	749			1.7	749	
	Mustard			0.2	254.4			0.2	254.4	
Major Horticultural crops (Crops identified based on total acreage)										
	Cauliflower	13728	16.0					13728	16.0	
	Cabbage	6256	16.0					6256	16.0	
	Tomato	12920	20.0					12920	20.0	
	Brinjal	9340	20.0					9340	20.0	

	Chilli	4752	12.0					4752	12.0	
	Ladies finger	6594	14.0					6594	14.0	

1.12	Sowing window for 5 major field crops	Rice	Blackgram	Pigeonpea	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

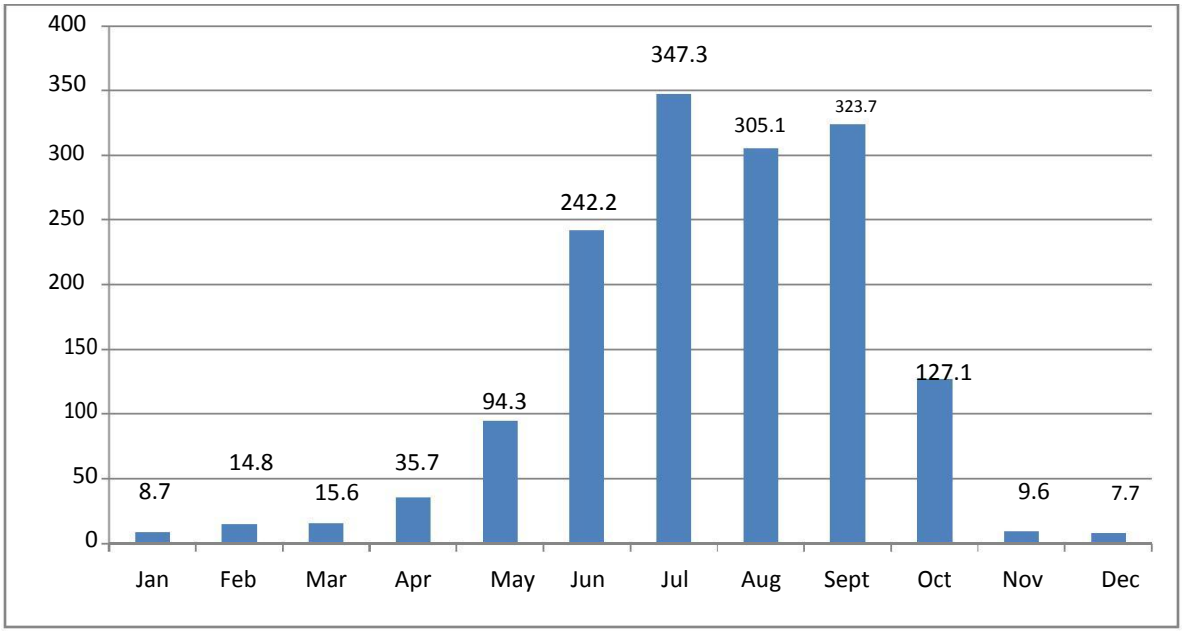
1.13	What is the major contingency the district is prone to? (Tick mark)	Regular	Occasional	None
	Drought	✓		
	Flood			
	Cyclone			
	Hail storm		✓	
	Heat wave	✓		
	Cold wave		✓	
	Frost			
	Sea water intrusion			
	Pests and disease outbreak			

