

State: KARNATAKA

Agriculture Contingency Plan for District: CHAMARAJANAGAR

1.0 District Agriculture profile					
1.1	Agro-Climatic/Ecological Zone				
	Agro Ecological Sub Region (ICAR)		Central Karnataka plateau, hot, moist, semi-arid eco-subregion (8.2)		
	Agro-Climatic Region (Planning Commission)		Southern Plateau And Hills Region (X)		
	Agro Climatic Zone (NARP)		Southern dry zone (KA-6) Southern Transition Zone (KA-7)		
	List all the districts or part thereof falling under the NARP Zone		Chamarajanagar, Mysore, Mandya, Tumkur		
	Geographic coordinates of district		Latitude	Longitude	Altitude
			11°55'17.40" N	76°56'21.52" E	787.6 M
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS		ZARS, V. C farm Mandya - 571405		
	Mention the KVK located in the district		Krishi Vigyan Kendra-Haradanahalli, Chamarajanagaram, Karnataka - 571313		
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-September):	244.3	29	Second week of June	Last week of September
	NE Monsoon(October-December):	246.8	39	1 st week of October	2 nd week of December
	Winter (January- February)	16.6	01		
	Summer March-May)	196.9	13		
	Annual	704.6	82		

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 (ha)	569.9	191.8	275.6	46.0	22.7	7.6	4.8	21.4	7.7	13.5

1.4	Major Soils (common names like shallow red soils etc.,)	Area (ha)	Percent (%) of total
	Medium black soils	91.2	16.0
	Red loamy soils	81.3	14.2
	Red sandy loam soils	27.5	4.8
	Others (specify):	-	-
1.5	Agricultural land use	Area ('ha)	Cropping intensity %
	Net sown area	191.8	120
	Area sown more than once	38.7	
	Gross cropped area	230.5	

1.6	Irrigation	Area ('000 ha)		
	Net irrigated area	67.6		
	Gross irrigated area	142.9		
	Rainfed area	124.2		
	Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
	Canals		12.9	19.1
	Tanks	9112	9.1	13.5
	Open wells	6562	6.6	9.8
	Bore wells	38500	38.5	57.0
	Lift irrigation	500	0.5	0.7
	Micro-irrigation	--		0.0
	Other sources	16		
	Total Irrigated Area		67.6	
	Pump sets			

No. of Tractors	405		
Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	No. of blocks/ Tehsils	(% area)	
Over exploited		21.7	
Critical		-	
Semi- critical		23.50	
Safe		54.75	
Wastewater availability and use		-	
Ground water quality			

*over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%

*Statistical data collected from District statistical Office,Chamarajanagar(2008-09)

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

1.7	Major Field Crops cultivated	Area (000'ha)							
		<i>Khariif</i>		<i>Rabi</i>		Summer		Total	
		<i>Irrigated</i>	<i>Rainfed</i>	<i>Irrigated</i>	<i>Rainfed</i>	<i>Irrigated</i>	<i>Rainfed</i>	<i>Irrigated</i>	<i>Rainfed</i>
1	Maize	4.3	39.3	0.9	0	2.6	-	7.9	55.0
2	Pulses	-	23.2	-	18.1	0.2	-	0.2	41.7
3	Paddy	15.7	-	0.1	-	2.4	-	18.0	36.2
4	Jowar	17.9	-	-	-	-	-	-	17.9
5	Ragi	-	19.5	-	0.1	0.5	-	0	20.0
6	Groundnut	-	19.9	-	-	0.2	-	0.2	19.9
7	Sugarcane	4.5	-	1.8	-	3.4	-	9.6	19.3
8	Sunflower	0.8	15.3	0.1	-	0.1	-	1.0	17.3
9	Cotton	0.5	-	-	-	0.07	-	0.5	1.1

	Horticulture crops - Fruits	Total area('000ha)
1	Banana	8.5
2	Mango	0.6
3	Sapota	0.4
4.	Papaya	0.3
	Horticultural crops - Vegetables	Total area
1	Onion	4.3
2	Tomato	0.7
3	Green chilly	1.0
4	Brinjal	0.4

	Plantation crops	-
1	Coconut	8.3
2	Arecanut	1.6
3	Oil Palm	0.4
	Spices	
1	Tumeric	8.5
	Flower	Total area
	Marigold	2.1
	Total fodder crop area	-
	Grazing land	-
	Sericulture etc	8.6

