

**State: MAHARASHTRA**

**Agriculture Contingency Plan for District: GADCHIROLI**

1.0 District Agriculture profile				
<b>1.1</b>	<b>Agro-Climatic/ Ecological Zone</b>			
	Agro Ecological Sub Region (ICAR)	Eastern plateau (chhotanagpur) and Eastern Ghats, Hot Subhumid Eco-Region(12.1)		
	Agro-Climatic Zone (Planning Commission)	Eastern plateau and hills region (VII)		
	Agro Climatic Zone (NARP)	Eastern Vidarbha zone (MH-9)		
	List all the districts or part thereof falling under the NARP Zone	Chandrapur, Bhandara, Gondia and Gadchiroli		
	Geographic coordinates of district headquarter : Gadchiroli	Latitude	Longitude	Altitude
		20° 10' 56.66"N	80° 00' 12.06" E	217 m
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTS	Zonal Agricultural Research Station ZARS) , Sindewahi, District		
	Mention the KVK located in the district	Krishi Vigyan Kendra, Sonapur Gadchiroli), District – Gadchiroli		

<b>1.2</b>	<b>Rainfall</b>	Normal RF(mm)	Normal Rainy days (number)	Normal Onset ( specify week and month)	Normal Cessation (specify week and month)
		SW monsoon (June-Sep):	1297.5	52.9	24 <sup>th</sup> Met. Week (June 11-17)
NE Monsoon(Oct-Dec):	73.9	3.9	-	-	
Winter (Jan- March)	34.9	2.5	-	-	
Summer (Apr-May)	22.2	1.8	-	-	
Annual	1428.5	61.1	-	-	

1.3	<b>Land use pattern of the district</b> (latest statistics)	<b>Geographical Area</b>	<b>Cultivable area</b>	<b>Forest area</b>	<b>Land under non agricultural use</b>	<b>Permanent pastures</b>	<b>Cultivable waste land</b>	<b>Land under miscellaneous tree crops &amp; groves</b>	<b>Barren &amp; uncultivable land</b>	<b>Current fallows</b>	<b>Other fallows</b>
	<b>Area ('000 ha)</b>	1492	253	1133	62	22	24	2	13	11	13

1.4	<b>Major Soils (common names like red sandy loam deep soils (etc..))*</b>	<b>Area ('000 ha)</b>	<b>Percent (%) of total</b>
	Deep black soil	1079.1	72.3
	Medium deep black soils	302.2	20.2
	Shallow black soils	110.6	7.4

1.5	<b>Agricultural land use</b>	<b>Area ('000 ha) *</b>	<b>Area ('000 ha) **</b>
	Net sown area	148	133.1
	Area sown more than once	49	
	Gross cropped area	197	

Source : \* District Socio economic Review 2009 of respective district pub by Govt. of M.S., Mumbai

\*\* Calculated actually \*\*\* Economic Survey of M.S. 2009-10

1.6	<b>Irrigation</b>	<b>Area ('000 ha)</b>		
	Net irrigated area	56.3		
	Gross irrigated area	60.7		
	Rainfed area	135.9		
	<b>Sources of Irrigation</b>	<b>Number</b>	<b>Area ('000 ha)</b>	<b>Percentage of total irrigated area</b>
	Canals		17.4	31.0
	Tanks	2058	30.9	44.5
	Open wells	6370	38.8	68.9

Bore wells	103	1.9	02.8
Lift irrigation schemes	17	0.05	0.07
Micro-irrigation			8.6
Other sources (please specify)	381	6.0	
Total Irrigated Area		69.3	
Pump sets	8119		
No. of Tractors	2289		

<b>Groundwater availability and use* (Data source: State/Central Ground water Department /Board)</b>	No. of blocks/ 12 Tehsils	(%) area	Quality of water (specify the problem such as high levels of arsenic, fluoride, saline etc)
Over exploited			
Critical			
Semi- critical			
Safe	12		
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 etc. (2008-09)

1.7	Major Field Crops cultivated	Area ('000 ha)						Summer	Total
		Kharif			Rabi				
		Irrigated	Rainfed	Total	Irrigated	Rainfed	Total		
	Paddy		149.6	149.6	-	-	-	-	149.6
	Pigeon pea		6.2	6.2	-	-	-	-	6.2
	Soybean		5.8	5.8	-	-	-	-	5.8
	Maize		2.3	2.3	-	-	-	-	2.3
	Sorghum		0.5	0.5	-	-	-	-	0.5
	<b>Rabi</b>								
	Wheat				1.6		1.6		1.6
	Gram				3.8		3.8		3.8
	Rabi sorghum				9.5		9.5		9.5
	Linseed				3.9		3.9		3.9

