



# KOLHAPUR DISTRICT

## CONTINGENT CROP PLANNING AND AGRO ADVISORY

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2017

**STATE: MAHARASHTRA**  
**Agriculture Contingency Plan for District : KOLHAPUR**

<b>1.0 District Agriculture Profile</b>																															
<b>1.1</b>	<p><b>Agro-Climatic/Ecological Zone</b></p> <p>Agro Ecological Sub Region (ICAR)</p> <p>Agro-Climatic Region (Planning Commission)</p> <p>Agro Climatic Zone (NARP):</p> <p>List all the districts or part thereof falling under the NARP Zone</p> <p>Geographic coordinates of district headquarters</p> <p>Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS</p> <p>Mention the KVK located in the district</p>																														
	<p>North Sahyadris and Western Karnataka plateau, hot dry sub-humid eco-subregion (6.4)</p> <p>West Coast Plains and Ghat Region (XII), Western Plateau And Hills Region (IX)</p> <p>South Konkan Coastal Zone (MH-1) Sub montane Zone (MH - ) and Western Ghat Zone(MH - )</p> <p>Sub Mountain Zone : Kolhapur, Satara, Sangli, Pune, Nashik</p> <p>Western Ghat Zone: Kolhapur, Nandurbar, Nashik, Pune, Satara</p> <p>Latitude Longitude Altitude</p> <p>16° 42' to 17.24" N 74° 14' to 75° 74" E 574 to 605 m (Above msl)</p> <p>Zonal Agricultural Research Station, Shenda Park, Kolhapur 4160012</p> <p>Phone- 0231/2692416 ; Fax 0231/2693017</p> <p>email adrkolhapur@reddiffmail.com , zars_kolhapur@reddiffmail.com</p> <p>KVK Talsande, Tal. Hatkanangale, Dist. Kolhapur. Pin. 416112</p> <p>Phone- 0230/2479099 Mob. 9423862713</p> <p>Email kvkkolhapur@gmail.com kvkkolhapur@reddiffmail.com</p>																														
<b>1.2</b>	<table border="1"> <thead> <tr> <th><b>Rainfall</b></th> <th><b>Normal RF(mm)</b></th> <th><b>Normal Rainy days (number)</b></th> <th><b>Normal Onset</b></th> <th><b>Normal Cessation</b></th> </tr> </thead> <tbody> <tr> <td>SW monsoon (June-Sep):</td> <td>809.0</td> <td>54</td> <td>2<sup>nd</sup> Week of June</td> <td>2<sup>nd</sup> Week of Oct</td> </tr> <tr> <td>NE Monsoon(Oct-Dec):</td> <td>137.7</td> <td>8</td> <td>-</td> <td>-</td> </tr> <tr> <td>Winter (Jan- Feb)</td> <td>7.6</td> <td>--</td> <td>-</td> <td>-</td> </tr> <tr> <td>Summer (Mar - May)</td> <td>65.2</td> <td>3</td> <td>-</td> <td>-</td> </tr> <tr> <td>Annual</td> <td>1019.5</td> <td>65</td> <td>-</td> <td>-</td> </tr> </tbody> </table>	<b>Rainfall</b>	<b>Normal RF(mm)</b>	<b>Normal Rainy days (number)</b>	<b>Normal Onset</b>	<b>Normal Cessation</b>	SW monsoon (June-Sep):	809.0	54	2 <sup>nd</sup> Week of June	2 <sup>nd</sup> Week of Oct	NE Monsoon(Oct-Dec):	137.7	8	-	-	Winter (Jan- Feb)	7.6	--	-	-	Summer (Mar - May)	65.2	3	-	-	Annual	1019.5	65	-	-
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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)	776261	442305	140100	35901	31,403	40,390	4,088	42,239	40,599	--

(Source: Superintending Agricultural Officer Kolhapur 2015-16 (G-DAP)

1.4	<b>Major Soils</b>	<b>Area (000ha)</b>
	Shallow lateritic soils	172.4
	Deep brownish soils	151.5
	Medium deep black soils	102.9

(Source: NBSS & LUP, Nagpur)

1.5	<b>Agricultural land use</b>	<b>Area ('000 ha)</b>	<b>Cropping intensity %</b>
	Net sown area	455.08	126.48
	Area sown more than once	120.49	
	Gross cropped area	575.57	

Source: Kolhapur District statistical information 2015-16

1.6	Irrigation	Area ('000 ha)		
		Number	Area ('000 ha)	Percentage of total irrigated area
	Net irrigated area		128.58	
	Gross irrigated area		135.51	
	Rainfed area		298.97	
	<b>Sources of Irrigation</b>			
	Canals	--	--	--
	Tanks	52	15308	8.11
	Open wells	10940	15236	8.08
	Bore wells	112	--	
	Lift irrigation schemes	30195	158003	83.80
	Micro-irrigation	--	--	
	Other sources (please specify)	--	--	
	Total Irrigated Area	41187	188547	
	Pump sets	80029		
	No. of Tractors	5932		
	<b>Groundwater availability and use*</b> <b>(Data source: State/Central Ground Water Department /Board)</b>	<b>No. of blocks/ Tehsils</b>	<b>(%) area</b>	<b>Quality of water (specify the problem such as high levels of arsenic, fluoride, saline etc)</b>
	Over exploited			
	Critical			
	Semi- critical			
	Safe		65% of ground water exploited	
	Wastewater availability and use			
	Ground water quality			

Source: Source: Superintending Agricultural Officer Kolhapur 2015-16 (C-DAP)