1.8	Livestock	Male	Female	Total			
	Non descriptive Cattle (local low yielding)	84596	100175	184771			
	Crossbred cattle	24331	60185	84516			
	Non descriptive Buffaloes (local low yielding)	9640	28112	37752			
	Graded Buffaloes	-	-	-			
	Goat	21000	85342	106342			
	Sheep	20650	96845	117495			
	Others (Pig, etc.)	45	975	1020 (pig)			
	Commercial dairy farms (Number)						
1.9	Poultry	No. of farms	Total No. of birds ('000)				
	Commercial	19	2,27,753				
	Backyard						
1.10	Fisheries (Data source: Chief Planning Officer)						
	A. Capture						
	i) Marine (Data Source: Fisheries Department)	No. of fishermen	Boats		Nets		Storage facilities (Ice plants etc.)
			Mechanized	Non-mechanized	Mechanized (Trawl nets, Gill nets)	Non-mechanized (Shore Seines, Stake & trap nets)	
	-	-	-	-	-	-	
ii) Inland (Data Source: Fisheries)	No. Farmer owned ponds		No. of Reservoirs		No. of village tanks		

Department)	-	359	-
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)	-	-	-
Others			

1.11 Production and Productivity of major crops (Average of last 5 years: 2004, 05, 06, 07, 08)

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 (q/ha)	
Major Field crops (Crops to be identified based on total acreage)										
1	Paddy	68.0	4736	1.4	4364	6.2	4946	75.7	4682	-
2	Jowar	20.0	849	0.02	212	0.2	20274	20.3	724	-
3	Maize	59.0	2845	3.4	2638	1.2	63656	63.6	2689	-
4	Ragi	27.2	1416	0.9	1996	0.8	28845	28.8	1686	-
5	Groundnut	18.2	705	-	-	0.2	18387	18.4	533	-
Others	Sunflower	1.1	498	0.1	916	0.2	1511	1.5	731	-
Major Horticultural crops (Crops to be identified based on total acreage)										
1	Banana	224.5	26.3					224.5	26.3	
2	Mango	6.5	11.0					6.5	11.0	
3	Sapota	2.9	7.9					2.9	7.9	
4	Papaya	23.6	74.9					23.6	74.9	

5	Banana	224.5	26.3					224.5	26.3	
Vegetables										
	Onion	22.6	5.3	13.0	4.0	8.2	13.4	43.9	5.3	
	Tomato	15.5	21.0	16.9	21.6	7.5	21.7	40.0	21.4	
	Green chilli	77.8	76.8					77.8	76.8	
Plantation crops										
	Coconut							1723 lakh nuts	0.21 lakh nuts	
	Arecanut							1.2	0.7	
	Oil Palm							4.0	10.7	
Spices										
	Turmeric	24.2	3.1					24.2	3.1	
Flower Crops										
	Mari gold	18.7	9.0					18.7	9.0	

1.12	Sowing window for 5 major field crops (start and end of normal sowing period)	Paddy	Ragi	Groundnut	Jowar	Maize
	Khariif- Rainfed	-	1 st Week May- 2 nd week May	4 th week July-1 st week August	1 st Week April—2 nd Week June	2 nd Week May- 1 st Week July
	Khariif-Irrigated	July-August	1 st Week August-1 st Week September	-----	-	August 1 st Week – September 2 nd Week
	Rabi- Rainfed	-	1 st Week September-1 st Week October	-	-	September-October
	Summer-Irrigated	2 nd Week January -2 rd Week February	1 st Week January -1 st Week February	1 st January -1 st Week February	-	1 st Week January- 2 nd February