	<b>Horticulture crops – Fruits</b>	<b>Total area (('000 ha)</b>
	Mango	2.6
	Cashew nut	0.4
	Sapota	0.08
	Total	<b>2.6</b>
	<b>Horticultural crops - Vegetables</b>	<b>Total area ('000 ha)</b>
	Chili	2.1
	Turmeric	0.05
	Onion	0.1
	Brinjal	0.5
	Tomato	0.1
	Others (specify)	0.3
	Total	<b>3.2</b>
		<b>Plantation crops</b>
		-
<b>Fodder crops</b>		<b>Total area('000 ha)</b>
Fodder (Sorghum,bajra etc)		18.7
Others (specify)		
<b>Total fodder crop area</b>		18.7
<b>Grazing land</b>		28.9
<b>Sericulture etc</b>	7.9	

1.8	Livestock	Male ('000)	Female ('000)	Total ('000)
	Non descriptive Cattle (local low yielding)	377.8	256.0	633.8
	Crossbred cattle	1.7	4.6	6.3
	Non descriptive Buffaloes (local low yielding)	64.0	43.4	107.5
	Graded Buffaloes	0.2	1.2	1.2
	Goat	66.9	141.9	208.8
	Sheep	8.0	54.1	62.2

	Others (Camel, Pig, Yak etc.)		
	Commercial dairy farms (Number)		
1.9	<b>Poultry</b>	<b>No. of farms</b>	<b>Total No. of birds ('000)</b>
	Commercial	0	14.8
	Backyard	0	325.8

1.10	<b>Fisheries</b> (Data source: Chief Planning Officer)						
	<b>A. Capture</b>						
	i) <b>Marine</b> (Data Source: Fisheries Department) <b>Not applicable</b>	<b>No. of fishermen</b>	<b>Boats</b>		<b>Nets</b>		<b>Storage facilities (Ice plants etc.)</b>
			Mechanized	Non-mechanized	Mechanized (Trawl nets, Gill nets)	Non-mechanized (Shore Seines, Stake & trap nets)	
		-	-		-	-	-
ii) <b>Inland</b> (Data Source: Fisheries Department)	<b>No. Farmer owned ponds</b>		<b>No. of Reservoirs</b>		<b>No. of village tanks</b>		
	5		15		2902		

	<b>B. Culture</b>			
		<b>Water Spread Area (ha)</b>	<b>Yield (t/ha)</b>	<b>Production ('000 tons)</b>
	i) <b>Brackish water</b> (Data Source: MPEDA/ Fisheries Department)			
	ii) <b>Fresh water</b> (Data Source: Fisheries Department)	8357	0.4	3685
	<b>Others</b>			

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

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)	
<b>Major Field crops (Crops to be identified based on total acreage)</b>										
	Paddy	237.7	1577			0.96	360	238.66	968.5	
	Maize	4.072	1757					4.072	1757	
	Pigeon pea	4.00	642					4.00	642	
	Green gram	0.18	927					0.18	927	
	Black gram	0.07	673					0.07	673	
	Rabi Sorghum			4.63	483			4.63	483	
	Wheat			1.75	1085			1.75	1085	
	Gram			1.99	521			1.99	521	
	Linseed			0.85	215			0.85	215	

