

Contingency Crop Planning for 100 Districts in Peninsular India



Y.G. Prasad, B. Venkateswarlu, G. Ravindra Chary,
Ch. Srinivasarao, K.V. Rao, D.B.V. Ramana,
V.U.M. Rao, G. Subba Reddy and A.K. Singh



Central Research Institute for Dryland Agriculture
(Indian Council of Agricultural Research)
Hyderabad

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FOREWORD

Monsoon plays a pivotal role in the success of the Indian agriculture. Timely onset and uniform distribution of rainfall are critical for optimum productivity during kharif season. Adequate rainfall during south west monsoon not only supports production of major commodities like coarse cereals, oilseeds and pulses but also determines the success of rabi crops through carrying over sufficient moisture in the soil profile. However, when the onset of monsoon gets delayed, farmers face difficulties in timely planting and realize economic yields. Whenever, significant negative departure occurred in the south-west monsoon, such as in the years 2002 and 2009, the kharif agricultural production declined significantly.

While the uncertainties related to monsoons are here to stay and even might increase in future due to climate change, it is important to evolve strategies to cope with these uncertainties. This can be done only by fully using existing scientific knowledge on early warning systems, crop planning in relation to progress of monsoon and timely dissemination of weather based agro-advisories to the farmers. In this context, the Indian Council of Agricultural Research (ICAR) has taken up the challenge of preparing district wise crop contingency plans for all the rural districts of the country for major weather related contingencies like droughts, floods, cyclones, unseasonal rains, heat wave, cold wave, frost, etc. in pursuance of the recommendations of the Parliamentary Consultative Committee on Agriculture. Nearly 300 such plans have been completed not only covering crops but also livestock and fisheries.

However, among the weather aberrations, drought is the most common and wide spread in India. Considering the delay in onset of monsoon during 2012 in several states and also the mid-season breaks likely in the event of El-Nino, a part of the contingency plans for drought are being brought out in the form of a publication for ready use by all stakeholders. This publication covers about 100 districts in Peninsular India covering the states of Andhra Pradesh, Maharashtra, Karnataka and Tamil Nadu for which the district wise contingency plans have been completed in all respects.

I am sure this publication will be immensely useful to all the stakeholders at the national, state and district level in operationalizing contingency plans during 2012 and to draw lessons to improve these plans further. I compliment the Natural Resource Management division of the Council and Director, Central Research Institute for Dryland Agriculture for bringing out this useful publication.

(S. Ayyappan)

Dated the 16th July, 2012
New Delhi



PREFACE

Agriculture in India depends heavily on south west monsoon as it contributes 75% of the rainfall. In the last decade, the country witnessed two wide-spread drought years. In 2002, the advancement of monsoon witnessed intermittent delays and the coverage over the entire country could happen only by 15th August. In 2009, despite the early onset of monsoon and its coverage over the entire country by 15th July, the year recorded the lowest mean annual rainfall of less than 700 mm. Any deviation from the normal rainfall pattern seriously affects production of food grains, fodder availability to livestock, supply of raw materials to agro-industries, livelihoods of rural workforce and reduces food grain supplies to the central pool for public distribution. It leads to increase in prices and inflation and finally affects the share of agriculture in GDP.

Delays in monsoon or mid-season breaks have been addressed by the Central and State governments by implementing contingency plans, particularly for droughts. On the recommendation of the Consultative Committee of Parliament on Agriculture, Central Research Institute for Dryland Agriculture in 2010 undertook the preparation of country-wide contingency plans at the district level to meet aberrant and extreme weather situations in crop, livestock and fisheries sectors involving several research institutes of ICAR and all the State Agricultural, Horticultural and Veterinary Universities. Over 300 plans have been prepared so far up to *Kharif* 2012 season which are made available to the Department of Agriculture and Cooperation, Ministry of Agriculture. Another 200 district plans are in the process of preparation. These plans are quite exhaustive containing all information on the district agricultural profile, different farming situations and contingency plans for all possible weather aberrations like droughts, floods, cyclones, unseasonal rains, heat wave and cold wave etc. in agriculture and allied sectors.

However, it has been decided to present the operational part of these plans related to drought in a concise manner to help and meet the prevailing aberrant monsoon situation of 2012 in peninsular India. An attempt has been made to suggest alternate crops with appropriate short-duration cultivars suited for delayed monsoon in each

of the 100 districts and also contingency measures for optimum crop and soil management to alleviate stress in standing crops due to early, mid and terminal drought situations. The authors thank the guidance and encouragement received from Dr S. Ayyappan, Secretary, DARE and Director General, ICAR, and Shri Ashish Bahuguna, Secretary (Agriculture & Cooperation), Department of Agriculture and Cooperation, Ministry of Agriculture. We thankfully acknowledge the contribution and support of all the nodal officers of SAUs in these four states and Director and scientists of NBSS & LUP, Nagpur and Bengaluru for providing district soil maps. It is our earnest desire that these contingency crop plans will be immediately useful to the concerned states in guiding the line departments to help farmers to cope with drought situations. These plans need to be updated periodically by the SAUs with current information and new technology options available from research in their states.

Authors

Hyderabad
16th July 2012

1. INTRODUCTION

Agriculture in Peninsular India is predominantly rainfed with 57% area in Andhra Pradesh, 70% in Karnataka and Kerala, 82% in Maharashtra and 43% in Tamilnadu under rainfed farming. Except assured rainfall districts in Kerala and few districts in Karnataka and Maharashtra, crop production in majority of the districts is therefore heavily dependent on rainfall amount and its distribution.

Monsoon behaviour

Peninsular India receives rainfall from both south west (June-September) and north east monsoon (October to December). Entire Maharashtra receives rainfall mostly from south west monsoon (460 to 3164 mm). In Andhra Pradesh, entire Telangana (546-959 mm), coastal (567-757 mm, except Nellore and Prakasam districts) and Rayalaseema (536-655 mm, except Chittoor and Kadapa districts) receive mostly south west monsoon rainfall. Districts in north interior Karnataka (365-640 mm), Malnad (981-1787 mm) and coastal regions (1877-3846 mm) receive south west monsoon rainfall while districts in south interior Karnataka receive north east monsoon rainfall as well (211-238 mm). In Tamilnadu, 18 districts receive higher rainfall from north east monsoon (311-886 mm) compared to south west monsoon rainfall. Kerala receives rainfall from the both the monsoons (971-2094 due to south west and 323-638 mm due to north east monsoon).

Deficit rainfall due to delayed onset or breaks in south west monsoon is a major limiting factor for crop production in Peninsular India particularly in Andhra Pradesh, Karnataka and Maharashtra (Table 1). The frequency of deficit rainfall i.e. occurrence of drought is once in 2.5 years in Rayalaseema and Telangana; once in three years in entire Tamilnadu; once in 4 years in Vidarbha and north interior Karnataka, and once in 5 years in coastal Andhra Pradesh, south interior Karnataka and Madhya Maharashtra. Recent El Nino years (2009, 2006, 2004 and 2002) demonstrated that the problem of deficit rainfall

Table 1. Actual and normal date of monsoon onset

State	IMD Meteorological Sub-Division	Onset of south west monsoon			
		Normal	Actual during drought years		
			2002	2009	2012
Kerala		1 st June	29 th May	23 rd May	5 th June
Tamilnadu		5 th June	29 th May	24 th May	6 th June
Andhra Pradesh	Rayalaseema	3 rd June	10 th June	7 th June	16 th June
	Coastal	4 th June	10 th June	1 st June	16 th June
	Telangana	7 th June	10 th June	22 nd June	17 th June
Karnataka	Coastal	3 rd June	3 rd June	31 st May	6 th June
	South interior	5 th June	3 rd June	1 st June	13 th June
	North interior	7 th June	10 th June	21 st June	16 th June
Maharashtra	Madhya Maharashtra	7 th June	11 th June	23 rd June	17 th June
	Marathwada	7 th June	11 th June	24 th June	17 th June
	Vidarbha	7 th June	17 th June	24 th June	19 th June

Table 2. Month-wise deficit rainfall

State/ IMD Met.	Drought Year																										
	2002						2009						2012														
	June		Jul		Aug		Sep		June		Jul		Aug		Sep		June										
A	N	D	A	N	D	A	N	D	A	N	D	A	N	D	A	N	D	A	N	D							
Kerala	485	562	-14	318	716	-56	438	385	14	106	279	-62	342	566	-40	960	697	38	274	438	-37	360	302	19	376	578	-35
Coastal Karnataka	762	761	0	460	1075	-57	675	763	-12	212	373	-43	410	715	-43	1652	1074	54	474	771	-39	673	381	77	656	756	-13
North interior Karnataka	115	85	35	76	174	-56	116	99	17	50	164	-70	96	85	13	111	113	-2	139	105	33	263	171	54	49	94	-48
South interior Karnataka	153	168	-9	171	437	-61	179	231	-23	78	182	-57	87	108	-19	332	204	63	181	159	14	284	156	82	62	125	-50
Coastal A.P.	118	85	39	77	205	-62	148	141	5	103	190	-46	45	79	-43	111	143	-23	116	138	-16	168	189	-11	77	93	-17
Telengana	140	111	26	74	227	-67	282	203	39	88	203	-57	46	99	-53	134	217	-38	119	206	-42	202	203	-1	113	119	-5
Rayalaseema	92	59	56	40	91	-56	60	88	-32	82	153	-46	71	57	24	22	82	-74	117	87	34	193	151	28	28	65	-57
Tamilnadu & Pondicherry	45	43	5	132	285	-54	35	79	-56	64	133	-52	40	41	-3	52	65	-21	103	75	37	133	133	0	19	45	-59
Madhya Maharashtra	144	113	27	134	291	-54	246	185	33	108	184	-41	52	99	-48	314	216	46	128	169	-24	189	174	9	59	125	-53
Marathwada	230	122	89	79	223	-65	216	163	33	136	195	-30	36	111	-68	173	171	2	146	178	-18	175	206	-15	51	128	-60
Vidarbha	352	123	186	142	375	-62	366	266	38	179	210	-15	22	109	-79	369	297	24	134	277	-52	136	222	-39	113	143	-21

*A=Actual, N=Normal, D= Deficit (%)

Source : AICRP on Agro-meteorology

is compounded because of mid-season breaks in monsoon during July to September. This implies regular monsoon failures in one part or the other in this region with serious consequences for small and marginal farmers and livelihoods of the rural poor. Breaks in monsoon are responsible for deficit soil moisture conditions during early, mid and late season (Table 2).

Cropping pattern

The major farming situations in Peninsular India are characterized by spatial diversity in soil types i.e. shallow skeletal coarse textured soils to very deep and fine textured soils covering black, red, laterite, mixed red and black soils occurring on varying physiography. Farmers over a period of time developed traditional cropping patterns based on their experiences over generations in tune with the location specific rainfall and soil factors. However, subsistence agriculture gave way to new cropping patterns with the advent of intensive agriculture practices due to improvement in irrigation facilities, breeding of better genotypes of crops (high yielding, short duration and resistant cultivars) and development of better crop production technologies and market-orientation. As a result, increased crop production and productivity is evident from these states in several major crops. However, these developments led to a decline in area under drought tolerant crops. Of special mention is the decline in cultivation area under *kharif* sorghum, castor and minor millets in several traditional districts in this region. Major crops that witnessed growth in area and production are rice, maize, cotton, sugarcane and vegetables. However, drought in this region contributed to dip in production of several crops due to decline in area and crop performance (Table 3).

Table 3. Production ('000 ton) of major rainfed crops in drought year (2002-03) and succeeding normal year (2003-04) in 4 major states in Peninsular India

Crop	Andhra Pradesh		Maharashtra		Karnataka		Tamilnadu	
	2002-03	2003-04	2002-03	2003-04	2002-03	2003-04	2002-03	2003-04
Rice	7327.0	8953.0	1854.0	2835.0	2390.1	2550.3	3577.1	3222.8
Sorghum	607.0	742.0	3882.0	2888.0	1224.9	781.1	210.8	246.0
Pearl millet	-	148.0	1146.0	896.0	120.1	191.5	88.7	172.3
Maize	1486.0	2477.0	744.0	752.0	1343.0	1209.9	191.6	251.0
Chickpea	382.0	457.0	449.0	421.0	251.9	171.1	4.2	4.3
Pigeonpea	150.0	218.0	777.0	695.0	240.7	199.6	24.1	27.5
Groundnut	820.0	986.0	450.0	437.0	539.0	433.5	717.4	918.2
Sesame	18.0	43.0	36.0	38.0	29.3	25.7	28.0	29.0
Soybean	41.8	107.3	1576.0	2219.0	47.8	45.3	-	-
Sunflower	276.0	333.0	143.0	100.0	374.0	364.7	8.9	13.4
Castor	86.0	132.0	7.0	5.0	15.7	15.4	5.6	2.9
Cotton	184.6	321.3	441.3	523.6	56.3	45.0	14.2	20.9

Source : Crop database, CRIDA

2. Contingency crop planning for monsoon aberrations

In-season monitoring of drought through monitoring of rainfall and progress in sowings is crucial for effective management of droughts and minimizing the adverse impacts on crop production. Early season drought due to delay in onset of monsoon is directly responsible for shortfalls in area sown under major crops compared to normal situation. Also, delay in onset often leads to poor inflows into reservoirs, water bodies or poor recharge of groundwater and contributes to delay in sowings.

Contingency crop planning refers to making available a plan for providing alternate crop or cultivar choices in tune with the resource endowments of rainfall and soils in a given location. In rainfed areas, as a general rule, early sowing of crops with the onset of monsoon is the best-bet practice that gives higher realizable yield. Major crops affected due to monsoon delays are those that have a narrow sowing window and therefore cannot be taken up if the delay is beyond this cut-off date for sowing. Crops with wider sowing windows can still be taken up till the cut-off date without major reduction in crop yield and only the change warranted could be the choice of short duration cultivars. Beyond the sowing window, choice of alternate crops or cultivars depends on the farming situation, soil, rainfall and cropping pattern in the location and extent of delay in the onset of monsoon (2, 4, 6 and 8 weeks). Breaks in monsoon cause prolonged dry spells and are responsible for early, mid and terminal droughts. These aberrant situations often lead to poor crop performance and or total crop failure. While early season droughts have to be combated with operations like gap filling and re-sowing, mid and late season droughts have to be managed through crop, soil, nutrient management and moisture conservation measures. Drought also affects livestock/milk productivity due to shortage of fodder. Appropriate location-specific fodder production strategies go a long way in reducing the adverse impact on livestock which is the major source of livelihood in dryland areas.