		✓		

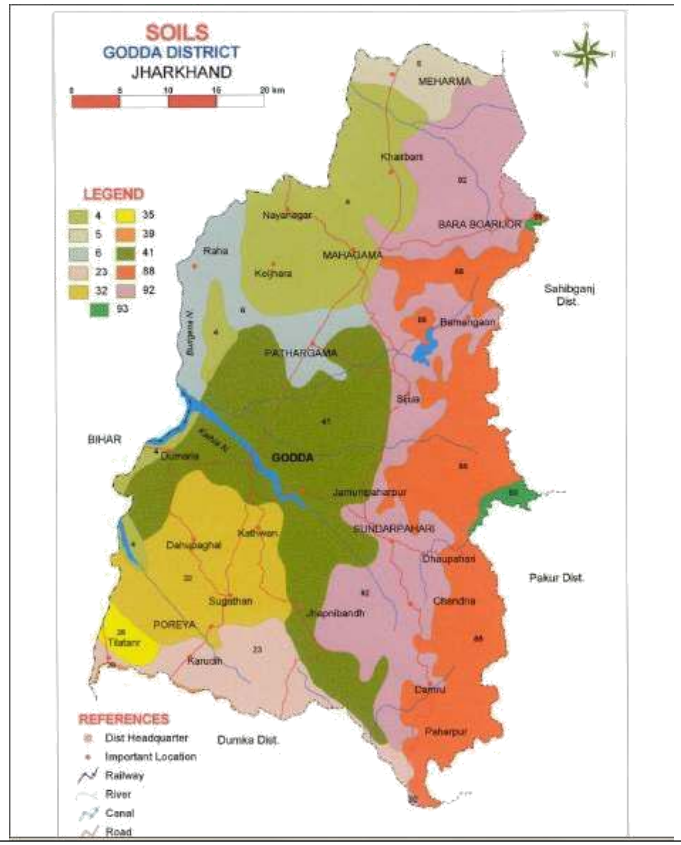
1.14	Include Digital maps of the district for	Location map of district within State as Annexure I	Enclosed: Yes
		Mean annual rainfall as Annexure II	Enclosed: Yes
		Soil map as Annexure III	Enclosed: Yes

Annexure-I

Annexure-II


400
350
300
250
200
150
100
50
0
8.7
14.8
15.6
35.7
94.3
242.2
347.3
305.1
323.7
127.1
9.6
7.7
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sept
Oct
Nov
Dec

Annexure-III



Legend Information:-

4-Very deep moderately well drained fine soils

5- Very deep imperfectly drained fine soils

6- Very deep poorly drained fine soils

23- Very deep, moderately well drained fine loamy soils

32- Deep, moderately well drained, coarse loamy soils

35- shallow, well drained, gravelly loamy soils

39-Deep moderately well drained fine soils.

41- Very deep, well drained, coarse loam soils

88-- Very deep, imperfectly drained, fine soils

92- Very deep, well 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	Upland red sandy loam soils.	Direct sown Rice,	Direct sown Rice (Sahbhagi, BVD 109/110, Abhishek),	Paddy seed rate 100kg/ha	
		Maize,	Maize,	Maize seed rate 20kg/ha	
			Elephant Foot Yam + Bitter Gourd	Pigeonpea seed rate 20kg/ha	
1st week of July		Pigeonpea,	Pigeonpea (NDA -1/2) ,	Light irrigation for proper germination	
		Maize + Kudrum,	Maize + Kudrum		
			Maize + Cowpea		
			Sweetpotato (S - 14)		
		Greengram,	Greengram (K-851/ IPM - 2-3),		
			Cowpea		
			Soyabean (JS - 9560)		
		Cowpea	Nursery of vegetable crops		

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	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 + Groundnut Sweetpotato (S - 14) Radish (Pusa Chetki) Pigeonpea + Blackgram (Birsa Blackgram-1) Cowpea /Dolichos Bean	Sowing on Ridge for proper germination, Alternate row irrigation, Use micro irrigation system, Irrigation at only critical stage of crop	Supply of seed through NFSM & RKVY.