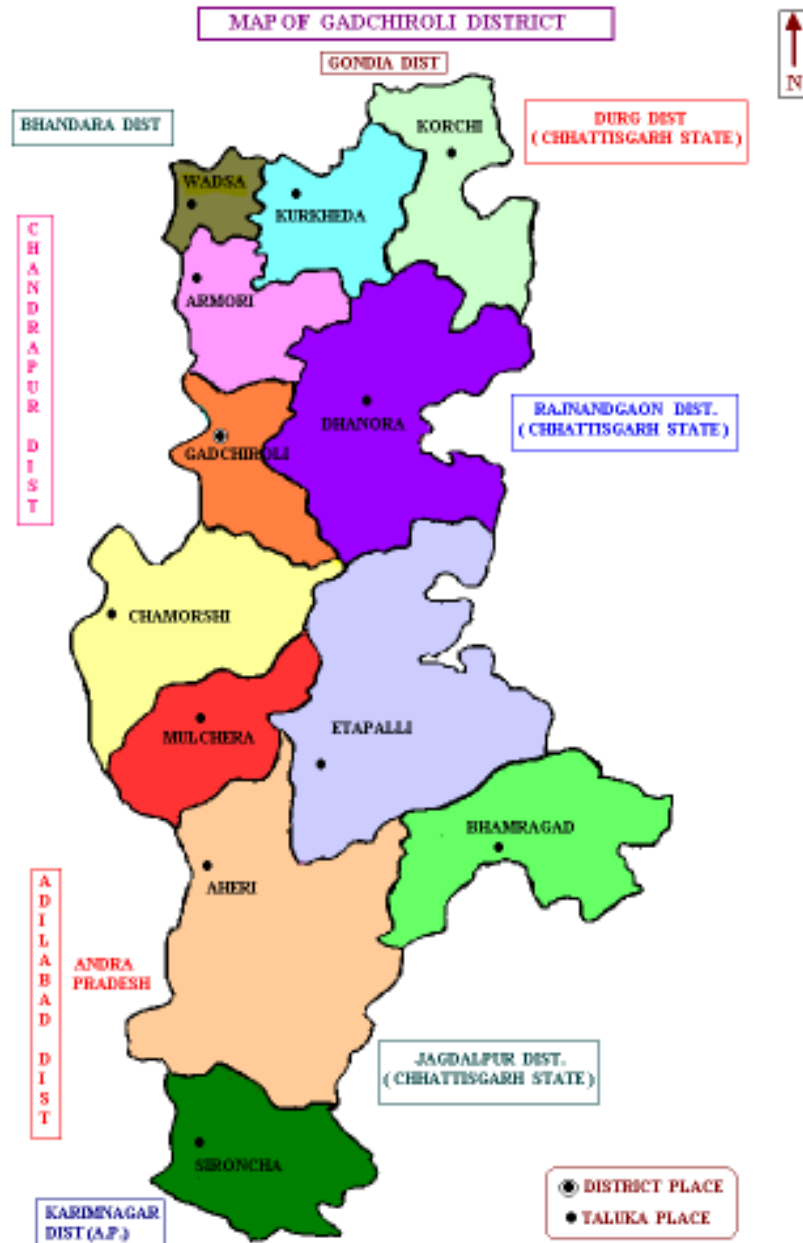
<b>Major Horticultural crops (Crops to be identified based on total acreage)</b>										
	Mango	10.2	3807					10.2	3807	
	Cashew nut	0.08	195					0.08	195	
	Sapota	0.07	833					0.07	833	
	Chili	1.6	772					1.6	772	
	Turmeric	1.0	18005					1.0	18005	
	Onion	1.4	12861					1.4	12861	
		4.9	13889					4.9	13889	

1.12	<b>Sowing window for 5 major field crops</b>	<b>Paddy</b>	<b>Cotton</b>	<b>Pigeon pea</b>	<b>Soybean</b>	<b>Sunflower</b>
	Kharif- Rainfed	18 <sup>th</sup> June-29 <sup>th</sup> July	18 <sup>th</sup> June-1 <sup>st</sup> July	18 <sup>th</sup> June-1 <sup>th</sup> July	18 <sup>th</sup> June-1 <sup>st</sup> July	18 <sup>th</sup> June-24 <sup>th</sup> June
	Kharif-Irrigated					
		Sorghum	Gram	Wheat	Lathyrus	Sunflower
	Rabi- Rainfed	27 <sup>th</sup> -30 <sup>th</sup> September	1 <sup>st</sup> Oct-4 <sup>th</sup> Nov	5 <sup>st</sup> Nov-2 <sup>st</sup> Dec	-	-
	Rabi-Irrigated					

1.13	<b>What is the major contingency the district is prone to (Tick mark)</b>	<b>Regular</b>	<b>Occasional</b>	<b>None</b>
	Drought			✓
	Flood		✓	
	Cyclone			
	Hail storm		✓	
	Heat wave		✓	
	Cold wave			✓
	Frost			✓
	Sea water intrusion			✓
Pests and disease outbreak (specify) Paddy-Armyworm, Soybean- Spodoptera			✓	