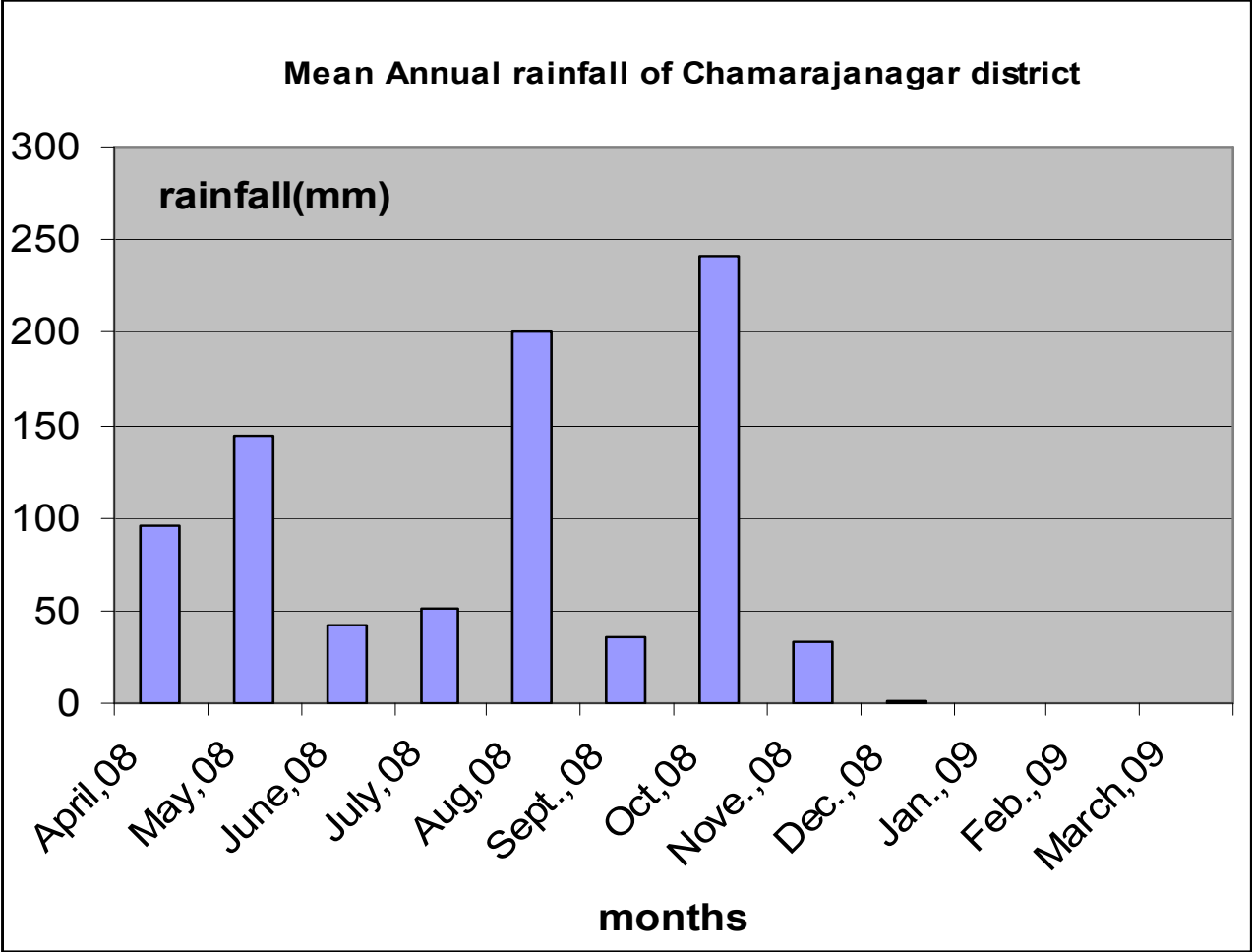
1.13	What is the major contingency the district is prone to? (Tick mark and mention years if known during the last 10 year period)	Regular	Occasional	None
	Drought			
	Flood			✓
	Cyclone			✓
	Hail storm			✓
	Heat wave			✓
	Cold wave			✓
	Frost			✓
	Sea water intrusion			✓
	Pests and diseases (specify)			
	Others			

1.14	Include Digital maps of the district for	Location map of district within State as Annexure I	Enclosed: Yes
		Mean annual rainfall as Annexure 2	Enclosed: Yes
		Soil map as Annexure 3	Enclosed: No (Pls include colored soil map with proper legend)

Annexure-I Location Map of district



Annexure-II- Mean Annual Rainfall



2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rain fed situation

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Insufficient RF with pre-monsoon showers (May 4 th Week)	Red sandy loam	Jowar- Groundnut Finger millet –Maize Jowar- Finger millet Jowar- Horsegram	Finger millet- Groundnut Finger millet: Indaf-9 Groundnut: GPBD-4 Redgram (BRG-1)+ Finger millet (Indaf-9,GPU-45) TVX-944 cowpea - Groundnut GPBD-4 Short duration and drought tolerant variety must be selected in both Groundnut & Finger millet (Indaf-8 Indaf-9 and KMR-301)	<ul style="list-style-type: none"> Adoption of soil moisture Conservation practices. Opening of interception bund at every 15-20mt Seed soaking with water overnight. Spacing reduced (20X15 cm) & Seed rate increased in Finger millet (15.0kg/ha) 	GPBD-4 seed procured from KOF and UAS, Dharwad
		Red gram-MaizeLong duration 120Days (intercropping) 1:1	Cowpea (TVX-944)+ maize NAC-6002 Cowpea- Maize(NAC-6004)	Sowing across the slope. Adoption of short duration and drought resistant variety Maize NAC - 6002(90Days) (Varieties should come under change in cropping system, earthing up , harrowing and seed treatment with 0.2% calcium chloride Cowpea : Maize 2:2 ratio	KSSC, Chamarajanagar
		Cowpea-Sorghum	Ragi (Indaf-9), + Maize	NAC-6002(90Days) RagiIndaf-9(105 days)	