This book on contingency crop planning draws from the country-wide exercise on preparation of district level contingency plans to meet weather aberrations covering crop, livestock, poultry and fisheries sectors undertaken by the Central Research Institute for Dryland Agriculture (CRIDA) in collaboration with State Agricultural Universities under the aegis of the Indian Council of Agricultural Research (ICAR) and sponsored by the Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India as recommended by the Consultative Committee of the Parliament on Agriculture and allied ministries. This coordinated effort yielded 300 district level plans so far. The complete plans prepared on the basis of a standard template developed by CRIDA are available on the internet as a web download (<http://www.icar.org.in>, <http://www.crida.in>, <http://www.agricoop.nic.in>) for all stakeholders. Aberrant monsoon onset in *kharif* 2012 prompted us to bring out a concise extract of the operational part of these extensive district plans related to the crop sector in drought prone districts in four Peninsular states of Andhra Pradesh, Karnataka, Maharashtra and Taminlnadu. In view of the prevailing cropping patterns under assured rainfall and irrigated situations, the contingency plans for the districts in Kerala are not dealt in this book. Similarly, 4 districts each in Karnataka and Maharashtra and 7 districts in Tamilnadu are not covered.

2.1 ANDHRA PRADESH

In Andhra Pradesh, contingency crop plans for 22 districts have been included. The annual and seasonal rainfall information is furnished for all the districts in the table given below:

District level annual and seasonal rainfall information*

Districts	Agro climatic zone	Mean Annual Rainfall (mm)	Rainy days	South West Monsoon (June-Sep)		North East Monsoon (Oct-Dec)	
				RF (mm)	Rainy days	RF (mm)	Rainy days
Vizianagaram	AP-1	1156	60	719	41	273	11
Srikakulam	AP-1 & AP-9	1157	54	726	37	307	10
Visakhapatnam	AP-1 & AP-9	1111	61	657	39	284	12
West Godavari	AP-2	1102	56	757	40	251	11
East Godavari	AP-2 & AP-9	1121	56	710	38	300	11
Guntur	AP-3	904	48	567	32	248	11
Krishna	AP-3	1020	53	701	38	238	11
Prakasam	AP-3	812	42	394	24	331	14
Chittoor	AP-4	841	45	378	23	351	16
Kadapa	AP-4	719	40	384	23	260	13
Nellore	AP-4	999	45	317	21	584	20
Karimnagar	AP-5	978	51	819	42	99	5
Nizamabad	AP-5	1069	53	929	44	88	5
Adilabad	AP-5 & AP-9	1104	55	959	46	89	5
Medak	AP-6	955	51	790	41	98	5
Warangal	AP-6	991	52	806	41	118	7
Khammam	AP-6 & AP-9	1096	57	867	44	132	7
Mahabubnagar	AP-7	749	45	588	36	101	6
Nalgonda	AP-7	744	42	546	31	139	7
Ranga Reddy	AP-7	835	49	658	38	113	7
Anantapur	AP-8	536	32	310	19	146	8
Kurnool	AP-8	655	39	457	27	123	7

*based on long-term rainfall data

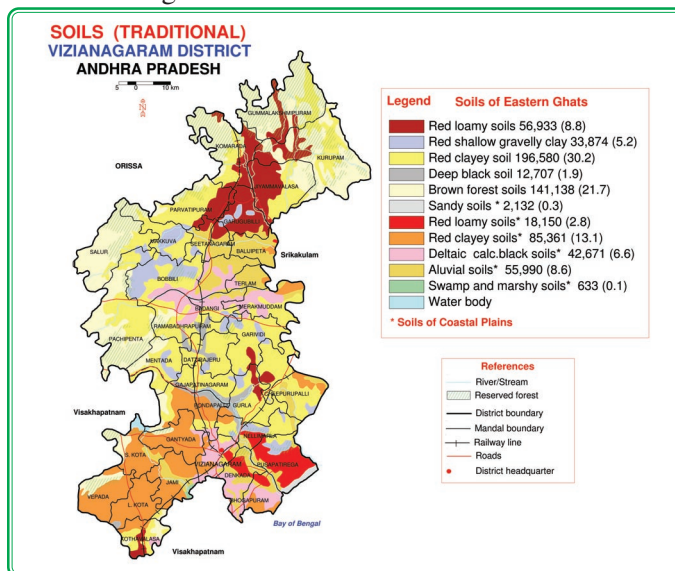
2.1.1. MAJOR CROPS IN COASTAL REGION OF ANDHRA PRADESH

- Coastal region of Andhra Pradesh comprises nine districts (Vizianagaram, Srikakulam, Visakhapatnam, West Godavari, East Godavari, Guntur, Krishna, Prakasam and Nellore). The major crops cultivated during *kharif* season under rainfed conditions are cotton, pigeonpea, groundnut, greengram, maize and blackgram. Mesta and sesame are mostly grown in Vizianagaram and Srikakulam; Rice and finger millet are grown in Vizianagaram and Visakhapatnam and pearl millet in Prakasam.
- Major crops cultivated during *kharif* season under irrigated conditions are: Rice in all districts; Cotton in Krishna and Guntur; Sugarcane in West Godavari, East Godavari and Srikakulam; Maize in Krishna and West Godavari; Sesame in West Godavari and pearl millet in Prakasam, Sunflower and Groundnut in Nellore.
- Major crops cultivated during *rabi* under rainfed conditions are: Blackgram in Krishna, Guntur, Nellore, West Godavari and Vizianagaram; Greengram in Srikakulam, Vizianagaram and Nellore; Tobacco in Prakasam, Guntur and Krishna; Maize in Vizianagaram; Sunflower in Prakasam and Nellore; Chickpea in Nellore; Groundnut and rice in Vizianagaram; Horsegram in Vizianagaram, Srikakulam and Visakhapatnam.
- Major crops cultivated during *rabi* season under irrigated conditions are: Rice in all districts; Maize in Guntur, West Godavari and Krishna; Chickpea in Prakasam; Sugarcane in Visakhapatnam, Krishna and Nellore. Tobacco in West Godavari and Krishna. Groundnut in Srikakulam, Nellore, West Godavari, Prakasam and Visakhapatnam; Sunflower in Prakasam and West Godavari and blackgram in West Godavari.
- Major crops cultivated during summer season under limited irrigation are greengram and blackgram in East Godavari and cotton in Nellore.
- The major vegetables cultivated during *rabi* under irrigated conditions are Chillies in all districts; Gourds in Guntur, East Godavari, Visakhapatnam; Tomato in Prakasam, Visakhapatnam; Bhendi in Guntur, East Godavari, Krishna; Brinjal in Visakhapatnam, East Godavari; Beans in Visakhapatnam.

<i>Kharif</i> rainfed crops	Districts
Cotton	Guntur, Prakasam, Vizianagaram, East Godavari, Krishna
Pigeonpea	Prakasam, Guntur
Groundnut	Vizianagaram, Srikakulam, Visakhapatnam, Krishna
Mesta	Vizianagaram, Srikakulam
Greengram	Krishna, West Godavari
Maize	Vizianagaram, Visakhapatnam
Finger millet	Vizianagaram, Visakhapatnam
Sesame	Vizianagaram, Srikakulam
Pearl millet	Prakasam
Blackgram	West Godavari, Krishna
Rice	Vizianagaram, Visakhapatnam, East Godavari
Minor millets	Visakhapatnam

Vizianagaram District

Vizianagaram district falls under North Coastal agroclimatic zone (AP-1) in Andhra Pradesh. The district receives a mean annual rainfall of 1156 mm of which 719 mm is received during south west monsoon and 273 mm during north east monsoon. The dominant soil types in the district are red sandy loams followed by red sandy clay loams and red loamy sandy soils (see map). The district has an area of 164000 ha under rainfed situation (53% of net sown area). The major crops cultivated in the district are rice, groundnut, mesta, greengram and blackgram.



Normal sowing window for major field crops

Season/ Situation	Rice	Groundnut	Mesta	Greengram	Blackgram
Khharif- Rainfed	1 st week of June to 1 st week of August	1 st week of June to 1 st week of July	1 st week of June to 1 st week of July	--	--
Khharif- Irrigated	1 st week of July to 1 st week of August	--	--	--	--
Rabi- Rainfed	--	--	--	1 st week of November to 2 nd week of December	3 rd week of October to 1 st week of November
Rabi- Irrigated	1 st week of December to 1 st week of January	--	--	--	--

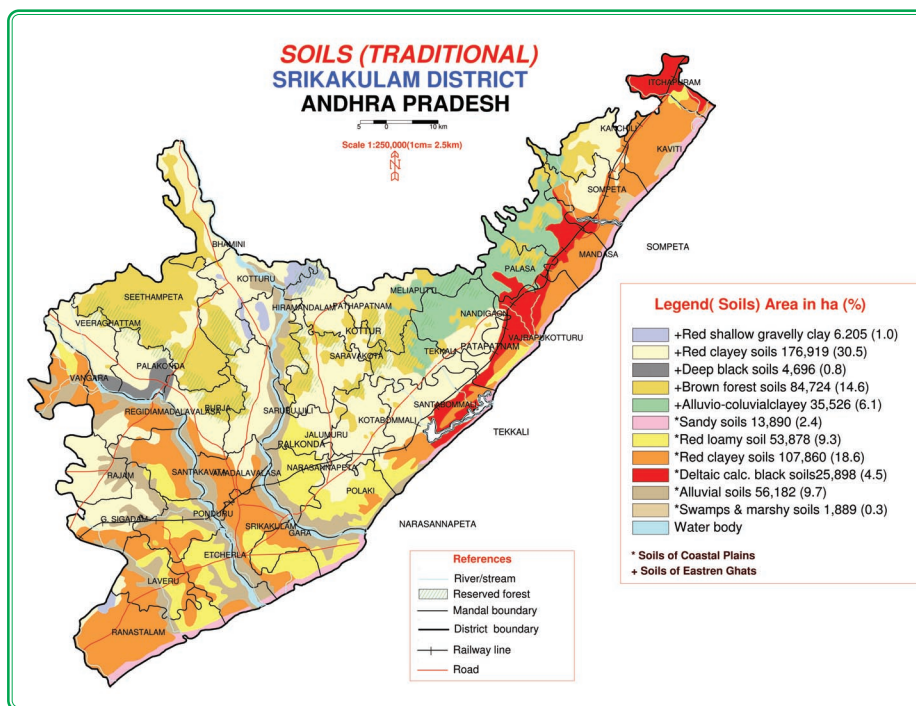
Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops / cropping systems and cultivars			
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)	Delay by 8 weeks (1 st week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Rainfed red sandy loam soils	Groundnut	Groundnut (Kalahasti, TG-26, TAG-24, Greeshma, Rohini)	Groundnut (Vemana, Abhaya, Kalahasti, TG-26, TAG-24)	Groundnut + Pigeonpea (7:1)/ Sesame Groundnut : Abhaya, TG-26, Kadiri-6, Narayani, Tirupati-4 Pigeonpea : LRG-30, 41 Sesame :Gowri, YLM-11,17,66	Greengram / Horsegram Greengram : LGG-407, PDM-54 Horsegram : PHG-9, 62, PZM-1
	Mesta	Mesta (AMV-1, 2, 3, 4)	Mesta + Maize (2:1) / Maize Maize : DHM-107, 109, Aswani, Harsha, Sardha Mesta : AMV-1, 2, 3, 4, 5, Bhimili-1	Maize (DHM-109, 115, PEH-1, GKMH-1701)	Maize (DHM-109, 115, PEH-1, GKMH-1701)
Rainfed sandy clay loam soils	Groundnut	Groundnut (Kadiri-5, 9, Harithandra, ICGV-91114)	Groundnut (Harithandra, Kadiri-9, Abhaya, ICGV-91114)	Groundnut + Pigeonpea(7:1) Groundnut : Greeshma, TAG-24, Kadiri-9 Pigeonpea : Abhaya, MRG-66, WRG-27	Greengram / Horsegram

(1)	(2)	(3)	(4)	(5)	(6)
	Mesta	Mesta	Maize/ Mesta + Maize (2:1)	Maize/ Sesame (YLM-11, 17, 66)	Maize

Srikakulam District

Srikakulam district falls under North Coastal agroclimatic zone (AP-1) and High Altitude and Tribal Area agroclimatic zone (AP-9) in Andhra Pradesh. The district receives a mean annual rainfall of 1157 mm of which 726 mm is received during south west monsoon and 307 mm during north east monsoon. The dominant soil types in the district are red soils (see map). The district has an area of 125000 ha under rainfed situation (39% of net sown area). The major crops cultivated in the district are rice, greengram, groundnut, mesta and sugarcane.