**1.7 Area under major field crops & horticulture etc. (2015-16)**

1.7	Major field crops cultivated	Area ('00 ha)									
		Kharif			Rabi			Total	Summer	Grand total	
		Irrigated	Rainfed	Total	Irrigated	Rainfed	Total				
	Sugarcane	--	--	--	1453	--	1453	--	--	1453	
	Paddy	--	1115	--	--	--	--	9	--	1124	
	Groundnut	--	537	537	--	--	--	26	--	563	
	Soybean	--	539	539	--	--	--	--	--	539	
	Finger millet	--	208	--	--	--	--	--	--	208	
	Sorghum	--	57	57	--	114	114	--	--	171	
	Maize	--	32	32	70	70	--	17	--	119	
	Chickpea	--	--	--	48	--	48	--	--	48	
	Wheat	--	--	--	20	--	20	--	--	20	
	<b>Horticulture crops - Fruits</b>						<b>Area ('000 ha)</b>				
							<b>Total</b>				
	Mango						2.34				
	Cashew						3.04				
	Coconut						0.59				
	Sapota						0.28				
	Banana						0.38				
	Grape						0.15				
	<b>Horticulture crops - Vegetables</b>						<b>Total</b>				
	Tomato						0.38				
	Cauliflower						0.38				
	Cabbage						0.37				
	Onion						0.22				
	Potato						0.74				
	Sweet Potato						0.40				
	Chilli						0.21				
	Garlic						0.002				
	Turmeric						0.32				

1.8	Livestock	Male('000)		Female ('000)		Total ('000)	
	Non descriptive Cattle (local low yielding)	77.0		275.1		352.4	
	Crossbred cattle	8.7		173.3		182.0	
	Non descriptive Buffaloes (local low yielding)	26.8		542.5		569.3	
	Graded Buffaloes	2.5		70.5		73.0	
	Goat	35.9		126.6		162.5	
	Sheep	19.8		103.2		123.0	
	Others (Camel, Pig, Yak etc.)	2.3		4.4		6.7	
	Commercial dairy farms (Number)	--		--		--	
1.9	<b>Poultry</b>	<b>No. of farms</b>		<b>Total No. of birds ('000)</b>			
	Commercial	--		3199.3			
	Backyard	--		660.5			
1.10	<b>Fisheries (Data source: Chief Planning Officer)</b>						
	<b>A. Capture</b>						
	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)	
		NA	NA	NA	NA	NA	NA
	ii) Inland (Data Source: Fisheries Department)	No. Farmer owned ponds	No. of Reservoirs		No. of village tanks		
		48	7		350		
	<b>B. Culture</b>						
	i) Brackish water (Data Source: MPEDA/ Fisheries Department)	Water Spread Area (ha)		Yield (t/ha)		Production tons	
		NA		NA		NA	
	ii) Fresh water (Data Source: Fisheries Department)	7492		0.46		2325	
	Others	NA		NA		NA	

Source: 19<sup>th</sup> Livestock Census 2012 Commissioner of Animal Husbandry Govt of Maharashtra

1.11 Production and Productivity of major crops (Average of last 5 years : 2011-12 to 2015-16)

1.11	Name of crop	Kharif		Rabi		Summer		Total		Crop residue as fodder ('000 tons)
		Production ('000 t)	Productivity (kg ha <sup>-1</sup> )	Production ('000 t)	Productivity (kg ha <sup>-1</sup> )	Production ('000 t)	Productivity (kg ha <sup>-1</sup> )	Production ('000 t)	Productivity (kg ha <sup>-1</sup> )	
<b>Major Field crops (Crops to be identified based on total acreage)</b>										
	Sugarcane	--	--	13659.2	95.60	--	--	13659.2	95.60**	--
	Paddy	301.8	2777.2	-	-	3.9	2968	314.2	4303.0	--
	Groundnut	76.6	1494.4	-	-	5.4	2175	82.0	2582.0	--
	Kharif Sorghum	13.6	2031.0	22.7	1464	--	--	36.3	2763.0	--
	Finger millet	32.1	1497.0	-	-	--	--	32.1	1497.0	--
	Soybean	121.4	2320.0	-	-	--	--	121.4	2320.0	--
	Maize	5.6	2246.0	16.8	2838.0	1.9	1785.0	24.3	2290.0	--
	Chickpea	--	--	9.10	1060.0	--	--	9.10	1060.0	--
	Wheat	--	--	20.5	2332.0	--	--	20.5	2332.0	--
<b>Major Horticultural crops- Fruits (Crops to be identified based on total acreage)</b>										
	Mango	5.30	2.27 (t ha <sup>-1</sup> )	--	--	--	--	5.30	2.27 (t ha <sup>-1</sup> )	--
	Cashew	3.10	1.02 (t ha <sup>-1</sup> )	--	--	--	--	3.10	1.02 (t ha <sup>-1</sup> )	--
	Coconut	51 lakh nuts	8648 nuts ha <sup>-1</sup>	--	--	--	--	51 lakh nuts	8648 nuts ha <sup>-1</sup>	--
	Sapota	1.71	6.19 (t ha <sup>-1</sup> )	--	--	--	--	1.71	6.19 (t ha <sup>-1</sup> )	--
	Banana	12.83	33.86 (t ha <sup>-1</sup> )	--	--	--	--	12.83	33.86 (t ha <sup>-1</sup> )	--
	Grape	2.86	18.98 (t ha <sup>-1</sup> )	--	--	--	--	2.86	18.98 (t ha <sup>-1</sup> )	--

\*\*Sugarcane productivity t/ha

Name of crop	Kharif		Rabi		Summer		Total		Crop residue as fodder ('000 tons)
	Production ('000 t)	Productivity (kg ha <sup>-1</sup> )	Production ('000 t)	Productivity (kg ha <sup>-1</sup> )	Production ('000 t)	Productivity (kg ha <sup>-1</sup> )	Production ('000 t)	Productivity (kg ha <sup>-1</sup> )	
<b>Horticultural Crops-Vegetables</b>									
Tomato	10.19	28.61 (t ha <sup>-1</sup> )	--	--	--	--	10.19	28.61 (t ha <sup>-1</sup> )	--
Cauliflower	8.15	21.40 (t ha <sup>-1</sup> )	--	--	--	--	8.15	21.40 (t ha <sup>-1</sup> )	--
Cabbage	8.21	23.76 (t ha <sup>-1</sup> )	--	--	--	--	8.21	23.76 (t ha <sup>-1</sup> )	--
Onion	3.82	16.83 (t ha <sup>-1</sup> )	--	--	--	--	3.82	16.83 (t ha <sup>-1</sup> )	--
Potato	15.31	20.97 (t ha <sup>-1</sup> )	--	--	--	--	15.31	20.97 (t ha <sup>-1</sup> )	--
Sweet Potato	11.95	29.52 (t ha <sup>-1</sup> )	--	--	--	--	11.95	29.52 (t ha <sup>-1</sup> )	--
<b>Spices</b>									
Chilli	1.66	10.69 (t ha <sup>-1</sup> )	--	--	--	--	1.66	10.69 (t ha <sup>-1</sup> )	--
Garlic	0.018	9.00 (t ha <sup>-1</sup> )	--	--	--	--	0.018	9.00 (t ha <sup>-1</sup> )	--
Turmeric	0.50	13.43 (t ha <sup>-1</sup> )	--	--	--	--	0.50	13.43 (t ha <sup>-1</sup> )	--
<b>Medicinal and Aromatic crops</b>									
<b>Plantation crops</b>									