			(Intercropping)	Harrowing and earthing up Sand mulching and weed mulching Seed hardening and seed soaking	
		Jowar - Horsegram	Groundnut-Horse gram	Opening of furrows at every 10 meters across the slope to conserve runoff flow of water.	
		Redgram -Finger millet (intercropping)	Redgram(BRG-2)+ Ragi(Indaf-9)	Harrowing and weed mulching ,Seed hardening and earthing up	
	Medium black soil	Green gram - Maize	Green gram-Maize Maize: Nityashree,NAC-6002	Green gram (PS-16)65-70days Fallowed by NAC-6002	
		Daincha –Maize long duration(120-125 days)	Field Bean-Maize	Field bean(HA-3 &HA-4) MaizeNAC-6002	

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Early season drought (delayed onset)					
Delay in pre-monsoon showers upto June 1 st wk	Medium black soil	Jowar- Groundnut Jowar- Horsegram	Finger millet-Bengal gram/Horsegram Maize-Bengal gram Finger millet:MR-6, Indaf-8,L-5, MR-2 Maize(NAC-6004, Nityashree) Horse gram (PHG-9)/Bengal gram(JG-11)	Increase in seed rate Mulching with weeds Use of Short duration and drought resistant variety Closer spacing Seed soaking before sowing	Supply seeds from KSSCA Chamarajanagar
		Finger millet –Maize	Red gram (BRG-1)+ Finger millet(MR-6, Indaf-7, GPU-28) (Intercropping)	Seed soaking Adoption of drought resistant variety Transplanting of redgram seedlings	
		Jowar- Finger millet	Ragi (KMR-301) +	Sowing across the slope	

			Groundnut	Seed soaking and hardening with calcium chloride Opening of furrows at every 10 mt to intercept runoff water	
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Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Early season drought (delayed onset) Delay by 4 weeks July 2 nd week	Red soil loamy soil	Jowar- Groundnut Finger millet –Maize Jowar- Finger millet Jowar- Horsegram	Finger millet-Horsegram Sunflower sole crop Maize + Redgram Finger millet : KMR-301,GPU-28, HR-911,Indaf-5, Sunflower: BSH-1& morden Groundnut as sole crop Groundnut + Red gram Groundnut+ Finger millet Sunflower+Redgram Maize-Horse gram Finger millet + Redgram Intercropping Finger millet : GPU-28, , HR-911,MR-6 Ground nut: TMV-2, JL-24, GPBD-4, K-134, Pigeon pea : BRG-2,Hyd-3C, ICP-7035 and TTB-7	In Finger millet : 1.Dry sowing 8-10 days before rains with 15-20% higher seed rate 2. Nursery-(Medium duration) transplanting 3. Seed hardening-(18 hrs. soaking in water followed by 24 hrs. shade drying Thinning to retain one seedling at 30 cm	1.Seed drills under RKVY 2.Supply of seeds through KSSC Supply of seeds through NFSM Sunflower: Breeder seeds supply- UAS(B) F1 seeds supply – KSSC
	Medium Black soil	Green gram- paddy Daincha - Paddy	Paddy-Green gram/Black gram	Drum seeder Application of additional fertilizer	Seeds procured from KSSCA and VC farm Mandya

			Paddy:MTU-1001IR-30864,MTU-1010,Thanu Grrengam:PS-16,Pusa Baisaki Black Gram:LBG-625	Short duration variety Closer spacing	
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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 August 1 st Week	Red loamy soil	Fingermillet-Groundnut Field bean-Fingermillet Sunflower	Finger millet +Redgram Cowpea + maize Sunflower as sole crop Finger millet : GPU-28, GPU-26 GPU-48 PR-202 ,Indaf-5, Field bean HA-3 &HA-4 Cowpea: TVX-944, IT-38956-1, KBC-1 & KBC- 2 Maize as a sole crop NAC-6004, Nityashree and NAH-1137	In Finger millet : 1.Dry sowing 8-10 days before rains with 15-20% higher seed rate 2. Nursery-(Medium duration) transplanting 3. Seed hardening-(18 hrs. soaking in water followed by 24 hrs. shade drying Thinning to retain one seedling at 30 cm Inter cultivation Conservation furrow Thinning	.Seed drills under RKVY 2.Supply of seeds through KSSC 3.Supply of seeds through NFSM Sunflower: Breeder seeds supply- UAS(B) F1 seeds supply – KSSC ISSOPOM
	Medium black soil	Pulse-Paddy Daincha-Paddy	Paddy-Black gram Paddy: IR-64, Rasi,MTU-1010 Black gram:LBG-625	Drum seeder Increase in Fertilizer dosage Closer spacing Seed soaking in pulses	Seed supply from VC farm Mandya Agril Dept
Delay by 8 weeks August 1 st Week	NA				