Normal sowing window for major field crops

Season/ Situation	Rice	Greengram	Groundnut	Mesta	Sugarcane
<i>Kharif</i> - Rainfed	--	--	2 nd week of June to 4 th week of July	2 nd week of May to 2 nd week of June	--
<i>Kharif</i> - Irrigated	1 st week of July to 1 st week of August	--	--	--	1 st week of June to 1 st week of July
<i>Rabi</i> - Rainfed	--	1 st week of November to 2 nd week of December	--	--	--
<i>Rabi</i> - Irrigated	4 th week of December to 2 nd week of January	--	4 th week of October to 4 th week of December	--	--

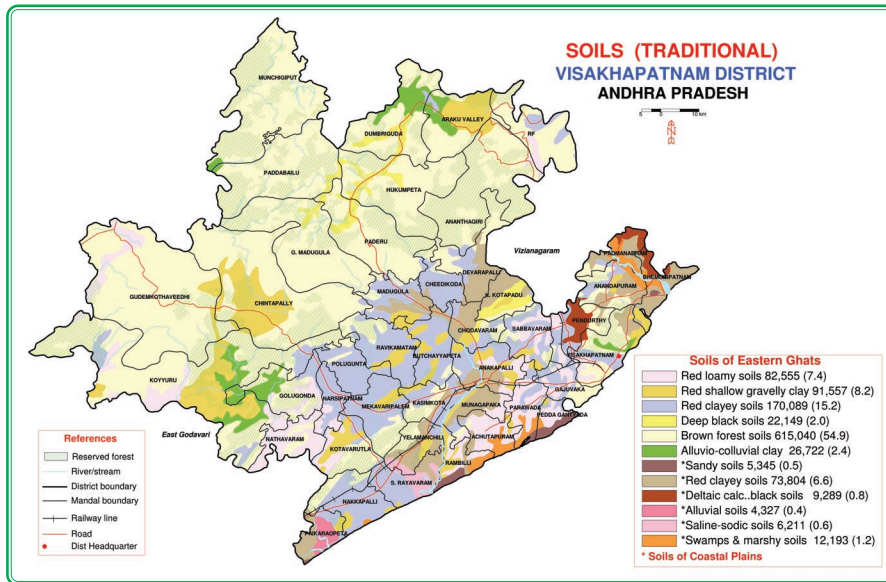
Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops / cropping systems and cultivars			
	Normal onset of monsoon (2 nd week of June)	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)	Delay by 8 weeks (2 nd week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Rainfed red sandy loam soils	Groundnut – Horsegram	Groundnut – Horsegram Groundnut: Vemana, Abhaya, TG-26, Kalahasti Horsegram: PDM-1, PZM-1, PHG-9, 62	Groundnut / Maize/ Finger millet Groundnut: Vemana, Abhaya, TG-26, Kalahasti Maize : DHM-1, 107, 109, 119 Finger millet : Maruthi, Gowthami,	Groundnut / Horsegram Groundnut: Vemana, Abhaya, TG-26, Kalahasti Horsegram : PHG-9, 62, PZM-1	Greengram / Horsegram Greengram : LGG-460, TM-96-2 Horsegram : PHG- 9, 62, PZM-1

(1)	(2)	(3)	(4)	(5)	(6)
Rainfed red clay Loam soils			Suraj, VR-847, Champavathi		
	Mesta - Horsegram	Mesta - Horsegram Mesta : AMV-3, 5, Bhimili-1	Maize + Pigeonpea (2:1) Pigeonpea : LRG-41, Asha, Maruthi	Finger millet (VR-847)	Greengram / Horsegram
	Groundnut – Horsegram	Groundnut – Horsegram	Groundnut / Finger millet	Groundnut / Finger millet	Greengram / Cowpea Cowpea: Russian Giant, EC-24126, C-152
	Mesta - Horsegram	Mesta – Horsegram	Maize + Pigeonpea (2:1)	Cowpea / Greengram / Horsegram Cowpea : Russian Giant, EC-24126, C-152	Greengram / Horsegram

Visakhapatnam District

Visakhapatnam district falls under North Coastal agroclimatic zone (AP-1) and High Altitude and Tribal Area agroclimatic zone (AP-9) in Andhra Pradesh. The district receives a mean annual rainfall of 1111 mm of which 657 mm is received during south west monsoon and 284 mm during north east monsoon. The dominant soil types in the district are red clay loams followed by red sandy loams and clay loams (see map). The district has an area of 203000 ha under rainfed situation (67% of net sown area). The major crops cultivated in the district are rice, sugarcane, finger millet and groundnut.



Normal sowing window for major field crops

Season/ Situation	Rice	Sugarcane	Finger millet	Groundnut
<i>Kharif</i> - Rainfed	3 rd week of June to 3 rd week of July	--	3 rd week of July to 1 st week of August	1 st week of June to 1 st week of July
<i>Kharif</i> - Irrigated	1 st week of July to 1 st week of August	--	--	--
<i>Rabi</i> - Irrigated	1 st week of December to 1 st week of January	3 rd week of December to 3 rd week of January (early varieties), 1 st week of February to 3 rd week of March (mid late varieties)	--	1 st week of November to 3 rd week of December

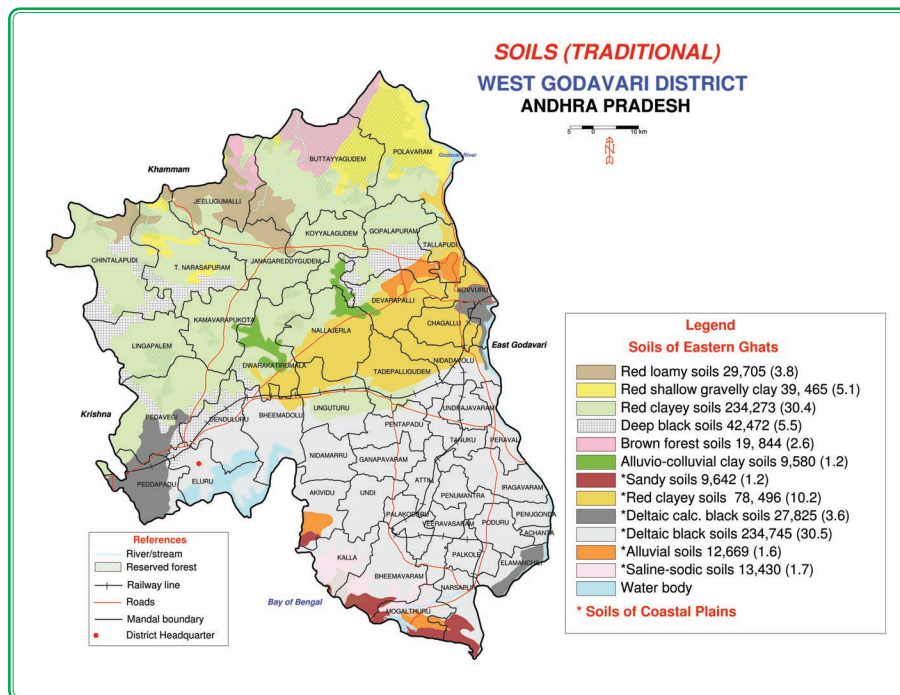
Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops / cropping systems and cultivars			
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)	Delay by 8 weeks (1 st week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Rainfed light soils	Finger millet / Finger millet + Pigeonpea	Finger millet / Finger millet + Pigeonpea Finger millet : Maruthi, Gowthami, Suraj, Champavathi Pigeonpea : LRG-30, 38, 41	Finger millet / Finger millet + Pigeonpea Finger millet : Maruthi, Gowthami, Suraj, Champavathi, VR-847 Pigeonpea : LRG-30, Abhaya, Maruthi, Lakshmi	Finger millet / Finger millet + Pigeonpea Finger millet : VR-847 Pigeonpea : LRG-30, Abhaya, Maruthi, Lakshmi	Finger millet / Finger millet + Pigeonpea Finger millet : VR-847 Pigeonpea : LRG-30, Abhaya, Maruthi, Lakshmi
	Groundnut	Groundnut (DRG-17, ICGV-91114, Vemana, Abhaya, GG-16, Mallika, Kadiri-9)	Groundnut (ICGS-11, TG-26, Vemana)	Cowpea (Russian Giant, UPC-5286, EC- 24216, C-152)	Cowpea (Russian Giant, UPC-5286, EC- 24216, C-152)
Rainfed medium soils	Finger millet / Pigeonpea / Finger millet + Pigeonpea	Finger millet / Pigeonpea / Finger millet + Pigeonpea	Finger millet / Pigeonpea / Finger millet + Pigeonpea	Finger millet + Pigeonpea	Maize + Pigeonpea / Pigeonpea Maize : DHM-109,115, Prakash, KH-5991, PEH-1
	Groundnut / Maize	Groundnut / Maize Groundnut :	Groundnut / Maize Groundnut :	Cowpea / Rainfed rice Cowpea :	Cowpea / Finger millet / Blackgram

(1)	(2)	(3)	(4)	(5)	(6)
		Vemana, Abhaya, Kalahasti, TG-26, TAG-24 Maize : DHM- 11, 107, 117, KSH-510	Kadiri-4, 5, 6, Narayani, Tirupati-4 Maize : DHM-109, 115, Prakash, KH-5991, PEH-1	Russian Giant, UPC-5286, EC-24216, C-152 Rainfed rice : Pushkala, MTU - 9993, Srisatya, Maruteru sannalu, Rajendra, Madhu	Cowpea : Russian Giant, UPC-5286, EC-24216, C-152 Finger millet : Maruthi, Suraj, Bharati, Champavathi: Blackgram : LBG-20, 623
	Groundnut + Pigeonpea	Groundnut + Pigeonpea	Groundnut + Pigeonpea	Maize (DHM-109, 115, Prakash, KH-5991, PEH-1)	Maize / Pigeonpea

West Godavari District

West Godavari district falls under Godavari agroclimatic zone (AP-2) in Andhra Pradesh. The district receives a mean annual rainfall of 1102 mm of which 757 mm is received during south west monsoon and 251 mm during north east monsoon. The dominant soil types in the district are red sandy soils (see map). The district has an area of 67000 ha under rainfed situation (15% of net sown area). The major crops cultivated in the district are rice, maize, blackgram and greengram.



Normal sowing window for major field crops

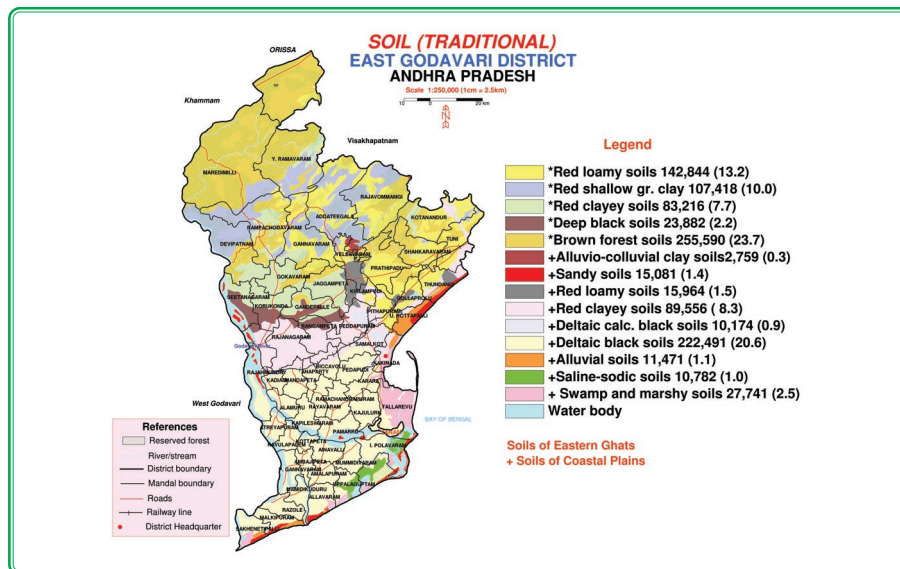
Season/ Situation	Rice	Maize	Blackgram	Greengram
Khariif- Rainfed	--	--	1 st week of June to 3 rd week of July	1 st week of June to 3 rd week of July
Khariif- Irrigated	1 st week of June to 3 rd week of July	1 st week of June to 3 rd week of July	--	--
Rabi- Rainfed	--	--	3 rd week of October to 1 st week of November	--
Rabi- Irrigated	3 rd week of December to 1 st week of January	3 rd week of November to 1 st week of December	3 rd week of November to 1 st week of December	--

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops / cropping systems and cultivars			
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)	Delay by 8 weeks (1 st week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Rainfed red sandy soils	Blackgram / Greengram / Pigeonpea	Blackgram / Greengram / Pigeonpea Blackgram : LBG-20, 623, 752, PU-31 Greengram : LGG- 407, 460, MGG-347 Pigeonpea : LRG-41, Lakshmi, Abhaya	Blackgram / Greengram / Pigeonpea Blackgram : LBG-20, 623 Greengram : PDM-54, LGG-407 Pigeonpea : LRG-41, Lakshmi, Abhaya	Blackgram/ Greengram/ Pigeonpea Blackgram : LBG-20, 623 Greengram : PDM-54, LGG-407 Pigeonpea : Durga, PRG-100	Blackgram / Greengram / Pigeonpea Blackgram : LBG-20, 623 Greengram : PDM-54, LGG-407 Pigeonpea : Durga, PRG-100

East Godavari District

East Godavari district falls under Godavari agroclimatic zone (AP-2) and High Altitude and Tribal Area agroclimatic zone (AP-9) in Andhra Pradesh. The district receives a mean annual rainfall of 1121 mm of which 710 mm is received during south west monsoon and 300 mm during north east monsoon. The dominant soil types in the district are sandy clay loam followed by clay loams and red sandy loams (see map). The district has an area of 140000 ha under rainfed situation (34% of net sown area). The major crops cultivated in the district are rice, greengram, blackgram, sugarcane and cotton.



Normal sowing window for major field crops

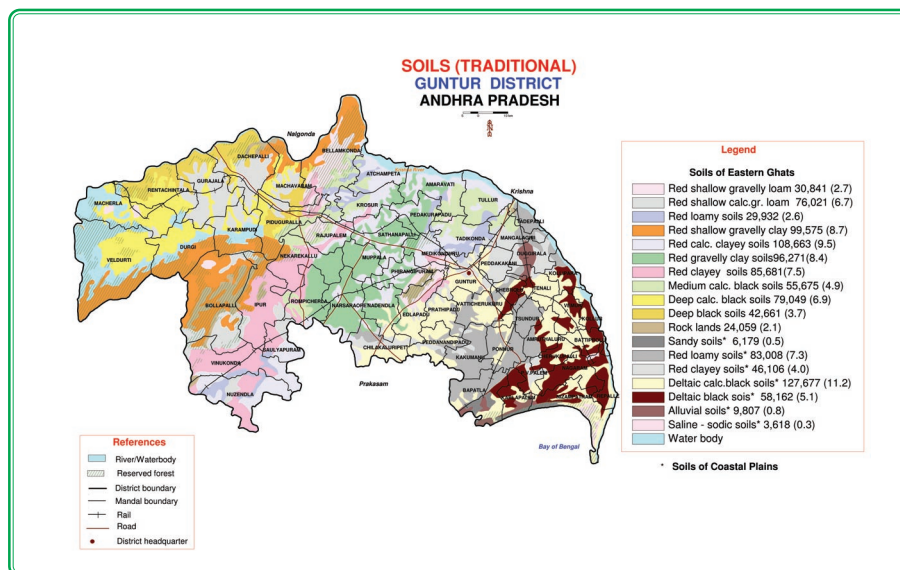
Season/ Situation	Rice	Greengram	Blackgram	Sugarcane	Cotton
<i>Kharif</i> - Rainfed	1 st week of June to 1 st week of July	--	--	--	1 st week of July to 3 rd week of July
<i>Kharif</i> - Irrigated	1 st week of July to 4 th week of July	--	--	1 st week of June to 1 st week of July	--
<i>Rabi</i> - Irrigated	3 rd week of December to 1 st week of January	--	--	--	--
Summer	--	4 th week of March to 1 st week of April	2 nd week of March to 3 rd week of March	--	--

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops / cropping systems and cultivars			
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)	Delay by 8 weeks (1 st week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Rainfed - Upland	Rice / Cotton	Rice / Cotton Rice : MTU-9993, Maruteru sannalu, Varalu, Rajendra Cotton : LK-861, LRA-5166, NHH-44, LAHH-4	Rice / Cotton Rice : MTU-9993, Maruteru sannalu, Varalu, Rajendra Cotton : LK - 861, LRA - 5166, NHH-44, LAHH-4	Rice / Cotton Rice : MTU-9993, Maruteru sannalu, Varalu, Rajendra Cotton : LRA - 5166, NA - 1325, L - 604, NHH-44, H-8	Pigeonpea / Pigeonpea + Blackgram / Greengram Pigeonpea : LRG-38, Abhaya, LRG-41 Blackgram : LBG -20, 623 Greengram : LGG-450, 460, PDM-54
Rainfed - Agency area	Rice	Rice	Rice	Rice	Pigeonpea / Pigeonpea + Blackgram / Greengram

Guntur District

Guntur district falls under Krishna agroclimatic zone (AP-3) in Andhra Pradesh. The district receives a mean annual rainfall of 904 mm of which 567 mm is received during south west monsoon and 248 mm during north east monsoon. The dominant soil types in the district are rainfed black and red soils (see map). The district has an area of 223000 ha under rainfed situation (37% of net sown area). The major crops cultivated in the district are rice, cotton, maize, pigeonpea and blackgram.