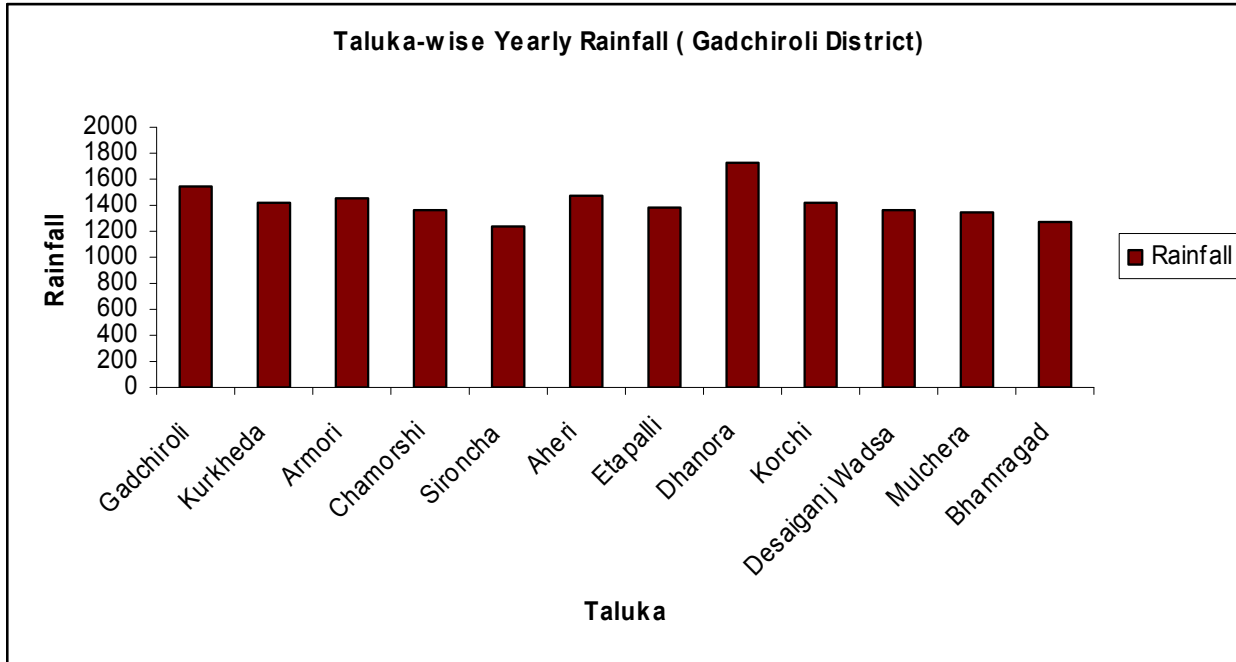
1.14	<b>Include Digital maps of the district for</b>	Location map of district within State as Annexure I	Enclosed: yes
		Mean annual rainfall as Annexure 2	Enclosed: yes
		Soil map as Annexure 3	Enclosed: yes

Annexure-I



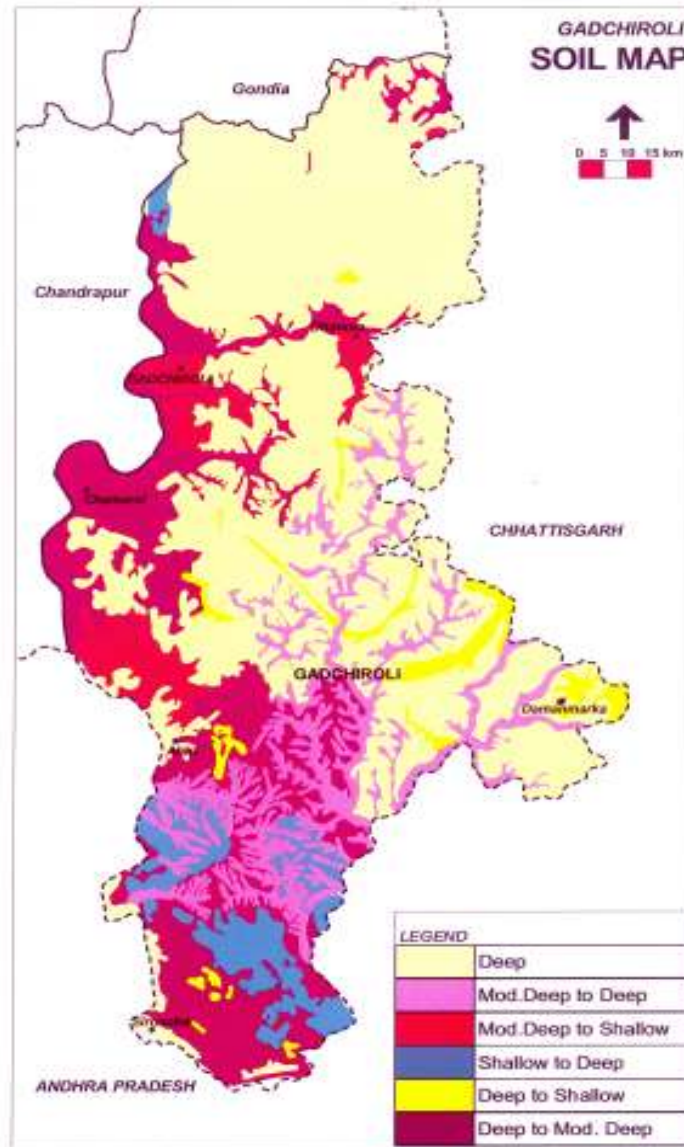


**Annexure-II Mean Annual rainfall**



<b>District Gadchiroli</b>		
<b>Taluka</b>	<b>Rainfall</b>	<b>Rainy Day</b>
Gadchiroli	1551.8	66.3
Kurkheda	1424.0	59.6
Armori	1451.2	63.9
Chamorshi	1367.0	57.0
Sironcha	1230.8	61.8
Aheri	1474.3	67.0
Etapalli	1379.0	59.6
Dhanora	1736.0	70.7
Korchi	1424.0	59.6
Desaiganj Wadsa	1361.0	59.6
Mulchera	1340.0	59.6
Bhamragad	1279.0	59.6
Overall	1418.2	62.0