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.	Red sandy loam soil	Sesame, Cowpea, Jowar-Groundnut Finger millet + Pigeon pea Finger millet + Field bean Finger millet : Indaf-8, MR-1, MR-2, MR-6, L-5, HR-911 Pigeon pea : TTB-7, BRG-1, Field bean local Sunflower : KBSH-1, KBSH 41, KBSH 42 & KBSH 44 Groundnut + Pigeon pea Groundnut: TMV-2, JL-24, GPBD-4, K-134, VRI-2 Pigeon pea : TTB-7, BRG-1 Sesame: TMV-3, T-7 & Navelle-1 Cowpea: TVX-944, IT-38956-1, KBC-1 & KBC -2 Horse gram	1. Thinning and gap filling the existing crop 2. Re sowing Maize as sole crop Groundnut+Redgram intercrop Groundnut: TMV-2, JL-24, GPBD-4, K-134, VRI-2 Pigeon pea : TTB-7, BRG-1 Sesame: TMV-3, T-7 & Navelle-1 Cowpea: TVX-944, IT-38956-1, KBC-1 & KBC -2 Field bean local Sunflower : KBSH-1, KBSH 41, KBSH 42 & KBSH 44 Field bean local and HA-4 Horse gram: PHG-9	Intercultivation Conservation Furrow thinning	1. Supply of inter cultural implements through RKVY 2. Pigeon pea seeds supply through NFSM

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)					
At vegetative stage	Red loamy soil	Sesame, Cowpea, Finger millet + Pigeon pea Finger millet + Field bean	Finger millet- Thinning, Grazing leaf tips, postponement of top dressing	Intercultivation	1. Supply of inter cultural implements through RKVY

		Finger millet : Indaf-8, MR-1, MR-2,MR-6 ,L-5, HR-911 Pigeon pea : TTB-7,BRG-1, Field bean local Sunflower : KBSH-1, KBSH 41, KBSH 42 & KBSH 44 Pigeon pea : TTB-7,BRG-1 Sesame: TMV-3, T-7& Navelle-1 Cowpea: TVX-944, IT-38956-1, KBC-1 & KBC -2	Life saving irrigation	Dust mulching Earthling up Weed mulching Ridges and Furrows	2.Farm ponds through IWSM programme 3.Pigeon pea seeds supply through NFSM
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Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Crop management	Soil management	Remarks on Implementation
Mid season drought (long dry spell)	Red loamy soil	Sesame, Cowpea, Finger millet + Pigeon pea Figer millet + Field bean Finger millet : Indaf-8, MR-1, MR-2,MR-6 ,L-5, HR-911 Pigeon pea : TTB-7,BRG-1, Field bean local Sunflower : KBSH-1, KBSH 41, KBSH 42 & KBSH 44 Groundnut + Pigeon pea Groundnut: TMV-2, JL-24, GPBD-4, K-134, VRI-2 Pigeon pea : TTB-7,BRG-1 Sesame: TMV-3, T-7& Navelle-1 Cowpea: TVX-944, IT-	Thinning Life saving irrigation Weeding and Weed mulching	—	Farm ponds through IWSM programme
At reproductive stage					

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Crop management	Soil management	Remarks on Implementation
Mid season drought (long dry spell)		38956-1, KBC-1 & KBC -2			
	Red sandy loam soil	Ground nut + Pigeon pea Groundnut: TMV-2, JL-24, GPBD-4, K-134, VRI-2 Pigeon pea : TTB-7, BRG-1 Horse gram	Life saving irrigation Weeding and Weed mulching Could be harvested for fodder purpose	—	Farm ponds through IWSM programme