Normal sowing window for major field crops

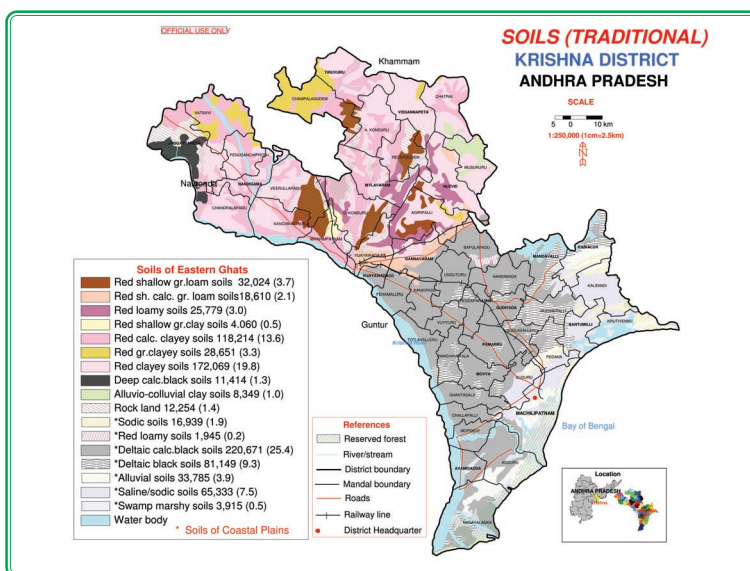
Season/ Situation	Rice	Cotton	Maize	Pigeonpea	Blackgram
<i>Kharif</i> - Rainfed	--	1 st week of July to 3 rd week of July	--	1 st week of July to 3 rd week of July	--
<i>Kharif</i> - Irrigated	1 st week of June to 3 rd week of July	1 st week of July to 3 rd week of July	--	--	--
<i>Rabi</i> - Rainfed	--	--	--	--	3 rd week of October to 1 st week of November
<i>Rabi</i> - Irrigated	3 rd week of December to 1 st week of January	--	3 rd week of November to 1 st week of December	--	--

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops / cropping systems and cultivars			
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)	Delay by 8 weeks (1 st week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Black soils (Medium deep) - Rainfed	Cotton	Cotton (L-604, Lam Hybrid-1,7, NDLHH-240)	Cotton (Lam Hybrid-1, 7, NDLHH-240)	Cotton (Lam Hybrid-1, 7, NDLHH-240)	Cotton (Short duration varieties / Hybrids)
Red soils (Medium deep) - Rainfed	Cotton	Cotton	Cotton	Cotton	Cotton
	Pigeonpea	Pigeonpea (LRG-38, 41, Lakshmi)	Pigeonpea (LRG-38, 41, Lakshmi, Abhaya)	Pigeonpea (PRG-100, Durga)	Pigeonpea (PRG-100, Durga)
	Pigeonpea + Greengram / Blackgram/ Pearl millet (1:5/1:2)	Pigeonpea + Greengram/ Blackgram Pearl millet (1:5/1:2) Greengram: LGG-407, 460, MGG-347 Blackgram: LBG-20, 623, 752, PU-31 Pearl millet: ICTP-8203, ICMV-221, HHB-67, RHB-121	Pigeonpea + Greengram / Blackgram/ Pearl millet (1:5/1:2) Greengram: LGG-407, 460, MGG-347 Blackgram : LBG-20, 623, 752, PU-31 Pearl millet : ICTP-8203, ICMV-221, HHB-67, RHB-121	Pigeonpea + Greengram / Blackgram/ Pearl millet (1:5/1:2) Greengram: PDM-54, LGG-407 Blackgram : LBG-20, 623 Pearl millet: ICTP-8203, ICMV-221, HHB-67, RHB-121	Pigeonpea + Greengram / Blackgram/ Pearl millet (1:5/1:2) Greengram: PDM-54, LGG-407 Blackgram : LBG-20, 623 Pearl millet : ICTP-8203, ICMV-221, HHB-67, RHB-121

Krishna District

Krishna district falls under Krishna agroclimatic zone (AP-3) in Andhra Pradesh. The district receives a mean annual rainfall of 1020 mm of which 701 mm is received during south west monsoon and 238 mm during north east monsoon. The dominant soil types in the district are rainfed black and red soils (see map). The district has an area of 155000 ha under rainfed situation (33% of net sown area). The major crops cultivated in the district are rice, blackgram, greengram, cotton, maize and groundnut.



Normal sowing window for major field crops

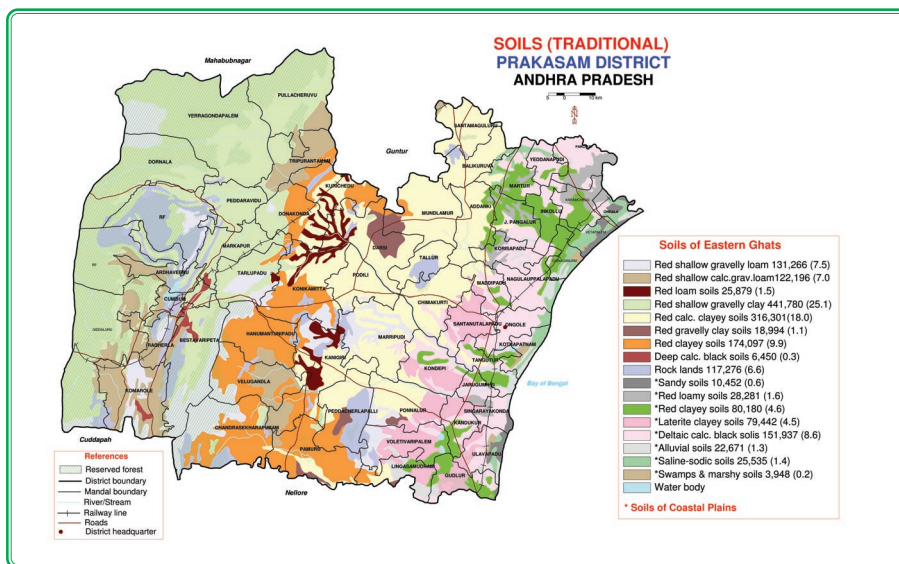
Season/Situation	Rice	Blackgram/Greengram	Cotton	Maize	Groundnut
Khharif-Rainfed	--	2 nd week of June to 3 rd week of July	2 nd week of June to 3 rd week of July	--	1 st week of June to 4 th week of July
Khharif-Irrigated	2 nd week of June to 3 rd week of July	--	3 rd week of June to 3 rd week of July	1 st week of July to 3 rd week of July	--
Rabi-Rainfed	--	1 st week of September to 1 st week of October	--	--	3 rd week of October to 1 st week of November
Rabi-Irrigated	3 rd week of December to 1 st week of January	--	--	3 rd week of November to 1 st week of December	3 rd week of November to 1 st week of December

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops / cropping systems and cultivars			
	Normal onset of monsoon (2 nd week of June)	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)	Delay by 8 weeks (2 nd week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Rainfed black soils	Greengram	Greengram (LGG- 407, 460, MGG-347)	Pigeonpea (LRG-41, LRG-38, Lakshmi, Abhaya)	Pigeonpea (PRG-100, Durga)	Pigeonpea (PRG-100, Durga)
	Cotton	Cotton (NHH-44, LAHH-4)	Cotton (NHH-44, LAHH-4)	Cotton (LRA-5166, NA-1325, L-8, 604)	Cotton
	Groundnut	Groundnut (Narayani, K-6, Greeshma)	Groundnut (Narayani, K-6, Greeshma)	Groundnut (Narayani, K-6, Greeshma, Abhaya)	-
	Pigeonpea	Pigeonpea (LRG-38, 41, ICPL-85063)	Pigeonpea	Pigeonpea	Pigeonpea
Rainfed red soils	Greengram / Blackgram – Pigeonpea(7:1)	Greengram / Blackgram – Pigeonpea (7:1) Blackgram : LBG-20, 623, 752, PU-31	Greengram / Blackgram – Pigeonpea(7:1) Blackgram : LBG-20, 623, 752, PU-31	-	-
	Cotton	Cotton (LK-861, LRA-5166, LPS-141, LAHH-5)	Cotton (LRA-5166, NA-1325, LAHH-5, NHH-44)	Cotton (LRA-5166, NA-1325, LAHH-5, NHH-44)	Cotton (LRA-5166, NA-1325, L-604, LAHH-5, NHH-44)
	Groundnut/ Pigeonpea	Groundnut/ Pigeonpea	Groundnut/ Pigeonpea	Groundnut/ Pigeonpea	Groundnut/ Pigeonpea

Prakasam District

Prakasam district falls under Krishna agroclimatic zone (AP-3) in Andhra Pradesh. The district receives a mean annual rainfall of 812 mm of which 394 mm is received during south west monsoon and 331 mm during north east monsoon. The dominant soil types in the district are rainfed black and red soils (see map). The district has an area of 375000 ha under rainfed situation (68% of net sown area). The major crops cultivated in the district are rice, pigeonpea, cotton, chickpea and sunflower.



Normal sowing window for major field crops

Season/ Situation	Rice	Pigeonpea	Cotton	Chickpea	Sunflower
<i>Kharif</i> - Rainfed	--	4 th week of June to 2 nd week of August	4 th week of June to 2 nd week of August	--	4 th week of June to 2 nd week of August
<i>Kharif</i> - Irrigated	2 nd week of August to 3 rd week of September	--	--	--	--
<i>Rabi</i> - Rainfed	--	--	--	--	3 rd week of October to 1 st week of November
<i>Rabi</i> - Irrigated	1 st week of October to 1 st week of December	--	--	1 st week of October to 1 st week of November	--

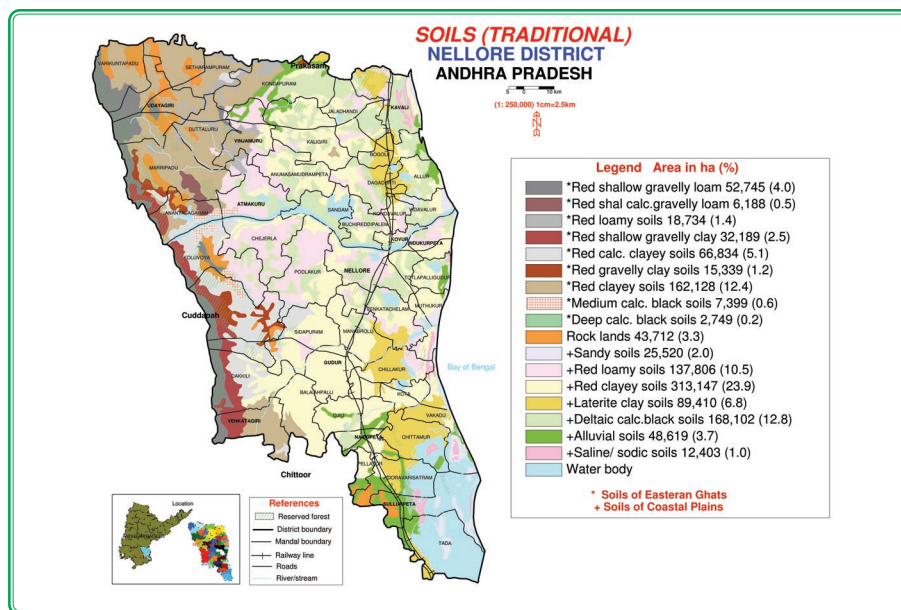
Contingency crop plan

Farming situation	Normal crop/cropping system	Suggested contingency crops / cropping systems and cultivars			
	Normal onset of monsoon (2 nd week of June)	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)	Delay by 8 weeks (2 nd week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Rainfed red soils	Pigeonpea	Pigeonpea (LRG- 30, 41, Maruthi, Lakshmi, Abhaya)	Pigeonpea (LRG- 30, 38, 41, Maruthi, Lakshmi, Abhaya)	Pigeonpea (PRG-100, Durga)	Pigeonpea (PRG-100, Durga)
	Pigeonpea + Castor (1:2)	Pigeonpea + Castor (1:2) Castor: Kranti, Jyothi, GCH-6	Pigeonpea + Castor (1:2) Castor: Kranti, Jyothi, GCH-6	Pigeonpea + Castor (1:2) Castor: Kranti, Jyothi, GCH-6	Pigeonpea + Castor (1:2) Castor: Kranti, Jyothi, Haritha, Jyothi
	Castor/ Castor + Pearl millet(1:2)	Castor/ Castor + Pearl millet(1:2) Pearlmillet: ICTP-8203, ICMV-221, HHB-67, RHB-121	Castor/ Castor + Pearl millet(1:2) Pearlmillet: ICTP-8203, ICMV-221, HHB-67, RHB-121	Castor/ Castor + Pearl millet(1:2) Pearlmillet: ICTP-8203, ICMV-221, HHB-67, RHB-121	Castor/ Castor + Pearl millet(1:2)
	Fallow-Tobacco (FCV) (Rabi) /Fallow-Chickpea(Rabi)	Fallow-Tobacco (FCV) (Rabi) /Fallow-Chickpea(Rabi) Chickpea : Kranti, Swetha, ICCV-10,JG-11, LBG-7, Pulezi-95311	Fallow-Tobacco (FCV) (Rabi) /Fallow-Chickpea(Rabi) Chickpea : Kranti, Swetha, ICCV-10, JG-11	Fallow-Tobacco (FCV) (Rabi) /Fallow-Chickpea(Rabi) Chickpea : Kranti, Swetha, ICCV-10, JG-11	Fallow-Tobacco (FCV) (Rabi) / Fallow-Sunflower Sunflower : DRSF-108, KBSH-44, GK-2002, DRSH-1

(1)	(2)	(3)	(4)	(5)	(6)
Rainfed black soils	Cotton	Cotton (Lam Hybrid-1, 7, NDLHH-240)	Cotton (Lam Hybrid-1, 7, NDLHH-240)	Cotton (Lam Hybrid-1, 7, NDLHH-240)	Cotton
	Fallow-Tobacco (FCV) (Rabi)	Fallow-Tobacco (FCV) (Rabi)	Fallow-Tobacco (FCV) (Rabi)	Fallow-Chickpea/ Fallow - Sunflower (Rabi) Sunflower: Morden, KBSH-1	Fallow-Chickpea / Fallow - Sunflower (Rabi) Sunflower: Morden, KBSH-1

Nellore District

Nellore district falls under Southern agroclimatic zone (AP-4) in Andhra Pradesh. The district receives a mean annual rainfall of 999 mm of which 317 mm is received during south west monsoon and 584 mm during north east monsoon. The dominant soil types in the district are rainfed red and black soils (see map). The district has an area of 93000 ha under rainfed situation (28% of net sown area). The major crops cultivated in the district are rice, blackgram, sunflower, sugarcane and groundnut.