Source: Kolhapur District Superintending Agricultural Officer Reports 2015-16



1.12	Sowing window for 5 major crops (start & end of sowing period)	Sugarcane	Paddy	Finger millet	Soybean	Khariif Sorghum	Groundnut
	<i>Khariif</i> -Rainfed	-	3 <sup>rd</sup> week of May to 1 <sup>st</sup> week of June	1 <sup>st</sup> of June to 2 <sup>nd</sup> week of July	1st week of June to 1st week of July	2 <sup>nd</sup> week of June to 1 <sup>st</sup> week of July	2 <sup>nd</sup> week of June to 2 <sup>nd</sup> week of July
	<i>Khariif</i> -Irrigated	--	3 <sup>rd</sup> week of May to 1 <sup>st</sup> week of June	-	4 <sup>th</sup> week of May to 1st week of July	2nd week of June to End of June	--
	<i>Rabi</i> -Rainfed	-		-	-	-	-
	<i>Rabi</i> -Irrigated	Preseasonal(15 <sup>th</sup> Oct to 15 <sup>th</sup> Nov) and suru (15 <sup>th</sup> Dec to 15 <sup>th</sup> Feb)	Wheat 1 <sup>st</sup> fortnight of October to 1 <sup>st</sup> Fortnight of Nov	Chickpea 20 <sup>th</sup> Oct to 10 <sup>th</sup> Nov	-	--	--

1.13	What is the major contingency the district is prone to?	Regular	Occasional	None
	Drought		Long dryspells of 15 to 20 days in khariif	✓
	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

## 2.0 Strategies for weather related contingencies

### 2.1 Drought

#### 2.1.1 Rainfed situation

Condition	Major Farming Situation	Crop/cropping system	Change in crop/cropping system	Suggested Contingency measures	
				Agronomic measures	Remarks on Implementation
Early season drought (delayed onset)	Shallow lateritic soils	Finger millet (Phule Nachani, Dapoli -1, Dapoli Safed, Dapoli 2)	No change	Early dry spell hoeing with slit blade hoe at 15 DAS. Hoeing with entire blade hoe at 25-30 DAS, dust mulch by blade harrow	<b>Seed Source:</b> Linkage with MPKV, Rahuri, College of Agriculture Kolhapur NSC and MSSC.
		Paddy (Phule Samruddhi, Bhogawati, Phule Radha , Karjat 184, Karjat 4, Indrayani, R-24, R-1)	-do-	Dry seeding, Rahu method for re sowing if needed	
Delay by 2 weeks	Medium deep black soils	Groundnut (Phule Bharti, Phule Unnati, Phule Pragati, JL-501, Phule Unap, TMV-10)	No change	Early dry spell hoeing with slit blade hoe at 15 DAS. Hoeing with entire blade hoe at 25-30 DAS, dust mulch by blade harrow	Prefer transplanting with the seedlings available from the existing nurseries
		Finger Millet (Phule Nachani, Dapoli 1, Dapoli safed, Dapoli 2)	No change	Prefer transplanting with the seedlings available from the existing nurseries	
June 4 <sup>th</sup> week		Sorghum(CSH-5,9,13, SSV-462)	No change	Early dry spell hoeing with slit blade hoe at 15 DAS. Hoeing with entire blade hoe at 25-30 DAS, dust mulch by blade harrow, protective irrigation	Early dry spell hoeing with slit blade hoe at 15 DAS. Hoeing with entire blade hoe at 25-30 DAS, dust mulch by blade harrow, protective irrigation
		Soybean (Phule Agrani, Phule Sangam, Phule Kalyani , JS-335, KS 103, JS 9305, )	No change	Early dry spell hoeing with slit blade hoe at 15 DAS. Hoeing with entire blade hoe at 25-30 DAS, dust mulch by blade harrow, protective irrigation	

	Deep brownish soils	Paddy (Phule Samruddhi, Bhogawati, Phule Radha , Karjat 184, Karjat 4, Indrayani, R-24, R-1)	No change	Prefer transplanting with the seedlings available from the existing nurseries, Rahu method for re sowing if needed	
		Groundnut (Phule Bharti, Phule Unnati, Phule Pragati, JL-501, Phule Unap, TMV -10)	No change	Increase spacing 45x15 cm, hoeing by two tyned hoe at 30DAS)	
		Finger Millet (Phule Nachani, Dapoli 1, Dapoli safed, Dapoli 2)	No change	Increase spacing (30x10 cm), hoeing/ soil mulch	
		Sorghum (CSH-5,8,9,13, Mahabeej 7)	No change	Early dry spell hoeing with slit blade hor at 15 DAS. Hoeing with entire blade hoe at 25-30 DAS, dust mulch by blade harrow, protective irrigation	
		Soyabean (Phule Agrani, Phule Sangam, Phule Kalyani , JS-335, KS 103, JS 9305, )	No change	Early dry spell hoeing with slit blade hor at 15 DAS. Hoeing with entire blade hoe at 25-30 DAS, dust mulch by blade harrow	

Condition	Major Farming Situation	Crop/cropping system	Suggested Contingency measures		Remarks on Implementation
			Change in cropping system	Agronomic measures	
Early season drought (delayed onset)	Shallow lateritic soils	Finger millet (Phule Nachani, Dapoli -1, Dapoli Safed, Dapoli 2)	No change	Early dry spell hoeing with slit blade hoe at 15 DAS. Hoeing with entire blade hoe at 25-30 DAS, dust mulch by blade harrow, dust mulch by blade harrow	Linkage with MPKV, Rahuri, College of Agriculture Kolhapur NSC and MSSC..
July 2 <sup>nd</sup> week	Medium deep black soils	Paddy ,(Karjat 184, Karjat 4 Phule Radha,R-1)	-do-	Transplanting, Rahu method for re sowing if needed	
		Groundnut (Phule Bharti, Phule Unnati, Phule Pragati, JL-501, Phule Unap, TMV -10)	No change	Early dry spell hoeing with slit blade hor at 15 DAS. Hoeing with entire blade hoe at 25-30 DAS, dust mulch by blade harrow and Weeding	