Condition	Major Farming situation	Crop/cropping system	Suggested Contingency measures		
			Crop management	Rabi Crop planning	Remarks on Implementation
Terminal drought					
	Red loamy soil	Sesame, Cowpea, Finger millet + Pigeon pea Finger millet + Field bean Finger millet : Indaf-8, MR-1, MR-2, MR-6, L-5, HR-911 Pigeon pea : TTB-7, BRG-1, Field bean local Sunflower : KBSH-1, KBSH 41, KBSH 42 & KBSH 44 Groundnut + Pigeon pea Groundnut: TMV-2, JL-24, GPBD-4, K-134, VRI-2 Pigeon pea : TTB-7, BRG-1 Sesame: TMV-3, T-7 & Navelle-1 Cowpea: TVX-944, IT-38956-1, KBC-1 & KBC -2 Horse gram	Life saving irrigation Pigeon pea harvested for vegetable purpose Harvest at physiological maturity stage Harvest for fodder	Cowpea, Sunflower, Field bean, Horse gram (October month)	1. Farm ponds through IWSM programme 2. Threshing implements through RKVY 3. Groundnut digger and plucker through RKVY seed 4. supply through KSSC

2.1.2 Irrigated situation

Condition	Suggested Contingency measures				
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Limited release of water in canals due to low rainfall	Medium black soil	Green gram-Paddy Daincha-Paddy	Aerobic Rice MAS-964-1	<ul style="list-style-type: none"> Limited irrigation Drum seeder 	Seeds through KSSC and NFSM
Delayed release of water in canals due to low rainfall	Canal irrigated Medium black soil	Paddy-Pulses (Blackgram/Bengalgram)	Prefer Paddy short duration varieties Rasi, IR-64, Blackgram LBG-625 Bengalgram JG-11	Drum seeder Increase in seed rate Increase in number of hills/sqmt Closer spacing Increase in fertilizer dosage	

Condition	Suggested Contingency measures				
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Non release of water in canals under delayed onset of monsoon in catchment	Medium Black Soil	Paddy-Pulse	Sunflower(KBSH-44) Maize(NAH-2049,NAH-1137 and NAC-6004) Ragi+Redgram/Horsegram Sunflower +Redgram	Harrowing Mulching Opening of Dead furrows Spraying of antitranspirants (0.2% conc.)	Seeds through KSSC and NFSM

Condition	Suggested Contingency measures				
	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Lack of inflows into tanks due to insufficient /delayed onset of	Red loamy soil	Jowar- Groundnut Finger millet –Maize Jowar- Finger millet	Cowpea-Maize Horse gram-Finger millet Sunflower-Green gram	Short duration varieties and harrowing and seed hardening, application of gypsum	

Condition	Suggested Contingency measures				
	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
monsoon (There is considerable area under tanks pls check)		Sunflower sole crop	Horse gram+ Finger millet	Short duration varieties and harrowing and seed hardening and application of gypsum	
	Red sandy loam	Sunflower-Maize	Black gram(reshmi)-Maize	Short duration varieties and harrowing and seed hardening and application of gypsum	
		Red gram+ Jowar	Cowpea(TVX-944)+ Finger millet(Indaf-9)	Short duration varieties and harrowing and seed hardening and application of gypsum	
	Medium black soil	Daincha- Paddy, Green gram-Maize	Cowpea(TVX-944)+ Finger millet(GPU-28)	Short duration varieties and application of gypsum harrowing and seed hardening	

Condition	Suggested Contingency measures				
	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Insufficient groundwater recharge due to low rainfall	Tube well irrigated red soil	Paddy/Sugarcane	Sugarcane cane(CO-86032) Short duration Maize (NAC-6002 and NAC-6004) and vegetables Ragi, Beans (Arka Komal)onion Cowpea (TVX-944)Maize and	<ul style="list-style-type: none"> • Limited irrigation • Alternate Furrow irrigation • Drip irrigation • Sugarcane trash mulching 	Seeds through KSSC, NFSM, NHM, & NAREGA
Any other condition (specify)	-				