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	Upland rainfed sandy soil	Direct sown rice, Pigeonpea, Maize, Groundnut, Cucurbits/Ladies finger/Cow pea /Dolichos Bean Pigeonpea + Blackgram, Blackgram + Greengram	Direct sown rice(Sahbhagi, BVD 109/110, Abhishek), French Bean, Dolichos Bean, Pigeonpea (UPAS – 120/ Jagriti) + 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 Use of organic mulches Conservation of soil moisture through Interculturing 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 including variety	Agronomic measures	Remarks on Implementation
Delay by 8 weeks 3nd week of August	Upland rainfed sandy soil	Pigeonpea + Horsegram, Pigeonpea + Sesame, Pigeonpea + Maize, French Bean, Dolichos Bean, Niger	Pigeonpea + Horsegram Pigeonpea + Sesame Pigeonpea : UPAS-120 Horsegram : Birsa Kulthi – 1/ Indra Kulthi Sesame: Kanke Safed, TC-25 Niger (B**irsa** Niger - 1)	Sowing on Ridge furrow system, Irrigate in alternate row, Conserve soil moisture, Mechanical weeding, Micro irrigation system	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 including variety	Agronomic measures	Remarks on Implementation
Delay by 2 weeks 1st week of July	Medium land rainfed loamy soils.	Rice	Rice (IR-64 DRT, IR-36, Lalat, Naveen, Sahbhagi, Arize-6444, Birsamati))	Rice cultivation through SRI method or plastic drum seeder, Proper bunding for water retention, Use of cono weeder for weeding	

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 DRT, 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, 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 DRT, 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	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.	Sowing with fertilizer cum seed drill, Proper drainage Bunding of Rice fields, Sowing of pulses along the slope , Sowing of short duration Pigeonpea (UPAS – 120/ Jagriti)/ Blackgram on bunds of rice field Use of micro irrigation system	Seed cum fertilizer drill supplied RKVY scheme.

			Rice Bean – RBL-1. Sweet Potato – Kalmegh. Radish – Japaneese White. Cauliflower – Early Kunwari, Hajipur extra early. Chilies – Pusa Jwala, Capsicum Bharat, Indra.		

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, MTU-7029, Rajendra Mahsuri/ Rajendar Sweta)	Rice cultivation through SRI method or plastic drum seeder, Bunding for water retention, Use of cono weeder for weeding	

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	Low land rainfed clay soils.	Rice	Rice (Rajshree/ Rajendar Sweta)	Direct sowing of rice with drum seeder Proper bunding for water retention,	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 including variety	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 with drum seeder Proper bunding for water retention, Weed control measures	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 with drum seeder, Proper bunding for water retention., Life saving irrigation. Weed control measures	Supply of seed & drum seeder through NFSM & RKVY.

Condition			Suggested Contingency measures		
Early season drought (Normal onset)	Major Farming situation	Normal Crop / Cropping system	Change in crop / cropping system including variety	Agronomic measures	Remarks on Implementation
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	Upland rainfed sandy soils.	Direct sown rice, Pigeonpea, Maize , Groundnut (AK12-24/K - 6), 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 if 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 transpirant.	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	Normal Crop/cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
At vegetative stage	Upland rainfed sandy soils.	Direct sown rice, Pigeonpea, Maize , Groundnut (AK12-24/ K -6), Cucurbits/ladysfinger, Pigeonpea + Maize, Maize + Ladysfinger, 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 MNREGA.

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	Upland rainfed sandy soils.	Direct sown rice, Pigeonpea, Maize , Groundnut (AK12-24), Cucurbits/ladyies finger, Pigeonpea + Maize, Maize + Ladies finger, Pigeonpea +Blackgram / Greengram	1.Life saving irrigation 2.Weed mulching, 3.Postponement of top dressing.	Spray of anti transparent. Proper use of compost/ vermicompost Spray of anti transpirants.	Farm ponds through MNREGA.

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
Terminal drought	Upland rainfed sandy soils.	Direct sown rice, Pigeonpea, Maize , Groundnut (AK12-24), Cucurbits/ladysfinger, Pigeonpea + Maize, Maize + Ladysfinger, 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, Short duration/ less water demanding vegetable crops prefered Cole crops, root crops etc. if irrigation source is available.	1. Farm pond through MNREGA. 2. Threshing implements through RKVY. 3. Groundnut digger and plucker through RKVY.