Condition		Suggested Contingency measures				Remarks on Implementation
Early season drought (delayed onset)	Major Farming Situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures		
Delay by 6 weeks July 4 <sup>th</sup> week	Shallow lateritic soils	Finger millet (Phule Nachani, Dapoli -1, Dapoli Safed, Dapoli 2)	No change	Hoeing at 25 DAS, dust mulch by blade harrow	Linkage with MPKV, Rahuri, College of Agriculture Kolhapur NSC and MSSC..	
	Medium deep black soils	Paddy ( Phule Radha, R-1, R -711, R- 73, R-24, Karjat 184, Karjat 4.) Groundnut (Phule Unap, TMV-10) Sorghum	No change	Prefer 5 to 6 seedlings/ hill , Rahu method for re sowing if needed		
Deep brownish soils	Finger Millet (Phule Nachani, Dapoli -1, Dapoli Safed, Dapoli 2, Nachani local)	No change	Finger Millet (KOPN-942, Dapoli 1, Phule Nachani, local)	Prefer transplanting with the seedlings available from the existing nurseries		
	Soybean	Fodder Maize (African tall, Ganga safed 2, Vijay, local)	Sowing at 30 cm spacing, apply 100:50:50 kg NPK/ha, harvest at 50% flowering (65-70 days) as fodder	Increase spacing (30x10 cm).		
		Finger Millet (Phule Nachani, Dapoli -1, Dapoli Safed, Dapoli 2, Nachani local)	Fodder Maize (African tall, Ganga safed 2, Vijay, local)	Sowing at 30 cm spacing, apply 100:50:50 kg NPK/ha, harvest at 50% flowering (65-70 days) as fodder		
		Soybean	No change	Late transplanting /increase no. of seedlings. Rahu method for re sowing if needed		
		Paddy ( Phule Radha, R-1, R -711, R- 73, R-24, Karjat 184, Karjat 4.) Groundnut	No change	Prefer transplanting with the seedlings available from the existing nurseries		
		Sorghum	Fodder Maize (African tall, Ganga safed 2, Vijay, local)	Sowing at 30 cm spacing, apply 100:50:50 kg NPK/ha, harvest at 50% flowering (65-70 days) as fodder		
		Finger Millet (Phule Nachani, Dapoli -1, Dapoli Safed, Dapoli 2, Nachani local)	No change	Prefer transplanting with the seedlings available from the existing nurseries		
		Soybean	Fodder Maize (African tall, Ganga safed 2, Vijay, local)	Sowing at 30 cm spacing, apply 100:50:50 kg NPK/ha, harvest at 50% flowering (65-70 days) as fodder		

Condition	Suggested Contingency measures			Remarks on Implementation
	Major Farming Situation	Crop/cropping system	Change in crop/cropping system	
Early season drought (delayed onset)				
Delay by 8 weeks 2 <sup>nd</sup> week of August			NA	

Condition	Major Farming Situation	Crop/cropping system	Suggested Contingency measures		Remarks on Implementation	
			Crop management	Soil nutrient and moisture conservation measures		
Early season drought (Normal onset) Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/ crop stand etc.	Shallow lateritic soils	Finger millet	Resowing / Gap filling	Hoing at 25 DAS, weeding	foliar spray of urea 2% OR water soluble 19:19:19 @ 5 gm/lit Linkage with MPKV, Rahuri, College of Agriculture Kolhapur NSC and MSSC..	
	Medium deep black soils	Paddy	Gap filling / Resowing	Hoing, foliar spray of urea 2% OR water soluble 19:19:19 @ 5 gm/lit of water		
		Groundnut	Gap filling / Resowing	Hoing/earthing up		
	Deep brownish soils	Sorghum	Resowing with early hybrids (CSH1, CSH5, SPV-462, CSV-13)	Delay top dressing of N hoeing at 25 DAS weeding, foliar spray of urea 2% OR water soluble 19:19:19 @ 5 gm/lit		Hoing at 25 DAS, weeding, foliar spray of urea 2% OR water soluble 19:19:19 @ 5 gm/lit
		Finger millet	Resowing / Gap filling	Resowing, foliar spray of urea 2% OR water soluble 19:19:19 @ 5 gm/lit		Hoing at 25 DAS, weeding, foliar spray of urea 2% OR water soluble 19:19:19 @ 5 gm/lit
		Soybean	As above	As above		Hoing at 25 DAS, weeding, foliar spray of urea 2% OR water soluble 19:19:19 @ 5 gm/lit
	Deep brownish soils	Paddy	Gap filling / Resowing	Gap filling / Resowing		Hoing, foliar spray of urea 2% OR water soluble 19:19:19 @ 5 gm/lit,
		Groundnut	Gap filling/ Resowing	Gap filling/ Resowing		Hoing / earthing up at 40 Das, foliar spray of urea 2% OR water soluble 19:19:19 @ 5 gm/lit
		sorghum	Resowing with early hybrids (CSH1, CSH5, CSH18)	Resowing with early hybrids (CSH1, CSH5, CSH18)		Delay top dressing of N hoeing at 25 DAS weeding, foliar spray of urea 2% OR water soluble 19:19:19 @ 5 gm/lit
	Deep brownish soils	Finger Millet	Resowing / Gap filling	Resowing / Gap filling		Hoing at 25 DAS, weeding, foliar spray of urea 2% OR water soluble 19:19:19 @ 5 gm/lit
Soybean		As above	As above	Hoing at 25 DAS, weeding, foliar spray of urea 2% OR water soluble 19:19:19 @ 5 gm/lit		