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

Condition	Suggested contingency measure			
	Vegetative stage	Flowering stage	Crop maturity stage	Post harvest
Continuous high rainfall in a short span leading to water logging				
Finger millet	Provide drainage & Additional nutrient given	Provide drainage	Drain out excess water Harvesting at physiological Value addition maturity stage	Shift to safer place
pigeon pea	Provide drainage	Provide drainage	Drain out excess water Harvesting at physiological maturity stage and Harvest of pigeon pea for vegetable purpose	Shift to safe place, dry in shade and turn frequently
Field bean	-do-	-do-	Drain out excess water Harvest for vegetable purpose	Safe storage against storage pest and disease
Horse gram	-do-	-do-	Drain out excess water	Safe storage against storage pest and disease
Paddy	Drainage & N-Top dressing Split application of fertilizers LC based fertilizer application	Provide drainage		
Horticulture				
Banana	Provide proper drainage	Provide proper drainage and strengthening of bunds Flower &Fruit drop will be controlled by spraying of NAA	Provide proper drainage and strengthening of bunds Flower &Fruit drop will be controlled by spraying of NAA	Drying of produce
Mango				
Papaya				
Coconut				
Heavy rainfall with high	(Earthing up with soil and planting of wind breaks across wind direction)			

speed winds in a short span				
Finger millet	Bund planting of Casuarina tree species, Leucaena, silver oak and Glyricidia etc. and tieing of neighbouring plants in groups to avoid loding and Earthing up			
pigeon pea	Bund planting of Casuarina tree species, Leucaena, silver oak and Glyricidia etc. and tieing of neighbouring plants in groups to avoid lodging and Earthing-up			
Field bean	Bund planting of Casuarina tree species, Leucaena, silver oak and Glyricidia etc. and tieing of neighbouring plants in groups to avoid loding and Earthing-up			
Horse gram	Bund planting of Casuarina tree species, Leucaena, silver oak and Glyricidia etc. and tying of neighboring plants in groups to avoid loding and Earthing-up			
Paddy	Provide proper drainage and reduce the plant height by spraying Ethrel, CCC	Planting of wind breaks	Planting of wind breaks Provide proper drainage and reduce the plant height by spraying Ethrel,CCC	Drying of produce
Mango				
Papaya				
Coconut				
Outbreak of pests and diseases due to unseasonal rains				
Banana	Provide proper drainage and intercropping and mixed cropping with legumes Support Or staking to plant	Proper drainage to control pest like banana stem borer and Diseases By cultural and biological methods	Proper drainage to control pest and Diseases By cultural and biological methods	Grading and discarding damaged Protect from Pest and diseases
Mango				
Papaya				
Coconut Turmeric				
Finger millet	Need based plant protection IPDM for pulses Tying of plants	Need based plant protection IPDM for pulses		Safe storage against storage pest and diseases
Pigeonpea				
Groundnut				
Field bean				
Horsegram				

2.3 Floods

Condition	Suggested contingency measure			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Transient water logging/ partial inundation				
Ragi	Drainage and Resowing	Drainage and foliar nutrition Earthing up	Drainage and additional foliar nutrition	Drainage ,harvest, drying and value addition
Paddy	Drainage and foliar nutrition	Drainage and foliar nutrition Split application of fertilizers	Drainage and additional foliar nutrition	Drainage ,harvest, drying and value addition
Groundnut	Drainage and re sowing	Split application of fertilizers Earthing up	Drainage and additional foliar nutrition	
Maize	Drainage and re sowing	Split application of fertilizers Earthing up	Drainage ,Harvest cobs De husk and use as Baby corn	Drainage ,harvest, drying and value addition
Horticulture				
Banana	Provide proper drainage and protect seedlings by using greenhouse /polyhouse/shade nets	Provide proper drainage and strengthening of bunds	Provide proper drainage and strengthening of bunds	Reduce harvest period by spraying CCC
Mango				
Papaya				
Coconut				
Turmeric				
Continuous submergence for more than 2 days				
Banana	Provide proper drainage and protect seedlings by using greenhouse /polyhouse/shade nets	Provide proper drainage and strengthening of bunds	Provide proper drainage and strengthening of bunds	Reduce harvest period by spraying CCC
Mango				
Papaya				
Coconut				
Turmeric				
Sea water inundation	NA			

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
Heat Wave				NA
Cold wave				NA
Frost				NA
Hailstorm				NA
Cyclone				NA