Normal sowing window for major field crops

Season/ Situation	Rice	Blackgram	Sunflower	Sugarcane	Groundnut
<i>Kharif</i> - Irrigated	1 st week of May to 4 th week of August	--	3 rd week of May to 4 th week of August	--	1 st week of May to 2 nd week of August
<i>Rabi</i> - Rainfed	--	3 rd week of October to 1 st week of November	3 rd week of October to 1 st week of November	--	--
<i>Rabi</i> - Irrigated	4 th week of December to 2 nd week of January	--	--	1 st week of December to 1 st week of February	--

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops / cropping systems and cultivars			
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)	Delay by 8 weeks (1 st week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Rainfed black soils	Blackgram	Blackgram (LBG-752, PU-31, PBG-107)	Blackgram (LBG - 20, 623, 645)	Chickpea (Kranti, Swetha, ICCV-10, JG-11, LBG-7, Pulezi-95311)	Chickpea (Kranti,Swetha, ICCV-10, JG-11, LBG-7, Pulezi-95311)
Rainfed red soils	Groundnut	Groundnut (Kalahasti, Vemana, TG-26, TAG-24, Greeshma, Rohini)	Groundnut Vemana, (Narayani, K-6, Abhaya, Kalahasti, TG-26, TAG-24)	Groundnut (Greeshma, Abhaya)	-
	Sunflower	Sunflower (KBSH-1, 44, NDSH-1, BSH-1)	Sunflower (KBSH-1, 44, NDSH-1, BSH-1)	Sunflower (Morden, DRSF-108, KBSH-1, 44 DRSH-1)	Sunflower (Morden, DRSF-108, KBSH-1, 44)

2.1.2. MAJOR CROPS IN TELANGANA REGION OF ANDHRA PRADESH

Telangana region comprises nine districts (Karimnagar, Nizamabad, Adilabad, Medak, Warangal, Khammam, Mahabubnagar, Nalgonda, and Ranga Reddy). The major crops cultivated during *kharif* season under rainfed conditions are cotton, maize, pigeonpea and sorghum. Castor in Mahabubnagar and Nalgonda; Soybean in Adilabad and Nizamabad; Greengram in Medak, Warangal and Nizamabad; Groundnut in Mahabubnagar, Nalgonda and Warangal. Blackgram is grown in Medak and Nizamabad and rice in Warangal and Nizamabad.

Major crops cultivated during *kharif* season under irrigated conditions are:

- Rice in Nalgonda, Nizamabad, Karimnagar, Warangal, Mahabubnagar, Medak, Khammam, Adilabad and Ranga Reddy
- Maize in Karimnagar, Khammam, Nizamabad and Warangal
- Cotton in Warangal, Karimnagar, Khammam
- Sugarcane in Warangal and Nizamabad
- Sunflower in Warangal

Major crops cultivated during *rabi* under rainfed conditions are:

- Sorghum in Adilabad, Medak, Mahabubnagar, Warangal and Ranga Reddy
- Chickpea in Medak, Adilabad, Nizamabad, Ranga Reddy and Warangal
- Sunflower in Nizamabad
- Maize and greengram in Khammam
- Pearl millet and rice in Warangal
- Safflower in Medak
- Horsegram in Nalgonda and Mahabubnagar
- Cowpea in Karimnagar, Khammam, Warangal, Nalgonda and Adilabad

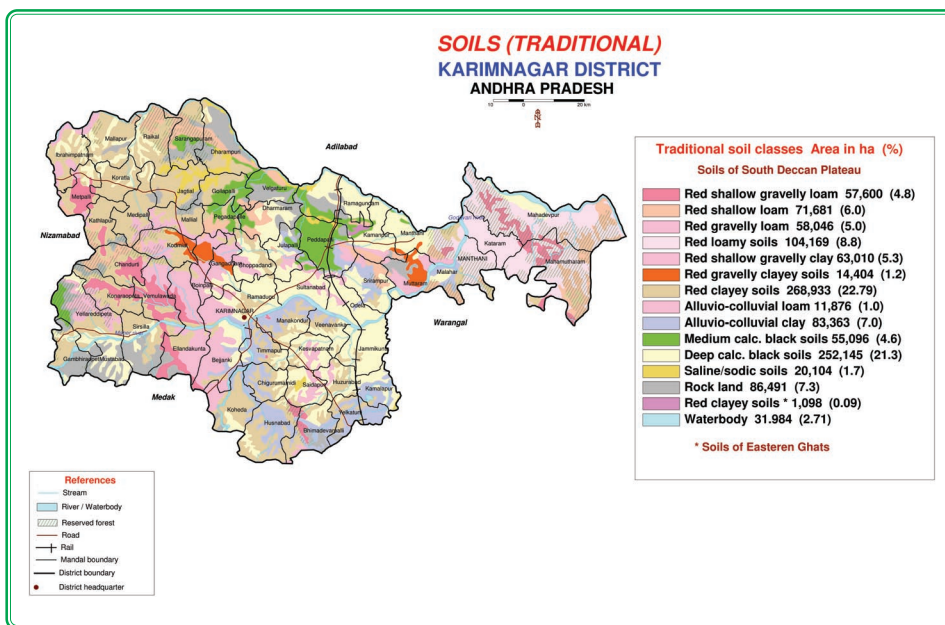
Major crops cultivated during *rabi* season under irrigated conditions are rice and maize in majority of the districts. Groundnut in Mahabubnagar, Warangal, Nalgonda and Medak and Sunflower in Medak.

- The major vegetables cultivated during *rabi* under irrigated conditions are Chillies in Khammam, Warangal, Mahabubnagar, Medak, Karimnagar and Adilabad; Tomatoes in Adilabad, Ranga Reddy, Mahabubnagar, Nizamabad and Khammam; Bhendi, Coriander and Brinjal in Adilabad and Potato in Nalgonda.

Kharif rainfed crops	Districts
Cotton	Adilabad, Nalgonda, Khammam, Warangal, Karimnagar, Mahabubnagar, Medak, Ranga Reddy, Nizamabad
Maize	Mahabubnagar, Medak, Warangal, Ranga Reddy, Khammam
Pigeonpea	Mahabubnagar, Adilabad, Nalgonda, Ranga Reddy, Medak, Warangal, Khammam, Karimnagar, Nizamabad
Castor	Mahabubnagar, Nalgonda
Soybean	Adilabad, Nizamabad
Sorghum	Mahabubnagar, Medak, Ranga Reddy, Warangal
Greengram	Medak, Warangal, Khammam, Karimnagar, Nizamabad
Groundnut	Mahabubnagar, Nalgonda, Warangal
Blackgram	Medak

Karimnagar District

Karimnagar district falls under Northern Telangana agroclimatic zone (AP-5) in Andhra Pradesh. The district receives a mean annual rainfall of 978 mm of which 819 mm is received during south west monsoon and 99 mm during north east monsoon. The dominant soil types in the district are red and black soils (see map). The district has an area of 113000 ha under rainfed situation (25% of net sown area). The major crops cultivated in the district are rice, maize, cotton, pigeonpea and greengram.



Normal sowing window for major field crops

Season/ Situation	Rice	Maize	Cotton	Pigeonpea	Greengram
<i>Kharif</i> - Rainfed	--	--	2 nd week of June to 1 st week of July	3 rd week of June to 2 nd week of August	1 st week of June to 4 th week of June
<i>Kharif</i> - Irrigated	4 th week of June to 4 th week of July (Nursery)	2 nd week of June to 2 nd week of July	2 nd week of June to 1 st week of July	--	--
<i>Rabi</i> - Rainfed	--	--	--	--	--
<i>Rabi</i> - Irrigated	3 rd week of November to 4 th week of November	2 nd week of October to 1 st week of December	--	--	--

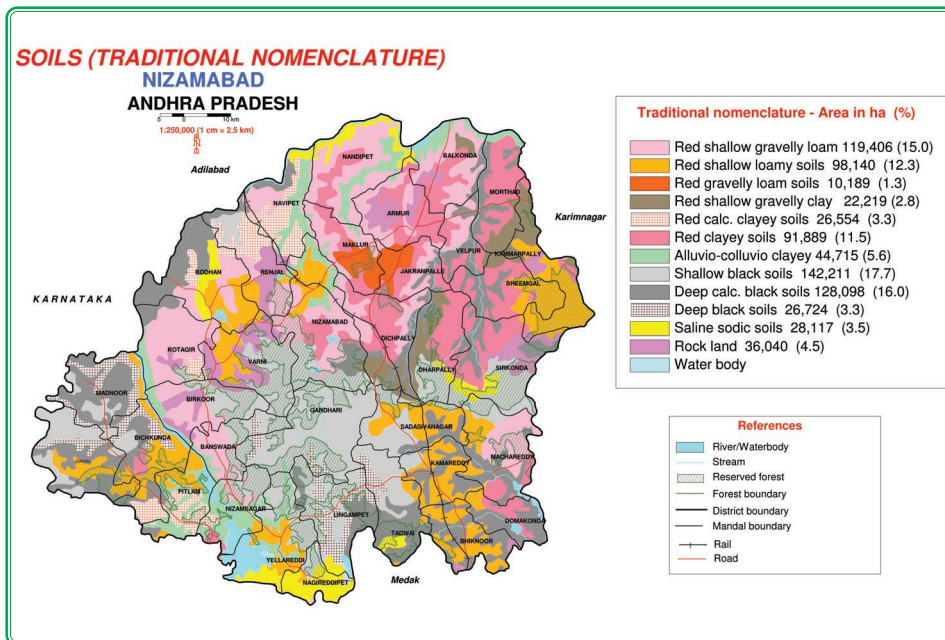
Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops / cropping systems and cultivars			
	Normal onset of monsoon (2 nd week of June)	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)	Delay by 8 weeks (2 nd week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Red soils	Cotton	Cotton (NHH-44, NDLHH-240, Orugallu)	Cotton (NHH-44, NDLHH-240, Orugallu)	Pigeonpea (Maruthi, PRG-100, 158)	Pigeonpea (Maruthi, PRG-100, 158)
	Maize-Maize / Greengram	Maize-Maize / Greengram Maize : DHM-103, BIO-9681, GKMH-2492 Greengram : LGG-407, 460, WGG-37	Maize-Maize / Greengram Maize : DHM-111, 117, KH-510 Greengram : LGG-407, 460, WGG-37	Pigeonpea	Pigeonpea / Sunflower Sunflower: Morden, DRSF-108, NDSH-1, KBSH-44

(1)	(2)	(3)	(4)	(5)	(6)
	Pigeonpea	Pigeonpea (Maruthi, PRG-158)	Pigeonpea (Maruthi, PRG-158)	Pigeonpea	Sunflower + Pigeonpea / Greengram Greengram: LGG-410, PDM-54
	Greengram - Maize	Greengram - Maize	Greengram - Maize	Sunflower (Morden, DRSF-108, NDSH-1, KBSH-44)	Sunflower + Groundnut / Greengram / Maize
	Pigeonpea + Greengram	Pigeonpea + Greengram	Pigeonpea + Greengram	Pigeonpea	Pigeonpea
Black soils	Cotton	Cotton	Cotton	Pigeonpea / Sunflower	Pigeonpea / Sunflower
	Greengram - Maize	Greengram - Maize Greengram : LGG-407, 460, MGG-347, PDM-54, WGG-37 Maize : DHM-103, 117	Greengram - Maize Greengram : LGG-407, 460, MGG-347, PDM-54, WGG-37 Maize : DHM-103, 117	Sunflower / Pigeonpea	Sunflower / Pigeonpea
	Pigeonpea	Pigeonpea (LRG-41, MRG-66)	Maize (DHM-109, 115, KH-5991, GKMH-1701, PEH-1, 2)	Pigeonpea	Pigeonpea / Sunflower/ Sesamum Sesamum: Chandana, Swetha Til, Rajeshwari

Nizamabad District

Nizamabad district falls under Northern Telangana agroclimatic zone (AP-5) in Andhra Pradesh. The district receives a mean annual rainfall of 1069 mm of which 929 mm is received during south west monsoon and 88 mm during north east monsoon. The dominant soil types in the district are rainfed black soils and red sandy loams (see map). The district has an area of 81000 ha under rainfed situation (32% of net sown area). The major crops cultivated in the district are cotton, rice, pigeonpea, greengram and maize.