### Annexure-III Soil Map



## 2.0 Strategies for weather related contingencies

### 2.1 Drought

#### 2.1.1 Rainfed situation

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures		
			Change in crop / cropping system including variety	Agronomic measures	Remarks on Implementation
Early season drought (delayed onset)  Delay by 4 weeks 25 <sup>th</sup> June – 1 <sup>st</sup> July	Medium deep to deep red and black soils	Paddy	No change	Sowing of early varieties like SKL-6, PKV Makrand, PKV Ganesh, PKV HMT, SYE 2001 by drilling –	
			No change	Sowing of sprouted paddy seed by using paddy drum seeder	
			DO-	Staggered sowing of paddy nursery	
			No change	Sowing by drilling method directly in main field	
	Moderately deep to shallow soils	Soybean	No change	<ul style="list-style-type: none"> <li>• Early varieties</li> <li>• Soil moisture conservation by preparing ridges and furrows by tying rope to hoe at the time of interculture (1 month after sowing)</li> </ul>	
	Pigeonpea	Pigeon pea	Reduce spacing and increase seed rate		

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures		
			Change in crop / cropping system including variety	Agronomic measures	Remarks on Implementation
Early season drought (delayed onset)  Delay by 4 weeks (9-15 July)	Moderately deep to deep red / black soils	Paddy	No change in crop planning	<ul style="list-style-type: none"> <li>• Midlate and Early varieties of paddy</li> <li>• Drilling of paddy in main field and use of weedicide</li> <li>• Sprouted seed sowing by using drum seeder on puddled field</li> <li>• Staggered sowing of paddy nursery</li> </ul>	
			No change in crop planning	Decrease spacing increase seed rate	
	Moderately to shallow	Pigeonpea	Soybean		

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 (Specify month) (23-29 July)	Medium deep to deep red black soils	Paddy	Early varieties of paddy SKL-6, IR 36, IR 64  No change in crop planning	<ul style="list-style-type: none"> <li>• Drilling of paddy directly in field with use of weedicide.</li> <li>• Sowing of sprouted paddy seed by using drum seeder on puddled field.</li> <li>• Staggered sowing of paddy.</li> <li>• Raising of nursery by Dapog method and transplanting in field</li> </ul>	
	Medium deep to shallow soils red / black soils	Paddy/ Soybean	Drilled paddy Soybean	<ul style="list-style-type: none"> <li>• Light irrigation</li> <li>• Weed management (weeding or hoeing by cono weeder to lower crop weed competition for water)</li> </ul>	
		Pigeonpea	Drilled paddy	Early varieties of paddy like SKL-6, IR-64, IR-36	

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 (6 Aug-12Aug)	Medium deep to deep soils	Paddy	No change	<ul style="list-style-type: none"> <li>• Early varieties of paddy</li> <li>• Staggered sowing of nursery</li> <li>• Direct seeding of sprouted seed on puddled fields by using drum seeder</li> <li>• Seed drill sowing of increased seed rate and decreased spacing</li> </ul>	
	Moderately to shallow soils	Soybean	Change crop with black gram, green gram, cowpea and vegetable.	Late variety	

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.	Medium Deep to deep soils	Paddy	Staggered sowing of paddy nursery? Drilling of paddy in mainfield Sprouted seed sowing on puddled field Nursery management, Raishing nursery by Dapog method Resowing of early varieties Dapog method	Life saving irrigation to nursery	
	Shallow to medium deep soils	Soybean	Gap filling	Hoeing to reduce evapotranspiration Life saving irrigation	
		Pigeonpea	-do-	-do-	

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 Deep to deep soil	Paddy	Life saving irrigation	Sprinkler irrigation Life saving irrigation Irrigation from Farm pond	
	Shallow to medium deep soil	Soybean	Thinning to lower plant population	*Hoeing by tying rope to hoe for across the slope cultivation	If the cultivation and sowing is along the slope, open the intermittent furrow by lifting the hoe at 10-15 ft. distance instead of opening
	Deep soils	Pigeon pea	Thinning to lower plant population	*Hoeing by tying rope to hoe for across the slope cultivation	

					the continuous furrows.
--	--	--	--	--	-------------------------

Condition			Suggested Contingency measures		
<b>Mid season drought (long dry spell)</b>	<b>Major Farming situation</b>	<b>Normal Crop/cropping system</b>	<b>Crop management</b>	<b>Soil nutrient &amp; moisture conservation meases</b>	<b>Remarks on Implementation</b>
<b>At flowering/ fruiting stage</b>	Medium Deep to deep soil	Paddy		Life saving Irrigation should be given	
	Moderately to shallow soils	Soybean			
	Deep soils	Pigeonpea			