Condition	Major Farming Situation	Crop/cropping system	Suggested Contingency measures			
			Crop management	Soil nutrient and moisture conservation measures	Remarks on Implementation	
Mid season drought (long dry spell, At vegetative stage)	Shallow lateritic soils	Finger millet	Reduce plant population	Reduce 2 <sup>nd</sup> N Dose by 25% hoeing/weeding/		
		Paddy	Protective irrigation, foliar spray of urea 2% OR water soluble 19:19:19 @ 5 gm/lit	Hoeing/weeding		
	Medium deep black soils	Groundnut	As above	As above		
		Sorghum	As above	Hoeing/weeding		
	Deep brownish soils	Finger millet	--	Hoeing/weeding		
		Soyabean	Protective irrigation, foliar spray of urea 2% OR water soluble 19:19:19 @ 5 gm/lit	-do-		
		Paddy	As above	-do-		
		Groundnut	As above	-do-		
		Sorghum	As above	-do-		
		Finger Millet	--	-do-		
Mid season drought (long dry spell) At reproductive stage	Shallow lateritic soils	Soybean	Protective irrigation, foliar spray of urea 2% OR water soluble 19:19:19 @ 5 gm/lit	-do-		
	Medium deep black soils					
Mid season drought (long dry spell) At reproductive stage	Shallow lateritic soils	Finger millet	—	--		
		Paddy	Protective irrigation,	--		
	Medium deep black soils	Finger millet	--	--		
		Kharif sorghum	Spray 8% Kaoline, Protective irrigation, alternate thinning, defoliation of older leaves	--		
	Deep brownish soils	Groundnut	As above	--		
		Soybean	As above	--		
		Paddy	As above	--		
		Finger millet	--	--		
		sorghum	Spray 8% Kaoline, Protective irrigation, alternate thinning, defoliation of older leaves	--		
		Groundnut	As above	--		
Soybean	As above	--				



Condition	Major Farming Situation	Crop/cropping system	Suggested Contingency measures			Remarks on Implementation
			Crop management	Rabi crop planning		
Terminal drought of monsoon	Medium deep black soils	Paddy	Protective irrigation, harvest at physiological maturity	Chickpea short duration cultivar (Phule Vikram, Vishal, Virat, Vijay, Digvijay, local)	--	
			harvest at physiological maturity, in case of poor grain filling harvest for fodder	No rabi crop		
		sorghum	As above	Chickpea (Phule Vikram, Vishal Virat, Vijay, Digvijay,local)/ Wheat, variety (Panchavati, Phule Netravati, Phule Samadhan, HD 2189, Local )		
			harvest at physiological maturity	As above		
		Soybean	As above	Sorghum (Phule Suchitra, Phule Chitra), Chickpea (Vishal Virat Vijay, Digvijay, local)/ wheat (Panchavati, Phule Netravati, Phule Samadhan, HD 2189, Local )		
			Protective irrigation, harvest at physiological maturity	Chickpea early variety (Phule Vikram, Vishal, Virat, Vijay, Digvijay, local)		
		Finger Millet	Harvest at physiological maturity, in case of poor grain filling harvest for fodder	--		
			Protective irrigation, harvest at physiological maturity, in case of poor grain filling harvest for fodder	Chickpea (Phule Vikram, Vishal, Virat, Vijay, Digvijay, local) / Wheat (Panchavati, Phule Netravati, Phule Samadhan, HD 2189, Local )	--	
		Groundnut	Harvest at physiological maturity	As above		
			As above	As above		
Soybean	Harvest at physiological maturity	As above				
	As above	As above				



### 2.1.2 Irrigated situation

Condition	Major Farming Situation	Crop/cropping system	Suggested Contingency measures		Remarks on Implementation
			Change in crop/cropping system	Agronomic measures	
Delayed/limited release of water in canals due to low rainfall			NA		
Condition	Major Farming Situation	Crop/cropping system	Change in crop/cropping system	Suggested Contingency measures Agronomic measures	Remarks on Implementation
Non release of water in canals under delayed onset of monsoon in catchment			NA		
Condition	Major Farming Situation	Crop/cropping system	Change in crop/cropping system	Suggested Contingency measures Agronomic measures	Remarks on Implementation
Lack of inflows into tanks due to Insufficient/delayed onset of monsoon			NA		

Condition	Suggested Contingency measures				Remarks on Implementation
	Major Farming Situation	Crop/cropping system	Change in crop/ cropping system	Agronomic measures	
Lift Irrigation	Medium deep black soils	Paddy (Phule Radha Indrayani, Bhogawati, R-24)	No change	Weeding,Hoeing, Irrigation at critical growth stages	
		Soybean (Phule Agrani, Phule Sangam, Phule Kalyani , JS-335, KS 103, JS 9305, )	No change	Weeding,Hoeing, Irrigation at critical growth stages	
		Sunflower (SS 56, Bhanu, Phule Raviraj, Phule Bhaskar)	Chickpea (Phule Vikram, Vishal, Virat, Vijay, Digvijay , local) / <i>rabi</i> sorghum (Phule Vasuda, Phule Revati, Phule Yashoda ) Hurada: Phule Uttara Corn: Phule Panchami Papad: Phule Rohini	Skip row irrigation	
		<i>Rabi</i> sorghum	Chickpea (Phule Vikram, Vishal, Virat, Vijay, Digvijay , local)/ wheat ( Phule Samadhan, Netravati, Panchawati, Tapovan , Trimbak, Godavari)	Sprinkler irrigation	
		Wheat	Chickpea/(Vishal, Vikas, Vijay, Digvijay , local) <i>rabi</i> sorghum /sunflower	Sprinkler irrigation,	
		Sugarcane	--	Alternate row irrigation/ drip irrigation / Trash mulching, paired row planting	
		Paddy (Indrayani,Bhogawati, Phule Radha, R-24)	No change	Weeding,Hoeing, Irrigation at critical growth stages	

		No change	Weeding, Hoeing, Irrigation at critical growth stages	
Soybean (Phule Agrani, Phule Sangam, Phule Kalyani , JS-335, KS 103, JS 9305, )	--	No change	--	
Sunflower (SS 56, Bhanu, Phule Raviraj, Phule Bhaskar)	--		--	
<i>Rabi</i> sorghum	<i>Rabi</i> sorghum (Phule Vasuda, Phule Revati, Phule Yashoda ) Hurada: Phule Uttara Corn: Phule Panchami Papad: Phule Rohini		--	
Chickpea	(Phule Vikram, Vishal, Virat, Vijay, Digvijay , local)		Sprinkler irrigation,	
Sugarcane	--		Alternate row irrigation/ drip irrigation/ trash mulching, paired row planting.	