Normal sowing window for major field crops

Season/ Situation	Cotton	Rice	Pigeonpea	Greengram	Maize
Kharif- Rainfed	2 nd week of June to 1 st week of July	--	3 rd week of June to 4 th week of July	3 rd week of June to 1 st week of July	--
Kharif- Irrigated	--	4 th week of May to 3 rd week of July	--	--	2 nd week of June to 4 th week of July
Rabi- Irrigated	--	1 st week of October to 2 nd week of November	--	--	2 nd week of October to 1 st week of December

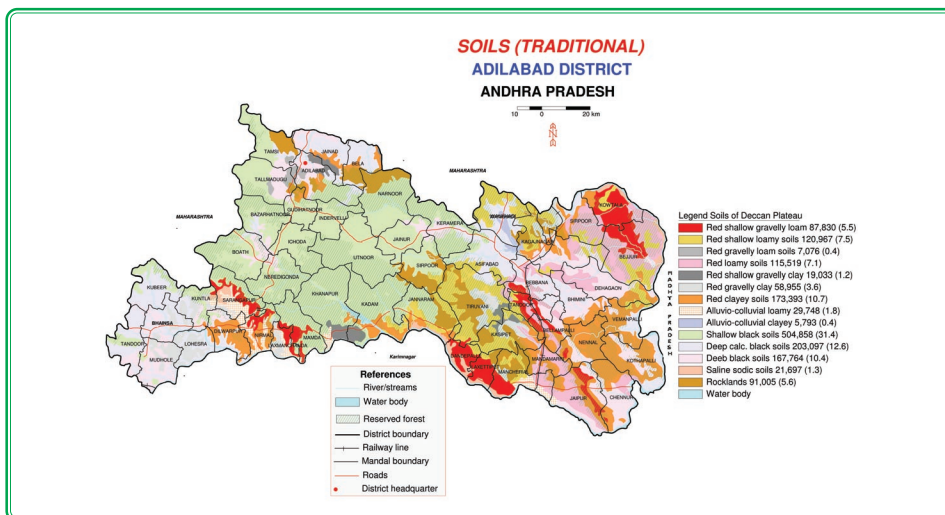
Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops / cropping systems and cultivars			
	Normal onset of monsoon (2 nd week of June)	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)	Delay by 8 weeks (2 nd week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Rainfed black Soils	Cotton	Cotton (NHH-44, LAHH-5)	Pigeonpea (PRG-100, 158 LRG-30, 38,41)	Pigeonpea (PRG-100, 158 LRG-30, 38,41)	Sunflower/ Castor/ Horsegram Sunflower: Morden, BSH-1, 44 Castor : GCH-6 Horsegram: VZM-1, VHG-9, 62
	Pigeonpea	Pigeonpea (LRG-41, WRG-53, MRG-1004)	Pigeonpea	Pigeonpea	Sunflower
	Greengram	Greengram (LGG-407, 460, WGG-3, MGG-347)	Greengram (LGG-407, 460, WGG-37)	Pigeonpea	Sunflower
	Pigeonpea + Maize (1:2)	Pigeonpea + Maize (1:2) Maize : DHM-115, 117, KH-510	Pigeonpea + Maize (1:2) Maize : DHM-115, 117, KH-510	Pigeonpea + Maize (1:2) Maize : DHM-115, 117, KH-510	Sunflower
	Soybean	Soybean (JS-335, PK-1029, MAC-450, LSB-1, NRC-2)	Maize + Pigeonpea	Maize + Pigeonpea	Sunflower

(1)	(2)	(3)	(4)	(5)	(6)
Rainfed red sandy loam soils	Pigeonpea	Pigeonpea (LRG- 38, 41, MRG-1004, PRG- 100, 158, Asha)	Pigeonpea	Pigeonpea	Sunflower (Morden, EC-68414, DRSH-1, MSFH-8, 17, APSH-11)
	Pigeonpea + Maize (1:2)	Pigeonpea + Maize (1:2)	Pigeonpea + Maize Maize : DHM-115, 117, KH-510, GKMH-175	Pigeonpea / Clusterbean Clusterbean : Pusanavbahar, Gouri, Pusa sadhabahar, Pusamousami, Neelam-51	Sunflower
	Turmeric + Maize	Turmeric + Maize Turmeric : Kasturi, Suguna, Sudharshan	Maize	Sunflower (Morden, EC-68414, DRSH-1, MFSH-8, 17, APSH-11)	Sunflower

Adilabad District

Adilabad district falls under Northern Telangana agroclimatic zone (AP-5) and High Altitude and Tribal Area agroclimatic zone (AP-9) in Andhra Pradesh. The district receives a mean annual rainfall of 1104 mm of which 959 mm is received during south west monsoon and 89 mm during north east monsoon. The dominant soil types in the district are black soils and red soils (see map). The district has an area of 463000 ha under rainfed situation (84% of net sown area). The major crops cultivated in the district are cotton, soybean, pigeonpea, sorghum, chickpea and rice.



Normal sowing window for major field crops

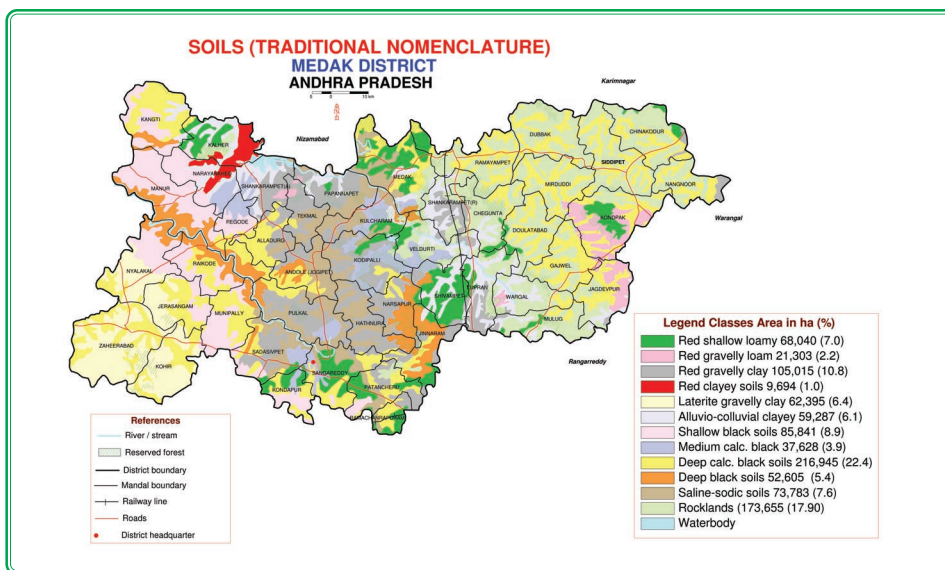
Season/Situation	Cotton	Soybean	Pigeonpea	Sorghum	Chickpea	Rice
<i>Kharif-Rainfed</i>	2 nd week of June to 1 st week of July	3 rd week of June to 3 rd week of July	2 nd week of June to 4 th week of July	--	--	--
<i>Kharif-Irrigated</i>	--	2 nd week of --	--	--	--	June to 1 st week of July
<i>Rabi-Rainfed</i>	--	--	--	1 st week of September to 4 th week of September	3 rd week of October to 1 st week of November	--
<i>Rabi-Irrigated</i>	--	--	--	--	--	--

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops / cropping systems and cultivars			
		Normal onset of monsoon (2 nd week of June)	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)
(1)	(2)	(3)	(4)	(5)	(6)
Rainfed black soils	Cotton	Cotton (NHH-390, LAHH-5, NDLHH-240, Orugallu)	Cotton (LRA-5166, LPS-141, LK-861, NDLHH-240, Orugallu)	Cotton (LRA-5166, LPS-141, LK-861, NDLHH-240, Orugallu)	Pigeonpea (Asha, Lakshmi, LRG-38, MRG-66)
	Soybean	Soybean (PK-472, 1029, MAC-58, 450, LSB-1, 3, MAUS-61, LRC-2)	Soybean (PK-472, 1029, MAC-58, 450, LSB-1, 3, MAUS-61, LRC-2)	Soybean (MAUS-61, LRC-2, Soybean-1)	Pigeonpea (PRG-100, 158, Durga, LRG-41)
	Pigeonpea	Pigeonpea (LRG -38, 41, WRG-53, WRG-1004, PRG-100, 158, Asha)	Pigeonpea (LRG-38, MRG-66 Asha, Lakshmi)	Pigeonpea (LRG-38, MRG-66 Asha, Lakshmi)	Pigeonpea (LRG-38, MRG-66 Asha, Lakshmi)

Medak District

Medak district falls under Central Telangana agroclimatic zone (AP-6) in Andhra Pradesh. The district receives a mean annual rainfall of 955 mm of which 790 mm is received during south west monsoon and 98 mm during north east monsoon. The dominant soil types in the district are black soils and red chalka soils (see map). The district has an area of 286000 ha under rainfed situation (67% of net sown area). The major crops cultivated in the district are maize, rice, sorghum, greengram and cotton.



Normal sowing window for major field crops

Season Situation	Maize	Rice	Sorghum	Greengram	Cotton
Kharif-Rainfed	2 nd week of June to 2 nd week of July	--	1 st week of June to 4 th week of June	2 nd week of June to 3 rd week of July	2 nd week of June to 1 st week of July
Kharif-Irrigated	--	2 nd week of June to 3 rd week of July	--	--	--
Rabi-Rainfed	--	--	1 st week of September to 4 th week of September	--	--
Rabi-Irrigated	1 st week of November to 4 th week of November	1 st week of December to 4 th week of December	--	--	--

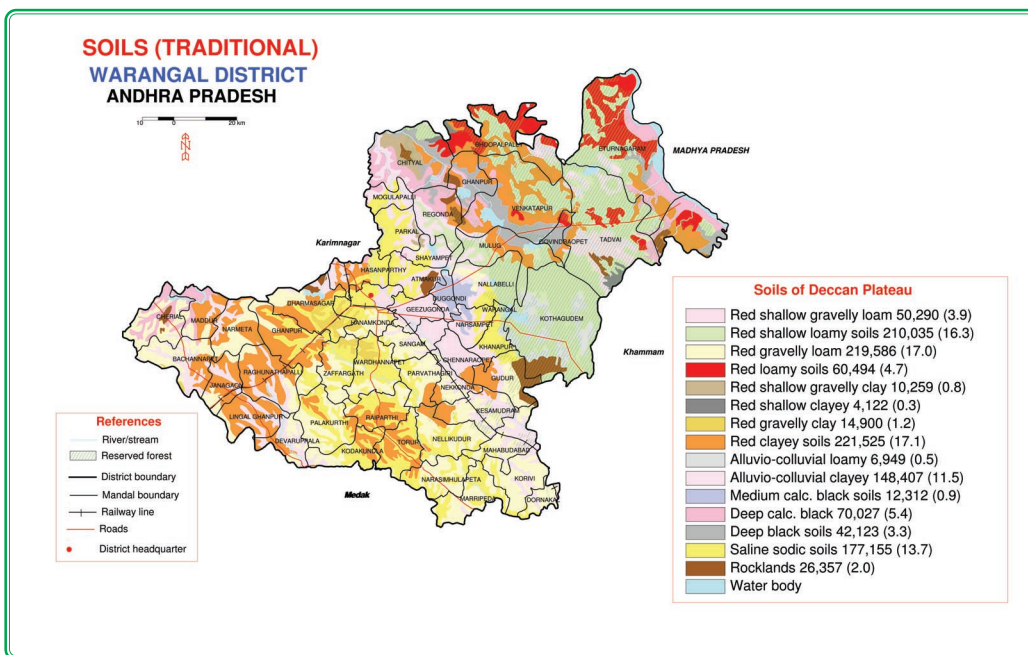
Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops / cropping systems and cultivars			
	Normal onset of monsoon (2 nd week of June)	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)	Delay by 8 weeks (2 nd week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Rainfed black Soils	Maize	Maize (DHM- 111, 113, KH-9541)	Maize (DHM-107, 109, 115, 117, PEH-1, Madhuri, Amber popcorn)	Pigeonpea / Castor Pigeonpea : LRG-41, Maruthi, PRG-158, Durga Castor : Kranthi, Kiran, Jyothi, Haritha, GCH-4, 5, 6 PCH-111	Pigeonpea (Maruthi, Durga, PRG-158)
	Maize + Pigeonpea	Maize + Pigeonpea Pigeonpea : LRG-41, Maruthi, PRG-158, Durga	Maize + Pigeonpea Pigeonpea : LRG-41, Maruthi, PRG-158, Durga	Pigeonpea / Castor	Pigeonpea
	Sorghum	Sorghum (CSH-14, 16, CSV-15)	Cotton /Maize Cotton: LRA-5166, LK-861	Pigeonpea / Castor	Pigeonpea
	Greengram	Greengram (LGG-407, 460, WGG-37)	Greengram / Maize Greengram : (LGG-407, 460, WGG-37)	Pigeonpea / Castor	Pigeonpea
	Cotton	Cotton (LRA-5166, LK-861)	Cotton (LRA-5166, LK-861)	Pigeonpea	Pigeonpea

(1)	(2)	(3)	(4)	(5)	(6)
Rainfed red chalka soils	Maize	Maize (DHM-107, 113, 117, 900, KH-510, Prakash)	Maize (DHM-109, 115, Prakash, KH-5991, GKM-1701)	Pigeonpea / Castor	Pigeonpea
	Cotton	Cotton (LK-861, NHH-44, NDKH-240)	Cotton (LK-861, NHH-44, NDKH-240)	Pigeonpea / Castor/ Sunflower Sunflower : Morden, KBSH-53, DRS-1	Pigeonpea

Warangal district

Warangal district falls under Central Telangana agroclimatic zone (AP-6) in Andhra Pradesh. The district receives a mean annual rainfall of 991 mm of which 806 mm is received during south west monsoon and 118 mm during north east monsoon. The dominant soil types in the district are black soils and red soils (see map). The district has an area of 147000 ha under rainfed situation (31% of net sown area). The major crops cultivated in the district are rice, cotton, maize, pigeonpea, chillies and turmeric.