Condition			Suggested Contingency measures		
<b>Terminal drought (Early withdrawal of monsoon)</b>	<b>Major Farming situation</b>	<b>Normal Crop/cropping system</b>	<b>Crop management</b>	<b>Rabi Crop planning</b>	<b>Remarks on Implementation</b>
Upto 15 <sup>th</sup> September	Medium Deep to deep soil	As above	As above	Semi rabi crop sowing by minimum cultivation, on residual moisture utera cropping of Green gram, urid, semirabi sesame, Pigeon pea, castor	
	Moderately to shallow soils	Soybean	Ridges and furrow	Direct sowing of semi rabi sesame	
	Medium deep soils	Castor		sowing by Minimum cultivation	
	All the soils	Pigeon pea		Semi rabi sesame	
				Castor	
				Pigeonpea	
				Semi rabi Pigeonpea	

2.1.2 Irrigated situation (As the reservoir goes dry in the summer, there is no question of releasing water)

Condition	Suggested Contingency measures				
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delayed release of water in canals due to low rainfall	Paddy based	Paddy (kharif)	Paddy	<ul style="list-style-type: none"> <li>• Interculture by cono weeder after release of water</li> <li>• Weeding</li> <li>• Sowing by seed drill</li> <li>• Intercultural by conoweeder</li> <li>• Raising of nursery by dapog or onraised bed with organic manure and forth</li> </ul>	

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	Paddy based	Paddy	Paddy	As above	No contingency in Bhandara district upto 30 <sup>th</sup> August

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	Paddy	Paddy	Semirabi crops after 15 <sup>th</sup> September		
			Sesame		
			Castor		
			safflower		

Condition	Suggested Contingency measures				
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	Paddy based	Paddy	No change upto 30 <sup>th</sup> August because this district comes under high rainfall	<ul style="list-style-type: none"> <li>• Sowing of sprouted seed by drum seeder</li> <li>• Drilled paddy</li> <li>• staggered community nursery</li> </ul>	-

Condition	Suggested Contingency measures				
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Insufficient groundwater recharge due to low rainfall	Paddy based	Paddy	No change upto 30 <sup>th</sup> August because this district comes under high rainfall		

## 2.2 Unusual rains (untimely, unseasonal etc) (for both rainfed 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				
Paddy	Drain excess water above 5 cm.	Drainage excess water above 10 cm.	Drainage , Delay harvesting for few days.	Harvesting at physiological maturity, Drying of paddy on bunds. Salt treatment of wetted paddy seeds with 5 % common salt to prevent germination. Shifting of produce at safer place or covering with paddy straw. Use of PARAQUAT as pre-harvest desiccant @ 0.1 % spray application for early harvesting to avoid losses by unpredictable monsoon at later stages.
Soybean	Preparation of ridges & furrows	Drainage	Harvesting at physiological maturity, drying grains	



Pigeon Pea	-do-	-do-	Harvesting at physiological maturity, drying on threshing floor by putting in standing position.	
<b>Horticulture</b>				
Mango	Drainage Preparation of ridges & furrows	Nil	Nil	Nil
<b>Heavy rainfall with high speed winds in a short span</b>				
Paddy	Drainage excess water above 5 cm.	Drainage excess water above 10 cm.	Drainage , Delay harvesting	Harvesting at physiological maturity, Drying of paddy on bunds. Salt treatment of wetted paddy sheaves with 5 % common salt to prevent germination. Shifting of produce at safer place or covering with paddy straw. Use of PARAQUAT as pre-harvest desiccant @ 0.1 % spray application for early harvesting to avoid losses by un predictable monsoon at later stages.
Pigeon pea	Drainage and hoeing , drenching or systemic fungicide spraying (redomil), Opening of ridges and furrow	Drainage and hoeing , drenching or systemic fungicide spraying (redomil)	Drainage	Drainage water and Shifting of produce at safer place
Gram	-do-	-do-	Drainage , Delay harvesting for few days.	Drainage water and Shifting of produce at safer place
Wheat	Drainage	Drainage		
<b>Horticulture</b>				
<b>Outbreak of pests and diseases due to unseasonal rains</b>				
Paddy	Spraying of Mono-crotophos 36 EC 14 ml or Cypermetharin 10	Spraying of Mono-crotophos 36 EC 14 ml	Removal and destruction of infected panicles due to	

	EC 6 ml per 10 liter of water	or Cypermetharin 10 EC 6 ml per 10 Liter of water	Loose smut	
Pigeon pea	Spraying of Endo sulphar 35 EC @ 20 ml or Quinolphos 25 EC @ 16 ml per 10 liters of water to control leaf roller and leaf minor.	Removal and destruction of wilted plant	Spraying of neem extract 5 % or Endo sulphar. 35EC 20 ml or Quinolphos 25 EC 20 ml or HANPV 250 LE to control pod borer	
Gram	Spraying of Endo. 35 EC @ 20 ml or Quinolphos 25 EC @ 16 ml per 10 liters of water to control leaf eating caterpillar	-do-	Do-	
Wheat	Spraying of Mancozeb @ 25 gm per 10 liter of water to control foliar blight		Spraying of Carbaryl @ 40 gm per 10 liter per water to control cut worms and stem borer.	