Condition			Suggested Contingency measures		
Early season drought (Normal onset)	Major Farming situation	Normal Crop/cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	MID LAND Medium land rainfed loamy soils	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 leguminous crop like Green gram, Black gram, Horse gram, Sesame & Niger. Sowing of Toria Green gram (Pusa Vishal) Black gram (Pant U-19, Birsa Blackgram-1) Horse gram (Birsa Kulthi-1)	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 NFSM and RKVY scheme.

			Sesame (Kanke Safed, TC-25) Niger (Birsa Niger-1,2)		

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 measues	Remarks on Implementation
At vegetative stage	Medium land rainfed loamy soils.	Rice	1. Life saving irrigation may be given if possible. 2. Replacement of crop with short duration leguminous crop like Greengram, Black ram, 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 transpirants.	Supply of SRI marker and cono weeder from NFSM of RKVY scheme.

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	Medium land rainfed loamy soils.	Rice	1. Life saving irrigation if available. 2. Postponment of top dressing.	1. Spray of anti transpirants.	

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	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) Paira cropping of linseed(Sarda/ Subhra/Neelam) and lentil (HUL - 57)	

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.	Low land rainfed clay soils.	Rice	1. Life saving irrigation may be applied if any water resource is available. 2. Gap filling should be done. 3. Re sowing with plastic drum seeder or SRI method respectively if heavy damage is occurs.	Proper bunding for water retention.	Supply of seeds, SRI marker & cono weeder and drum seeder 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	Low land rainfed clay soils.	Rice	1. Life saving irrigation. 2. SRI methods respectively.	1. Weed mulching 2. Spreading 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 NFSM & RKVY.

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

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 MNREGA. 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					
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	Drain out of excess water immediately , Harvest of crop at physiological maturity stage	
Blackgram	Ridge making	Provide drainage	Drain out of excess water immediately , Harvest of crop at physiological maturity stage	
Rice	Bund making and repairing	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	Leaf hoper/caterpillar Control- Monocrotophos/ @ 1 ml/lit Imidacloprid @ 1 ml/4lit	Pod borer Control- Quinolphos/Prophanophos @ 2 ml/lit	
Maize	Stem borer Control- Carbofuran 3G @ 25 kg/ha	Sheath blight Control- Hexaconazole1.0 lit in 500 lit water/ha		
Rice	Stem borer and leaf folder Control – Fipronil0.3G@ 15kg/ha	Gandhi Bug Control - Imidacloprid @ 1 ml/4lit Blast diseases Control- Tricyclazole (0.05 %)	False Smut Control- Propiconazole 0.1 % or Copper oxy chloride - 50 (2 kg/ha) Brown plant hopper Control- Imidacloprid @ 1	

			ml/4lit	
Bhendi		Fruit Borer Control – Propenophos/ Thiodicarb@1ml/1 lit YVM Control- Carbofuran 3G @ 3 gm/m2 / Imidacloprid @ 1 ml/4lit		
French bean	Rust disease Control- Mancozeb 2.5 kg/ ha Mite Control – Propargite@1ml/1 lit	Mite Control – Propargite@1ml/1 lit		

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		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 Spraying of Sulphur containing fungicide @ 2g/liter of water	Grading, quick disposal for marketing
Pigeonpea		Light irrigation Mulching with crop residue \ Weeds		
Frost				
Wheat		Exposure of crop to smoke by burning waste material during night time. Light irrigation Mulching with crop residue \ Weeds Spraying of Sulphur containing fungicide @ 2g/liter of water	Exposure of crop to smoke by burning waste material during night time	
Pigeonpea		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 Spraying of Sulphur containing fungicide @ 2g/liter of water Exposure of crop to smoke by	Light sprinkler irrigation	Harvest in dry weather

		burning waste material during night time		
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	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, Nursery raising, plantation of perennial foder crops 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 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.

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