Normal sowing window for major field crops

Season/ Situation	Rice	Cotton	Maize	Pigeonpea	Chillies
<i>Kharif</i> - Rainfed	--	3 rd week of June to 4 th week of July	2 nd week of June to 1 st week of August	3 rd week of June to 4 th week of July	--
<i>Kharif</i> - Irrigated	3 rd week of June to 4 th week of July	3 rd week of June to 4 th week of July	2 nd week of June to 2 nd week of August	--	3 rd week of June to 4 th week of August
<i>Rabi</i> - Rainfed	--	--	--	1 st week of September to 1 st week of October	--
<i>Rabi</i> - Irrigated	3 rd week of October to 4 th week of November	--	3 rd week of September to 4 th week of October	--	3 rd week of September to 3 rd week of October

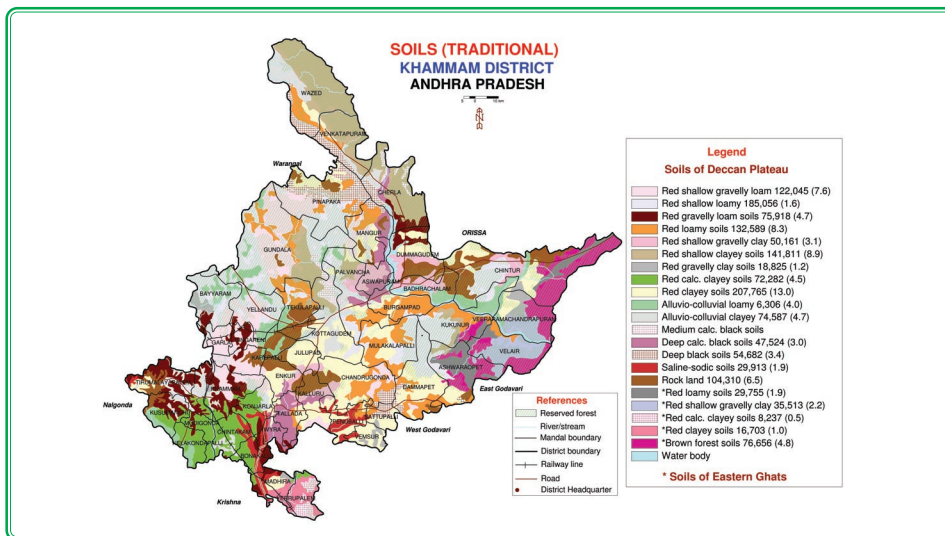
Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops / cropping systems and cultivars			
	Normal onset of monsoon (2 nd week of June)	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)	Delay by 8 weeks (2 nd week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Rainfed black soils	Cotton	Cotton (SDLHH-240, LRA-5166)	Cotton (SDLHH-240, LRA-5166)	Cotton (SDLHH-240, LRA-5166)	Pigeonpea / Castor Pigeonpea : Durga, Maruthi, PRG-100 Castor: Kiran, Kranthi, Haritha, GCH-6

(1)	(2)	(3)	(4)	(5)	(6)
	Maize	Maize (DHM-17,109, 119)	Maize (DHM-17,109, 119)	Pigeonpea (LRG-41, Maruthi, PRG-100)	Pigeonpea / Castor
	Pigeonpea	Pigeonpea (LRG-41, Maruthi)	Pigeonpea (LRG-41, Maruthi)	Pigeonpea	Pigeonpea / Castor
	Greengram	Greengram (LGG-407)	Greengram (LGG-460, WGG-37)	Greengram (LGG-460, WGG-37)	-
Rainfed red soils	Maize	Maize (DHM- 111, 113, 117)	Maize (DHM-109, 115, Prakash)	Greengram (LGG-407, WGG-37)	Pigeonpea/ Castor
	Pigeonpea	Pigeonpea + Groundnut Pigeonpea : LRG-41, WRG- 53 Groundnut : Narayani, Vemana, Tirupati-4, Greeshma	Pigeonpea + Maize Pigeonpea : LRG-41, WRG- 53 Maize : DHM – 109, 115, 117	Pigeonpea	Pigeonpea / Castor

Khammam District

Khammam district falls under Central Telangana agroclimatic zone (AP-6) and High Altitude and Tribal Area agroclimatic zone (AP-9) in Andhra Pradesh. The district receives a mean annual rainfall of 1096 mm of which 867 mm is received during south west monsoon and 132 mm during north east monsoon. The dominant soil types in the district are red chalka soils followed by black soils and dubba soils (see map). The district has an area of 256000 ha under rainfed situation (57% of net sown area). The major crops cultivated in the district are rice, cotton, maize, greengram and pigeonpea.



Normal sowing window for major field crops

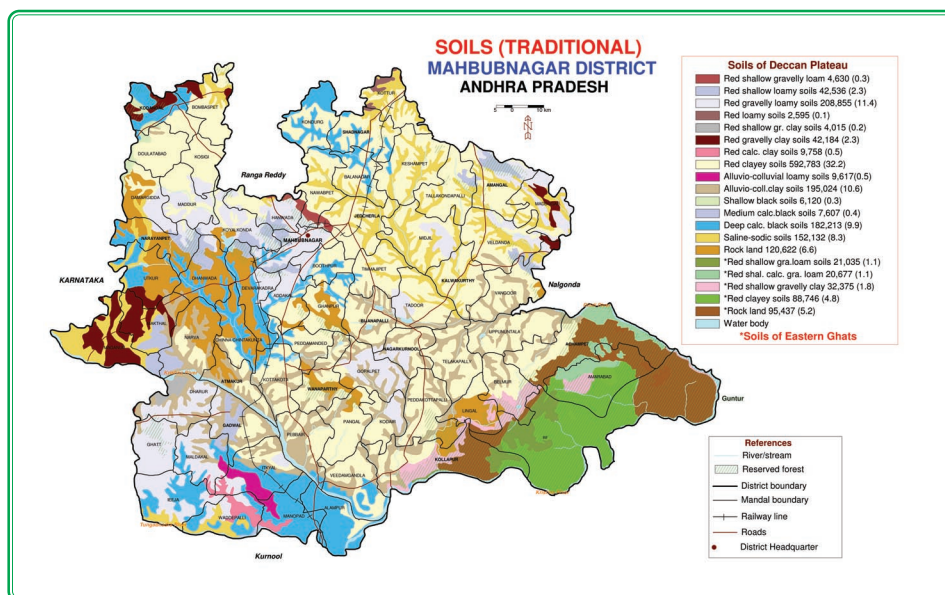
Season/Situation	Rice	Cotton	Maize	Greengram	Pigeonpea
Kharif-Rainfed	--	1 st week of June to 3 rd week of July	1 st week of June to 1 st week of August	1 st week of June to 1 st week of July	1 st week of June to 3 rd week of July
Kharif-Irrigated	1 st week of June to 3 rd week of July	3 rd week of June to 3 rd week of July	1 st week of June to 1 st week of August	--	--
Rabi-Rainfed	--	--	3 rd week of October to 1 st week of December	1 st week of October to 4 th week of October	--
Rabi-Irrigated	3 rd week of November to 3 rd week of December	--	3 rd week of October to 3 rd week of November	--	--

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops / cropping systems and cultivars			
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)	Delay by 8 weeks (1 st week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Rainfed black soils	Cotton	Cotton (LK-861, LRA-5166, LAHH-5, H-8)	Cotton (LRA-5166, NHH-44, H-8)	Cotton (LRA-5166, NHH-44, H-8)	Cotton (LRA-5166, NHH-44, H-8)
	Maize	Maize (DHM-107, 111)	Maize (DHM-109, 115)	Maize (DHM-109, 115, GKM-1701)	Maize
	Greengram	Greengram (LGG-407, 460, WGG-37)	Greengram (LGG-407, 460, WGG-37)	Pigeonpea (PRG-100, 158, Durga)	Pigeonpea (PRG-100, 158, Durga)
	Pigeonpea	Pigeonpea (LRG-30, Abhaya, Lakshmi, Maruthi)	Pigeonpea (LRG-41, MRG-66)	Pigeonpea	Pigeonpea
Rainfed red soils	Maize	Maize (DHM-103, 105, 113)	Maize (DHM-103, 105, 113)	Maize (DHM-109, 115, Prakash)	Pigeonpea
	Greengram	Greengram	Greengram	Pigeonpea	Pigeonpea
	Pigeonpea	Pigeonpea (LRG-38, 41, ICPL-85063, Lakshmi)	Pigeonpea (LRG-38, 41, ICPL-85063, Lakshmi, Abhaya)	Pigeonpea	Pigeonpea

Mahabubnagar District

Mahabubnagar district falls under Southern Telangana agroclimatic zone (AP-7) in Andhra Pradesh. The district receives a mean annual rainfall of 749 mm of which 588 mm is received during south west monsoon and 101 mm during north east monsoon. The dominant soil types in the district are black soils and red soils (see map). The district has an area of 566000 ha under rainfed situation (78% of net sown area). The major crops cultivated in the district are maize, castor, rice, sorghum, pigeonpea and cotton.



Normal sowing window for major field crops

Season/ Situation	Maize	Castor	Rice	Sorghum	Pigeonpea
<i>Kharif</i> - Rainfed	3 rd week of June to 3 rd week of July	2 nd week of June to 1 st week of July	--	2 nd week of June to 4 th week of June	3 rd week of June to 3 rd week of July
<i>Kharif</i> - Irrigated	--	--	1 st week of June to 4 th week of July	--	--
<i>Rabi</i> - Rainfed	--	--	--	1 st week of September to 4 th week of September	--
<i>Rabi</i> - Irrigated	3 rd week of October to 3 rd week of November	--	2 nd week of October to 1 st week of December	--	--

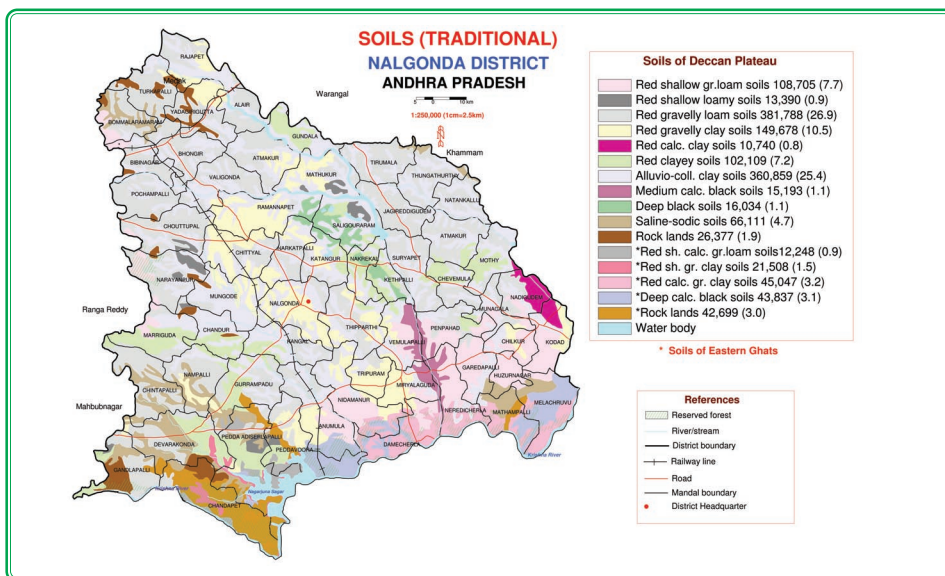
Contingency crop plan

Major Farming situation	Normal crop/ cropping system	Suggested contingency crops / cropping systems and cultivars			
	Normal onset of monsoon (2 nd week of June)	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)	Delay by 8 weeks (2 nd week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Rainfed red Soils	Maize (DHM-103, 105,113)	Maize (DHM-103, 105,113)	Maize (DHM-109, 115, Prakash)	Pigeonpea (PRG -158, Lakshmi, Maruthi)	Pearl millet (ICTP-8203, ICMV-221, HHB-67)
	Castor	Castor (Kranthi, Jyothi, GCH-4, 6, DCH-519)	Castor + Pigeonpea (1:1) Castor : GCH-4, 6, DCH-519 Pigeonpea : Maruthi, Lakshmi, PRG-158	Castor + Pigeonpea (1:1) Castor : Kranthi, Jyothi, Kiran Pigeonpea : Durga, PRG-100	Castor + Pigeonpea (1:1) Castor: Kranthi, Jyothi, Kiran Pigeonpea : Durga, PRG-100
	Pigeonpea	Pigeonpea (LRG-41, Maruthi, Abhaya)	Pigeonpea (Maruthi, PRG-100)	Pigeonpea	Pigeonpea (Maruti, Lakshmi, PRG-158)
	Groundnut	Groundnut (Vemana prasuna, ICGV-91114)	Castor + Pearl millet / Finger millet (1:1)	Pigeonpea	Castor + Pigeonpea (1:1)
	Sorghum	Sorghum / Sorghum + Pigeonpea Sorghum : PSV-1, Palem-2, CSV-15, CSH-14, 18	Pearl millet (ICTP-8203, ICMV-221, HHB-67, RHB-121)	Pearl millet (ICMH-67, RHB-121)	Castor + Pigeonpea (1:1) / Horsegram

(1)	(2)	(3)	(4)	(5)	(6)
					Horsegram : PZM-1, VHG-62, VHG-9
Rainfed black soils	Maize	Maize (DHM-107, 111)	Maize (DHM-109, 115)	Maize (DHM-109, 115, GKMH- 1701)	Castor + Pigeonpea (1:1)
	Pigeonpea	Pigeonpea (LRG-30, Abhaya, Lakshmi, Maruthi)	Pigeonpea (LRG-41, MRG-66)	Pigeonpea (PRG-100, Durga)	Sunflower (Morden, DRSF-113)
	Cotton	Cotton (LRA-5166, LK-861)	Cotton (LRA-5166, LK-861)	Fodder sorghum (PC-23, SSG-59-3)	Sunflower (Morden, DRSF-113)
	Sunflower	Sunflower (KBSH-1,53, DRSF-113)	Sunflower (KBSH-44, Morden, DRSF-108)	Fodder sorghum	Fodder sorghum (PC-6, 23, SSG-59-3)
	Finger millet	Finger millet (Godavari, Ratnagiri)	Finger millet (Maruthi, Suraj, Champavathi)	Sunflower (Morden, DRSF-113, KBSH-44)	Sunflower

Nalgonda District

Nalgonda district falls under Southern Telangana agroclimatic zone (AP-7) in Andhra Pradesh. The district receives a mean annual rainfall of 744 mm of which 546 mm is received during south west monsoon and 139 mm during north east monsoon. The dominant soil types in the district are black soils and red chalka soils (see map). The district has an area of 232000 ha under rainfed situation (49% of net sown area). The major rainfed crops cultivated in the district are rice, cotton, castor and pigeonpea.