### 2.3 Floods

Condition	Suggested contingency measure			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Transient water logging/ partial inundation				
Continuous submergence for more than 2 days	Not applicable			
Sea water intrusion	Not applicable			

### 2.4 Extreme events: Heat wave / Cold wave/Frost/ Hailstorm /Cyclone- Not applicable

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 and Fisheries

### 2.5.1 Livestock

	Suggested contingency measures		
	Before the event <sup>s</sup>	During the event	After the event
<b>Drought</b>	NA		
<b>Floods</b>	<p>In case of early forewarning (EFW), harvest all the crops (paddy, soybean, maize, sorghum, wheat, cowpea etc.) that can be useful as feed/fodder in future (store properly)</p> <p>Keeping sufficient of dry fodder to transport to the flood affected villages</p> <p>Don't allow the animals for grazing if severe floods are forewarned</p> <p>Keep stock of bleaching powder and lime</p> <p>Carry out Butax spray for control of external parasites</p> <p>Identify the Clinical staff and trained paravets and indent for their services as per schedules</p> <p>Identify the volunteers who can serve in need of emergency</p> <p>Arrangement for transportation of animals from low lying area to safer places and also for rescue animal health workers to get involve in rescue operations</p>	<p>Transportation of animals to elevated areas</p> <p>Proper hygiene and sanitation of the animal shed</p> <p>In severe storms, un-tether or let loose the animals</p> <p>Use of unconventional and locally available cheap feed ingredients for feeding of livestock.</p> <p>Avoid soaked and mould infected feeds / fodders to livestock</p> <p>Emergency outlet establishment for required medicines or feed in each village</p> <p>Spraying of fly repellants in animal sheds</p>	<p>Repair of animal shed</p> <p>Bring back the animals to the shed</p> <p>Cleaning and disinfection of the shed</p> <p>Bleach (0.1%) drinking water / water sources</p> <p>Encouraging farmers to cultivate short-term fodder crops like sunhemp.</p> <p>Deworming with broad spectrum dewormers</p> <p>Proper disposable of the dead animals / carcasses by burning / deep burying (4-8 feet) with lime powder (1kg for small ruminants and 5kg for large ruminants) in pit</p> <p>Drying the harvested crop material and proper storage for use as fodder.</p>

<b>Cyclone</b>	NA		
<b>Heat &amp; Cold wave</b>	<p>Arrangement for protection from <b>heat wave</b></p> <ul style="list-style-type: none"> <li>i) Plantation around the shed</li> <li>ii) H<sub>2</sub>O sprinklers / foggers in the shed</li> <li>iii) Application of white reflector paint on the roof</li> <li>iv) Thatched sheds should be provided as a shelter to animal to minimize heat stress</li> </ul>	<p>Allow the animals early in the morning or late in the evening for grazing during heat waves</p> <p>Make available cool drinking water during the day time</p> <p>Feed green fodder/silage / concentrates during day time and roughages / hay during night time</p> <p>Put on the foggers / sprinklers during heat waves</p> <p>In severe cases, vitamin 'C' and electrolytes should be added in H<sub>2</sub>O during heat waves.</p>	<p>Feed the animals as per routine schedule</p> <p>Allow the animals for grazing (normal timings)</p>
<b>Insurance</b>	Encouraging insurance of livestock	Listing out the details of the dead animals	<p>Submission for insurance claim and availing insurance benefit</p> <p>Purchase of new productive animals</p>

#### Vaccination schedule in small ruminants (Sheep & Goat)

Disease	Season
Foot and mouth disease (FMD)	Preferably in winter / autumn
PPR	All seasons, preferably in June-July
Black quarter (BQ)	May / June
Enterotoxaemia (ET)	May
Haemorrhagic septicaemia (HS)	March / June

Sheep pox (SP)	December / march
----------------	------------------

**Vaccination programme for cattle and buffalo:**

Disease	Age and season at vaccination
Anthrax	In endemic areas only, Feb to May
HS	May to June
BQ	May to June
FMD	November to December