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	<p>As the district is occasionally prone to drought the following measures to be taken to ameliorate the fodder deficiency</p> <p>Sowing of cereals (Sorghum/Bajra) and leguminous crops (Lucerne, Berseem, Horse gram, Cowpea) during early monsoon under dry land system for fodder production.</p> <p>Available sorghum/Bajra stover, sugarcane tops and groundnut haulms should be properly stored for future use.</p>	<p>Harvest and use biomass of dried up crops (Maize, , Paddy, Sorghum, Bajra, Groundnut, etc.) material as fodder.</p> <p>Use of unconventional and locally available cheap feed ingredients especially groundnut cake and haulms as protein supplement for livestock during drought</p> <p>Concentrate ingredients such as Grains, brans, chunnies & oilseed cakes, low grade grains etc. unfit for human consumption should be procured from Govt. Godowns for feeding as supplement for high productive animals during drought</p> <p>Continuous supplementation of mineral mixture to prevent infertility</p>	<p>Training/educating farmers for feed & fodder storage.</p> <p>Maintenance / repair of silo pits and feed/fodder stores.</p> <p>Encourage progressive farmers to grow fodder crops of sorghum/bajra/maize(UP chari, MP chari, HC-136, HD-2, GAIN T BAJRA, L-74, K-677, Ananad/African Tall etc., on their own lands & supporting them with assisting infrastructures like seeds, manure.</p> <p>Supply of quality fodder seed (multi cut sorghum/bajra/maize varieties) and fodder</p>

	<p>Encourage silage making with available maize fodder and sugar cane tops in the villages</p> <p>Collection of groundnut haulms and groundnut cake for use as feed supplement during drought</p> <p>Chopping of fodder should be made as mandatory in every village through supply and establishment of good quality chaff cutters.</p> <p>Harvesting and collection of perennial vegetation particularly grasses which grow during monsoon</p> <p>Proper drying, bailing and densification of harvested grass from previous season</p> <p>Creation of permanent fodder, feed and fodder seed banks in all drought prone villages</p>	<p>Harvest the tree fodder (Neem, Subabul, Acasia, Pipal etc) and unconventional feeds resources available and use as fodder for livestock (LS).</p> <p>Available feed and fodder should be cut from CPRs and stall fed in order to reduce the energy requirements of the animals</p> <p>Advise the farmers about the practice of mixing available kitchen waste with dry fodder while feeding</p>	<p>slips of Napier, guinea grass well before monsoon</p> <p>Replenish the feed and fodder banks</p>
Floods	NA		
Cyclone	NA		
Heat & Cold waves	NA		
Health and Disease management	<p>List out the endemic diseases (species wise) in that district</p> <p>Procure and stock emergency medicines and vaccines for important endemic diseases of the area</p> <p>All the stock must be immunized for</p>	<p>Constitution of Rapid Action Veterinary Force</p> <p>Performing ring vaccination (8 km radius) in case of any outbreak</p> <p>Restricting movement of livestock in case of any epidemic</p> <p>Rescue of sick and injured animals and their treatment</p> <p>Rescue of sick and injured animals and</p>	<p>Conducting mass animal health camps</p> <p>Conducting fertility camps</p> <p>Mass deworming camps</p>

	endemic diseases of the area Surveillance and disease monitoring network to be established at Joint Director (Animal Husbandry) office in the district	their treatment	
Drinking water	Identification of water resources Rain water harvesting and create water bodies/watering points (when water is scarce use only as drinking water for animals)	Restrict wallowing of animals in water bodies/resources	Bleach (0.1%) drinking water / water sources Provide clean drinking water
Insurance	Encouraging insurance of livestock	Listing out the details of the dead animals	Submission for insurance claim and availing insurance benefit Purchase of new productive animals

2.5.2 Poultry

	Suggested contingency measures		
	Before the event ^a	During the event	After the event
Drought			
Shortage of feed ingredients	Storing of house hold grain like maize, broken rice etc, in to use as feed in case of severe drought	Supplementation only for productive birds with house hold grain Supplementation of shell grit (calcium) for laying birds Culling of weak birds	Supplementation to all survived birds
Drinking water		Use water sanitizers or offer cool hygienic	

		drinking water	
Health and disease management	Culling of sick birds. Deworming and vaccination against RD and fowl pox	Mixing of Vit. A,D,E, K and B-complex including vit C in drinking water (5ml in one litre water)	Hygienic and sanitation of poultry house Disposal of dead birds by burning / burying with lime powder in pit
Floods	NA		
Cyclone	NA		
Heat & Cold waves	NA		

2.5.3 Fisheries : NA

	Suggested contingency measures		
	Before the event	During the event	After the event
Drought			
Shallow water in ponds due to insufficient rains/inflows			
Impact of heat and salt load build up in ponds / change in water quality			
Any other (specify)			
Floods	NA		
Inundation with flood waters			
Water contamination and changes in BOD			
Health and disease management			
Loss of stock and inputs (feed, chemicals etc.)			
Infrastructure damage			
Cyclone	NA		
Overflow / flooding of ponds			
Change in fresh/brackish water ratio			

Health and disease management			
Loss of stock and inputs (feed, chemicals etc.)			
Infrastructure damage			
Heat wave and cold wave	NA		