Condition	Suggested Contingency measures				Remarks on Implementation
	Major Farming Situation	Crop/cropping system	Change in crop/ cropping system	Agronomic measures	
Insufficient groundwater recharge due to low rainfall	Medium deep black soils –Open well irrigated	Sunflower (Phule Bhaskar , Bhanu, Phule Raviraj)	Chickpea(Phule Vikram, Vishal, Virat, Vijay, Digvijay , local) / <i>rabi</i> sorghum (Phule Anuradha, Phule Suchitra)	Skip row irrigation	
		<i>Rabi</i> sorghum (Phule Vasuda, Phule Revati, Phule Yashoda)	Chickpea (Phule Vikram, Vishal, Virat, Vijay, Digvijay , local)	Sprinkler irrigation	
		Wheat	Chickpea/( Phule Vikram, Vishal, Virat, Vijay, Digvijay , local) <i>rabi</i> sorghum /sunflower	Sprinkler irrigation,	
		Sugarcane	--	Alternate row irrigation/ drip irrigation / Trash mulching, paired row planting	
		Sunflower (Bhanu, Phule Raviraj, Phule Bhaskar)	--	--	
	Deep brownish soil- Open well irrigated	<i>Rabi</i> sorghum	( <i>rabi</i> sorghum (Phule Vasuda, Phule Revati, Phule Yashoda ) Hurada: Phule Uttara Corn: Phule Panchami Papad: Phule Rohini	--	
		Chickpea	Chickpea (Phule Vikram, Vishal, Virat, Vijay, Digvijay , local	Sprinkler irrigation,	
		Sugarcane	--	Alternate row irrigation/ drip irrigation/ trash mulching, paired row planting.	

## 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
<b>Continuous high rainfall in a short span leading to water logging</b>				
Paddy	Drain out excess water, Adopt necessary plant protection measures As above	Drain out excess water, necessary plant protection measures As above	Drain out excess water, harvest at physiological maturity stage As above	Harvest & dry in drying shade As above
Finger millet	As above	As above	As above	As above
<i>Kharif</i> Sorghum	As above	As above	As above	As above
Soybean	As above	As above	As above	As above
Groundnut	As above	As above	Produce must be turned frequently to reduce moisture & avoid germination of pods.	
Sugarcane	As above	As above	Tying of sugarcane, harvest the crop as early possible.	
<b>Horticulture</b>				
Chilli	As above	As above	Immediate harvesting & marketing	
Tomato	As above	As above	As above	
Brinjal	As above	As above	As above	
Sapota	As above	As above	Harvest and cleaning the fruits	
Coconut	As above	As above	As above	
Banana	As above	As above	As above	

Heavy rainfall with high speed winds in a short span	Not Applicable	<b>Suggested contingency measure</b>		
<b>Condition</b>		<b>Vegetative stage</b>	<b>Flowering stage</b>	<b>Crop maturity stage</b>
<b>Outbreak of pests and diseases due to un-seasonal rains</b>				
Paddy	<p><b>a) Disease - Leaf Blast -</b> Spraying of Carbendazim 0.1 % immediately after appearance of the symptoms and subsequent 2-3 sprays at an interval of 15 days</p> <p><b>a) Insect pest - Stem Borer -</b> Soil application of phorate 10 G @ 10 kg ha-1 in nursery after 15 DAS followed by spraying of quinolphos 25 EC @ 2 ml/L of water</p> <p><b>Brown leaf hopper:</b> Spraying of Monocrotophos @ 1ml/L of water</p> <p><b>Army Worm:</b> Spraying of Chlorpyrifos @ 1.5 ml /lit of water</p>	<p><b>a) Disease- Leaf &amp; Neck blast/Nodal blast -</b> Spraying of Carbendazim 0.1 % immediately on appearance and subsequent 2-3 sprays at an interval of 15 days on need base</p> <p><b>a) Insect pest - Stem Borer:</b> Soil application of phorate 10 G @ 10 kg ha-1 in nursery after 15 DAS followed by spraying of quinolphos 25 EC @ 2ml /L of water</p> <p><b>Brown leaf hopper:-</b> Spraying of Monocrotophos 1ml /L of water</p> <p><b>Army Worm:</b> Spraying of Chlorpyrifos @ 1.5ml /L of water or Quinalphos @ 2 ml/lit of water</p> <p>Crabs : Use of poison bait</p>	--	--
Finger millet	<p><b>a) Disease- Leaf Blast-</b> Spraying of Carbendazim 0.1% + Mancozeb 0.25% % immediately after appearance of the symptoms and subsequent 2-3 spray at interval of 15 days</p> <p><b>b) Insect pest- Army Worm:</b> Spraying of Chlorpyrifos @ 1.5ml /L of water</p>	<p><b>a) Disease- Leaf Blast-</b> Spraying of Carbendazim 0.1 + Mancozeb 0.25% % immediately after appearance of the symptoms and subsequent 2-3 spray at interval of 15 days</p> <p><b>b) Insect pest- Army Worm:</b> Spraying of Chlorpyrifos @ 1.5ml /L of water</p>	--	--