**2.5.2 Poultry**

	Suggested contingency measures		
	Before the event <sup>a</sup>	During the event	After the event
<b>Drought</b>	NA		
<b>Floods</b>			
<b>Shortage of feed ingredients</b>	In case of early forewarning of floods, shift the birds to safer place Storing of house hold grain like maize, broken rice, bajra etc,	Use stored feed as supplement Don't allow for scavenging Culling of weak birds	Routine practices are followed Deworming and vaccination against RD
<b>Drinking water</b>		Use water sanitizers or offer cool hygienic drinking water	
<b>Health and disease management</b>	In case of EFW, add antibiotic		

	powder (Terramycin/Ampicilline/ Ampiclox etc., 10g in one litre) in drinking water to prevent any disease outbreak	Prevent water logging surrounding the sheds through proper drainage facility  Assure supply of electricity by generator or solar energy or biogas  Sprinkle lime powder to prevent ammonia accumulation due to dampness	Sanitation of poultry house  Treatment of affected birds Disposal of dead birds by burning / burying with lime powder in pit  Disposal of poultry manure to prevent protozoal problem  Supplementation of coccidiostats in feed  Vaccination against RD
<b>Cyclone</b>	<b>NA</b>		
<b>Heat wave</b>			
Shelter/environment management	Provision of proper shelter with good ventilation	In severe cases, foggers/water sprinklers/wetting of hanged gunny bags should be arranged  Don't allow for scavenging during mid day	Routine practices are followed
Health and disease management	Deworming and vaccination against RD and fowl pox	Supplementation of house hold grain  Provide cool and clean drinking water with electrolytes and vit. C  In hot summer, add anti-stress probiotics in drinking water or feed	Routine practices are followed
<b>Cold wave</b>	<b>NA</b>		

<sup>a</sup> based on forewarning wherever available

## 2.5.3

## Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event	During the event	After the event
<b>1) Drought</b>			
<b>A. Capture</b>	-	-	-
Marine	-	-	-
Inland	-	-	-
(i) Shallow water depth due to insufficient rains/inflow	Extra food supply / sale out fish-	Extra food supply / sale out fish	-
(ii) Changes in water quality	-	-	-
<b>B. Aquaculture</b>			
(i) Shallow water in ponds due to insufficient rains/inflow	-	-	-
(ii) Impact of salt load build up in ponds / change in water quality	-	pH maintenance	200 Kg lime / ha.
<b>2) Floods</b>			
<b>A. Capture</b>			
Marine			
Inland			
(i) Average compensation paid due to loss of human life	As per Govt .norm	-	1 lakh per fisherman nominee for death OR 0.5 lakh for disability
(ii) No. of boats / nets/damaged	-	-	0.01 lakh /fisherman Coop Soc. For tank
(iii) No. of houses damaged	-	-	-
(iv) Loss of stock	-	-	0.01 lakh /fisherman Coop Soc. For tank
(v) Changes in water quality	-	pH maintenance	200 Kg lime / ha
(vi) Health and diseases	-	Ulcerative syndrome	25% subsidy on treatment
<b>B. Aquaculture</b>			
(i) Inundation with flood water	-	-	-
(ii) Water contamination and changes in water quality	-	pH maintenance	200 Kg lime / ha.
(iii) Health and diseases	-	Ulcerative syndrome	25% subsidy on treatment

(iv) Loss of stock and inputs (feed, chemicals etc)	-	-	per fisherman Rs 500/-
(v) Infrastructure damage (pumps, aerators, huts etc)	-	-	-
<b>3. Cyclone / Tsunami</b>			
<b>A. Capture</b>	-	-	-
Marine	-	-	-
(i) Average compensation paid due to loss of fishermen lives	As per Govt .norm	-	1 lakh per fisherman nominee.
(ii) Avg. no. of boats / nets/damaged	-	-	-
(iii) Avg. no. of houses damaged	-	-	-
Inland			-
<b>B. Aquaculture</b>			
(i) Overflow / flooding of ponds	As per Govt .norm	-	0.005 / fisherman or Rs 500/-
(ii) Changes in water quality (fresh water / brackish water ratio)	-	PH maintenance	200 Kg lime / ha.
(iii) Health and diseases	-	Ulcerative syndrome	25% subsidy on treatment
(iv) Loss of stock and inputs (feed, chemicals etc)	-	-	0.005 / fisherman or Rs 500/-
(v) Infrastructure damage (pumps, aerators, shelters/huts etc)	-	-	-

<b>4. Heat wave and cold wave</b>	-	-	-
<b>A. Capture</b>	-	-	-
Marine	-	-	-
Inland	-	-	-
<b>B. Aquaculture</b>			
(i) Changes in pond environment (water quality)	-	PH maintenance	200 Kg lime / ha.
(ii) Health and Disease management	-	Ulcerative syndrome	25% subsidy on treatment