Maize	<p><b>a) Disease- Turcium leaf blight-</b> 2-3 sprayings of Mancozeb 0.25% at an interval of 15 days at silking stage of the crop</p> <p><b>b) Insect pest Stem Borer:</b> Spraying of Chloropyriphos 2 ml/ L of water. Use of trichocards @ 5 per ha</p> <p><b>Army Worm:</b> Spraying of Quinalphos / Dimethoate @ 1.5 ml/L of water</p>	<p><b>a) Disease- Turcium leaf blight-</b> Spraying of Mancozeb 0.25 % during dry silk stage</p> <p><b>b) Insect pest Stem Borer:</b> Spraying of Chloropyriphos @ 2 ml /L of water.</p> <p><b>Army Worm:</b> Spraying of Carbaryl @ 1.5 g/L of water</p>	--	--
Sorghum	<p><b>a) Disease- Downy mildew-</b> 4 sprayings of Metalaxyl MZ-72 0.2 % at interval of 10 days</p> <p><b>b) Insect pest:</b></p> <p><b>i) Shootfly:</b></p> <ul style="list-style-type: none"> <li>- Spraying of 5% NSKE</li> <li>- Installation of fish meal traps @ 5 per ha</li> <li>- Spraying of Chloropyriphos @ 1.5 ml/L of water</li> </ul> <p><b>ii) Stem Borer:</b> Spraying of chloropyriphos @ 2ml/L of water. Use of trichocards @ 5 per ha</p>	<p><b>a) Disease</b> Downy mildew- 4 sprayings of Metalaxyl MZ-72 0.2 % at interval of 10 days</p> <p><b>b) Insect pest</b></p> <p><b>Stem Borer:</b> Spraying of chloropyriphos or Quinalphos @ 2.0 ml /L of water.</p> <p>Use of Phule trichocards @ 5 per ha</p>	--	--
Soybean	<p><b>a) Disease</b> Prophylactic sprays of Hexaconazole @ 0.1% at flowering stage of the crop followed by Spraying the crop with Propiconazole 0.1% at pod filling stage</p> <p><b>b) Insect pest</b></p> <p><b>Leaf eating caterpillar/Hairy caterpillar:</b></p> <ul style="list-style-type: none"> <li>- Installation of pheromone traps</li> <li>- Dusting of Methyl parathion 2% or Quinolphos 1.5 % or Malathion 5% dust @ 20 kg/ha. or spraying of Chloropyriphos 20EC 2 ml/L or Quinalphos 25 EC 2.0 ml /L of water</li> </ul>	<p><b>a) Disease</b> Rust- Spraying the crop with Propiconazole 0.1%</p> <p><b>b) Insect pest</b> Leaf eating caterpillar/Hairy caterpillar:</p> <ul style="list-style-type: none"> <li>- Installation of pheromone traps</li> <li>- Dusting of Methyl parathion 2% or Quinolphos 1.5 % or Malathion 4% dust @ 20 kg/ha. or Spraying of Chloropyriphos 20 EC or Quinalphos 25 EC 2.0 ml /L of water</li> </ul>	--	--

Groundnut	<p><b>a) Disease</b>  <b>Tikka &amp; Rust-</b> Spraying of Carbendazim @ 0.1% or Mancozeb 0.25% one month after sowing</p>	<p><b>a) Disease</b>  <b>Tikka &amp; Rust-</b> Spraying of Carbendazim @ 0.1% or Mancozeb 0.25%</p>	--	--
	<p><b>b) Insect pest</b>  <b>Thrips &amp; Hopper:</b> Spraying of Dimethoate or Methyl dematon @ 1.5 ml/L of water.</p> <p><b>b) Insect pest</b>  <b>Stem Borer:</b>  Soil application of Carbaryl 10 % dust 50 kg ha<sup>-1</sup> or 20% Chloropyriphos 5 Lit in 1000 lit of water through water channel.  <b>Topshoot borer:</b>  Chloropyriphos 20 EC 2.0 ml / L of water, Use of Phule Trichocards @ 5 per ha</p>	<p><b>b) Insect pest</b>  <b>Leaf Roller:</b> Spraying of Quinolphos 25 EC @ 2.0ml/L of water</p> <p><b>b) Insect pest:</b>  <b>Top Shoot borer:</b>  Soil application of Carbaryl 10% dust 50 kg ha-1 or 20% Chloropyriphos 5 lit in 1000 lit of water through water channal.  <b>Leaf Hopper/Pyrilla:</b>  Diamethoate 30 EC / Malathion 50EC /Quinolphos 25 EC @ 1.5 to 2.0 ml/L of water. Use of Epiricania melanoleuca  <b>White Wooly aphid:</b>  Soil application Phorate 10G 15 kg ha-1, or spraying of Methyl dematon 25%EC or Diamethoate 30 EC @ 1.5 to 2.0 ml/L of water. Use of predators.</p>	--	--
Horticulture crops Mango	<p><b>a) Insect pest –</b>  <b>Mango hopper –</b>  Spraying of 50 % carbaryl 2 g/lit of water or dust 10% carbaryl 20kg ha-1 or Imidacloprid 17.8 SL @ 3 ml per 10 lit water spray.</p>	<p><b>a) Disease</b>  <b>Powdery mildew:</b>  - Dusting of sulphur 300 mesh @ 20 kg ha-1.  - Spraying of Carbendazim 0.1% or 0.1% karathane/calixin  <b>Anthraxnose:</b> Copper oxychloride 0.25% or Carbendazim 0.1% at interval of 10 days</p>	--	--



Grape	<p><b>a) Insect pest – Mealy bug –</b>  - Use stick traps on trunks and girdles,  - Spraying of malathion 50 EC2 ml/lit or Verticillium lecanii @ 20 g/10 lit.</p> <p><b>b) Disease</b>  <b>Powdery Mildew:</b> Spraying of Penconazole 0.05 % 4 times. First spray 15 day after October pruning &amp; subsequent sprays at interval of 15 days</p>	<p><b>a) Insect pest – Mealy bug –</b>  - Use stick traps on trunks and girdles,  - Spraying of malathion 50 EC2 ml/lit  - Buproferin @ 15 ml/10 lit. of water</p> <p><b>b) Disease</b>  <b>Powdery Mildew:</b> Spraying of Penconazole 0.05 % 4 times. First spray 15 day after October pruning &amp; subsequent sprays at interval of 15 days</p>	<p><b>a) Insect pest – Mealy bug–</b> Use traps on either side of berry and bunches.</p>	--
Ber	<p><b>a) Disease</b>  <b>Powdery Mildew-</b> Spray 0.2% wettable sulphur or calixin 0.1%</p>	<p><b>a) Disease</b>  <b>Powdery Mildew-</b> 0.2% wettable sulphur or calixin 0.1% 4 sprays at 20 days interval</p> <p><b>b) Insect pest</b>  <b>Fruit fly –</b> Dusting with 10 % carbaryl @ 20 kg ha-1 or spraying of 50 % carbaryl @ 2 g/lit of water. Use of methyl eujanal traps</p>	--	--
Cabbage, Cauliflower, Cucumber	<p><b>Downy mildew :</b> Copper oxychloride 0.25% or Metalaxyl + mancozeb 72 wp @ 25 g/10 lit of water</p> <p><b>b) Insect pest</b>  <b>Thrips/Aphids/Jassids:</b> Soil application of Phorate 10G 10 kg ha-1 or spraying of Chlorpyrifos 20 EC or Malathion 50EC ml or Diamethoate 30EC @ 0.5 ml /L of water / spray 5% NSKE</p> <p><b>Black fly:</b> Malathion 50EC or Diamethoate 30EC @ 1.5 to 2.0 ml/L of water</p> <p><b>Alternaria leaf blight:</b> Mancozeb @ 0.25% or chlorothalonil @ 0.1%</p>	<p><b>Downy mildew :</b> Copper oxychloride 0.25% or Metalaxyl + mancozeb 72 wp @ 25 g/10 lit of water</p> <p><b>b) Insect pest</b>  <b>Thrips/Aphids/Jassids:</b> Soil application of Phorate 10G 10 kg ha-1 or spraying of Chlorpyrifos 20 EC or Malathion 50EC ml or Diamethoate 30EC @ 0.5 ml /L of water / spray 5% NSKE</p> <p><b>Black fly:</b> Malathion 50EC or Diamethoate 30EC @ 1.5 to 2.0 ml/L of water</p> <p><b>Alternaria leaf blight:</b> Mancozeb @ 0.25% or chlorothalonil @ 0.1%</p>	--	--
Potato, Onion, Tomato, Cabbage	<p><b>b) Insect pest</b>  <b>Hoppers/White fly /Leaf roller/Fruit borer:</b> Chlorpyrifos 20 EC or Malathion 50EC or Diamethoate 30EC @ 1.5 ml/L of water or Imidacloprid @ 3 ml / 10 lit. of water</p>	<p><b>b) Insect pest</b>  <b>Hoppers/White fly /Leaf roller/Fruit borer:</b> Chlorpyrifos 20 EC or Malathion 50EC or Diamethoate 30EC @ 1.5 ml/L of water or Imidacloprid @ 3 ml / 10 lit. of water</p>	--	--

## 2.3 Floods

Condition	Suggested contingency measure				At harvest
	Seedling/nursery stage	Vegetative stage	Reproductive stage		
<b>Transient water logging/partial inundation</b>					
Paddy	Drain out excess water / Reseeding	Transplanting, Drain out excess water, Plant protection	Drain out excess water, Plant protection	Drain out excess water	Drain out excess water
Finger millet	Resowing	Drain out excess water, Plant protection	As above	As above	As above
<i>Kharif</i> sorghum	As above	As above	As above	As above	--
Soybean	As above	As above	As above	As above	--
Groundnut	As above	As above	As above	As above	--
Sugarcane	Gap filling by using sugarcane seedlings	Drain out excess water, necessary plant protection measures	Drain out excess water, necessary propping of sugarcane, harvest the crop as early possible.	Drain out excess water, plant protection,	Drain out excess water, plant protection, harvest the crop as early possible.
<b>Horticulture</b>					
Mango	Drain out excess water	Drain out excess water	Drain out excess water	Drain out excess water	Plant protection
Cashew	Drain out excess water, effective measures to check soil erosion	Drain out excess water, effective measures to check soil erosion	Plant protection	Plant protection	--
Coconut	Drain out excess water	Nutrient management	Drain out excess water	Drain out excess water	--
Banana	As above	Propping	Propping, Drain out excess water	Propping, Drain out excess water	Processing & marketing
Tomato/ Brinjal/ Chilli	Drain out excess water, plant protection	Use of GR to check flower drop	Staking to plants	Staking to plants	--
Cole crops	As above	Drain out excess water	Immediate harvesting & marketing	Immediate harvesting & marketing	--
Tuber & bulb crops	As above	Drain out excess water, turning of vines	As above	As above	Proper storage
Leafy vegetable	As above	As above	Harvesting	Harvesting	--

Condition	Suggested contingency measure			At harvest
	Seedling/ nursery stage	Vegetative stage	Reproductive stage	
Transient water logging/partial inundation				
Continuous submergence for more than 2 days				--
Paddy	Retransplanting	Drain out excess water & application of additional N dose	Drain out excess water & application of additional N dose	--
Sugarcane	Gap filling by using sugarcane seedlings	Drain out excess water & application of N dose	Drain out excess water & application of special N dose	--
Sea water inundation	Not Applicable			

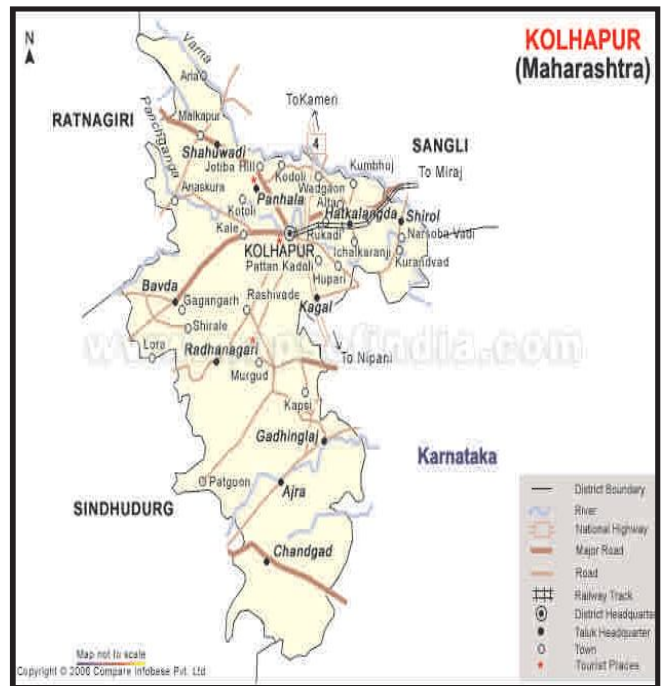
**2.4 Extreme events: Heat wave/Cold wave/Frost/Hailstorm/Cyclone : NA**

**2.5 Contingent strategies for Livestock, Poultry & Fisheries : Separate Chapter given (Animal Component for All District)**

ANNEXURE I

(a) : Location map of Kolhapur district within the state

(b): Map of Kolhapur district



Annexure-II  
Soil Map of Kolhapur District