Normal sowing window for major field crops

Season/ situation	Rice	Cotton	Castor	Pigeonpea
Khariif- Rainfed	--	1 st week of July to 3 rd week of July	4 th week of June to 2 nd week of July	4 th week of June to 2 nd week of July
Khariif- Irrigated	3 rd week of June to 3 rd week of July	--	--	--
Rabi- Rainfed	--	--	--	1 st week of September to 1 st week of October
Rabi- Irrigated	3 rd week of December to 1 st week of January	--	--	--

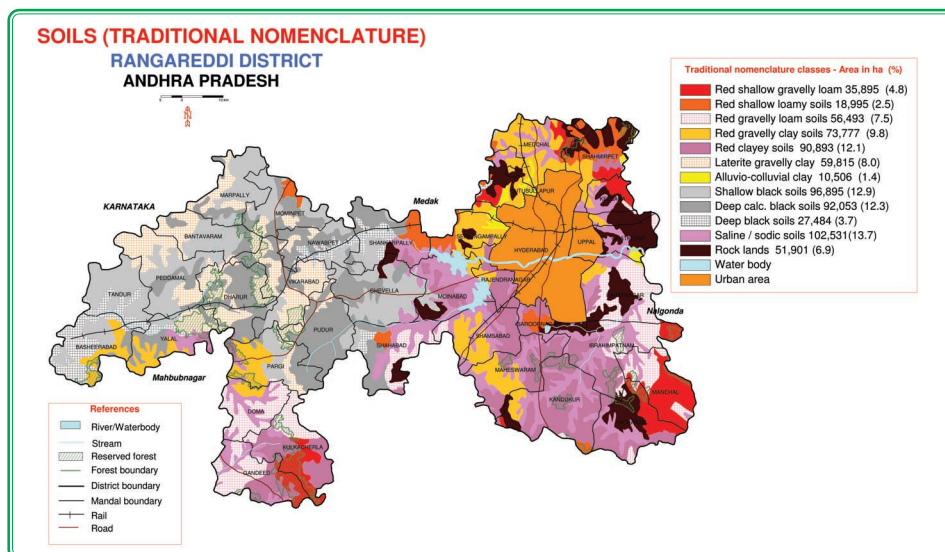
Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops / cropping systems and cultivars			
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)	Delay by 8 weeks (1 st week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Shallow red chalka soils	Cotton	Cotton (LK-861, LRA-5166, NHH-390, LAHH-5)	Cotton (LK-861, LAHH-5)	Cotton (Lam Hybrid-1, NA-1325, NHH-44, H-8)	Castor / Sorghum / Pearl millet / Finger millet / Sunflower / Horsegram / Cowpea Castor: Jwala, Kranti, Kiran, PCH-111 Sorghum: CSV-5, CSH-9 Pearl millet: ICTP-8203, ICMV-221 Finger millet: VR-847 Sunflower: Morden Horsegram : PZM-1, VHG-62, VHG-6, CRIDA1,2 Cowpea : Russian Giant, C-152, UPC-5286
	Castor	Castor (Kranti, Jyothi, GCH-4, DCH-177)	Castor (Kranti, Jyothi , GCH-6, DCH-32)	Castor (Jwala, Kranti, Kiran, Haritha)	Castor

(1)	(2)	(3)	(4)	(5)	(6)
	Pigeonpea	Pigeonpea + Greengram (5:1) Greengram : LGG-407, 460	Pigeonpea + Greengram(5:1) Pigeonpea : LRG-30, Maruthi	Pigeonpea + Greengram (5:1)	Pigeonpea (PRG-100, Durga)
	Greengram	Greengram (LGG-407, 460, MGG-295)	Greengram (MGG-29, WGG-37)	Castor	Horsegram / Cowpea
Medium black soils	Cotton	Cotton (LK-861, L-389, LRA-5166, NHH-44)	Cotton (LRA-5166, NHH-44, H-8)	Castor	Sunflower
	Pigeonpea	Pigeonpea (LRG- 30, 41, Abhaya, Maruthi, PRG-158)	Pigeonpea (PRG-100, 158, Maruthi)	Pigeonpea+ Greengram (5:1) Pigeonpea: PRG-100, 158, Durga Greengram: LGG-407, 460, WGG-37	Pigeonpea
	Greengram	Greengram: (LGG-407, 460, WGG-37)	Greengram: (LGG-407, 460, WGG-37)	Pigeonpea + Greengram (5:1)	Pigeonpea

Ranga Reddy District

Ranga Reddy district falls under Southern Telangana agroclimatic zone (AP-7) in Andhra Pradesh. The district receives a mean annual rainfall of 835 mm of which 658 mm is received during south west monsoon and 113 mm during north east monsoon. The dominant soil types in the district are rainfed black soils and rainfed red soils (see map). The district has an area of 149000 ha under rainfed situation (73% of net sown area). The major crops cultivated in the district are pigeonpea, maize, cotton, sorghum and rice.



Normal sowing window for major field crops

Season/ Situation	Pigeonpea	Maize	Cotton	Sorghum	Rice
<i>Kharif</i> - Rainfed	2 nd week of June to 3 rd week of July	2 nd week of June to 1 st week of July	2 nd week of June to 3 rd week of July	4 th week of May to 4 th week of June	- --
<i>Kharif</i> - Irrigated	--	--	--	--	4 th week of May to 1 st week of August
<i>Rabi</i> - Rainfed	--	3 rd week of October to 1 st week of December	--	--	--
<i>Rabi</i> - Irrigated	--	3 rd week of October to 3 rd week of November	--	--	1 st week of November to 1 st week of January

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops / cropping systems and cultivars			
	Normal onset of monsoon (2 nd week of June)	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)	Delay by 8 weeks (2 nd week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Rainfed black soils	Cotton	Cotton (LK-861, LRA-5166, LAHH-5, H-8)	Cotton (LRA-5166, NHH-44)	Cotton (LRA-5166, NA-1325, NHH-44, H-8)	Cotton (Short duration varieties / Hybrids)
	Pigeonpea	Pigeonpea (PRG-158, Maruthi, Abhaya, LRG-41)	Pigeonpea (LRG-41, Abhaya, Maruthi, PRG-158)	Pigeonpea (PRG-100, 158, Durga)	Pigeonpea (PRG-100, 158, Durga)
	Pigeonpea + Sorghum (1:2)	Pigeonpea + Sorghum / Maize (1:2) Sorghum: PSH-1, PSV-1, CSV-15, CSH-9 Maize: DHM-117	Pigeonpea	Pigeonpea	Pigeonpea
	Sorghum / Maize	Sorghum / Maize	Vegetables - Chickpea / Safflower Chickpea : JG-11, JAK-I9218, KAK-2, LBEG-7 Safflower : TSF-1, NARI 6, DSH-129, MKH-11	Vegetables - Chickpea / Safflower Chickpea : JG-11, JAK-I9218, KAK-2, Viha, Swetha Safflower : TSF-1, NARI 6, DSH-129, MKH-11	Fallow – Rabi crops Chickpea / Safflower / Tomato / Wheat Chickpea : JG-11, JAK-I9218, Viha, Swetha

(1)	(2)	(3)	(4)	(5)	(6)
Rainfed red soils	Pigeonpea	Pigeonpea (LRG-41, Maruthi, Abhaya)	Pigeonpea (Maruthi, PRG-100)	Pigeonpea (Maruti, Lakshmi, PRG-158)	Pigeonpea (Maruti, Lakshmi, PRG-158)
	Pigeonpea + Sorghum / Maize (1:2) Sorghum: PSV-2, Palem-2 Maize : DHM- 111, 113, 117	Pigeonpea + Sorghum / Maize (1:2) Pigeonpea : LRG-41, PRG-158 Maize : DHM-111, 113, 117	Pigeonpea (LRG-41, PRG-158)	Pigeonpea (LRG-41, PRG-158)	Pigeonpea (Durga, PRG-100)
	Castor / Sorghum / Maize	Castor / Sorghum / Maize Castor : Kranti,GCH-4 Sorghum : CSH-14,16, CSV-15, Palem-2 Maize: DHM-103, 117	Castor (Kranti, GCH-6)	Castor (Kranti, GCH-6)	Castor (Kranti, GCH-6)

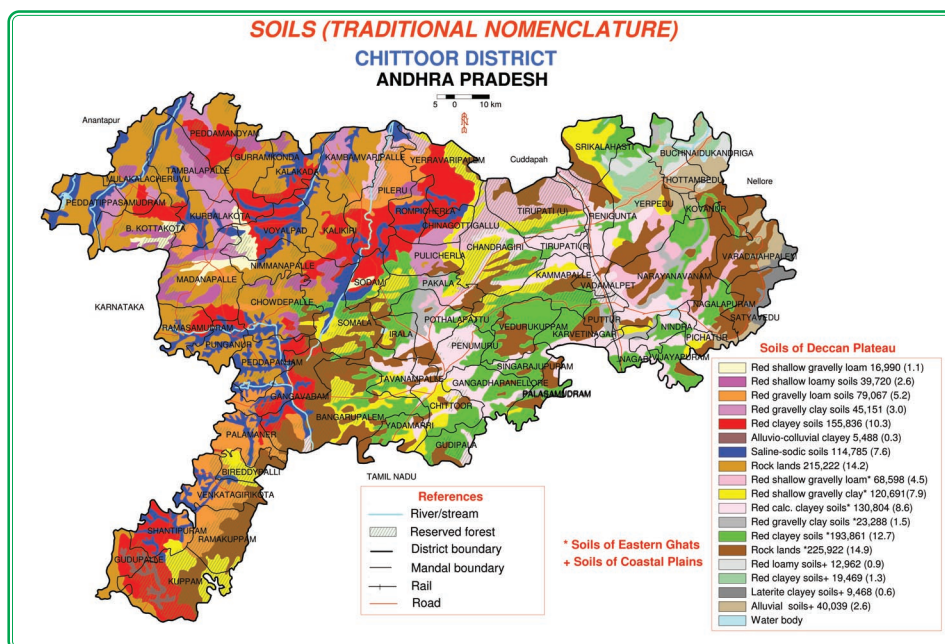
2.1.3 MAJOR CROPS IN RAYALASEEMA REGION OF ANDHRA PRADESH

- Rayalaseema region of Andhra Pradesh comprises four districts (Chittoor, Kadapa, Anantapur and Kurnool). Major crops cultivated during *kharif* season under rainfed conditions are: Groundnut, sunflower, pigeonpea, maize, cotton and sorghum.
- The major field crops cultivated during *kharif* season under irrigated conditions are: Groundnut in Anantapur and Chittoor; Rice in all districts and Sugarcane in Chittoor.
- Major crops cultivated during *rabi* under rainfed conditions are: Chickpea in Kurnool, Kadapa and Anantapur; Sunflower and Sesame in Kadapa, Sorghum in Anantapur and horsegram in Anantapur and Chittoor.
- Major crops cultivated during *rabi* under irrigated conditions are: Sunflower in Kurnool, Anantapur and Chittoor; Rice and groundnut in all districts; Sorghum, greengram in Kurnool and maize in Kurnool and Anantapur.
- The major vegetables cultivated during *rabi* under irrigated conditions are: Chillies and tomatoes in all districts; Bhendi and Coriander in Kurnool; Brinjal in Kurnool and Chittoor

<i>Kharif</i> rainfed crops	Districts
Groundnut	Anantapur, Kurnool, Kadapa, Chittoor
Sunflower	Kurnool, Kadapa
Pigeonpea	Kurnool, Anantapur, Kadapa, Chittoor
Maize	Kurnool, Anantapur
Cotton	Kadapa, Anantapur
Sorghum	Kurnool, Anantapur

Chittoor District

Chittoor district falls under Southern agroclimatic zone (AP-4) in Andhra Pradesh. The district receives a mean annual rainfall of 841 mm of which 378 mm is received during south west monsoon and 351 mm during north east monsoon. The dominant soil types in the district are rainfed shallow red soils (see map). The district has an area of 161000 ha under rainfed situation (51% of net sown area). The major crops cultivated in the district are groundnut, rice, pigeonpea, sugarcane and sunflower.



Normal sowing window for major field crops

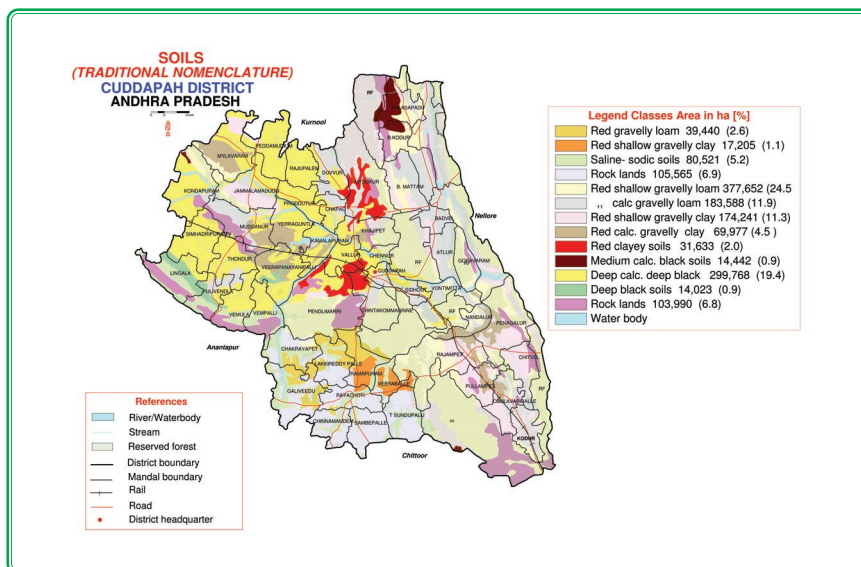
Season/ Situation	Groundnut	Rice	Pigeonpea	Sugarcane	Sunflower
<i>Kharif</i> - Rainfed	1 st week of June to 3 rd week of July	-	1 st week of June to 1 st week of August	-	-
<i>Kharif</i> - Irrigated	1 st week of May to 1 st week of June	3 rd week of May to 3 rd week of July	-	-	-
<i>Rabi</i> - Irrigated	3 rd week of November to 4 th week of December	1 st week of November to 4 th week of December	-	1 st week of December to 1 st week of March	1 st week of November to 4 th week of December

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops / cropping systems and cultivars			
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)	Delay by 8 weeks (1 st week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Rainfed - shallow red soil	Groundnut + Pigeonpea (7:1) or (11:1)	Groundnut + Pigeonpea (7:1) or (11:1) Groundnut : Narayani, K-6, Greeshma Pigeonpea : LRG-41	Groundnut + Pigeonpea (7:1) or (11:1) Groundnut : Narayani, K-6, Greeshma Pigeonpea : LRG-41	Pigeonpea / Sorghum / Pigeonpea + Tomato / Fieldbean / Maize / Greengram / Blackgram Pigeonpea : LRG-30, 41 Sorghum : CSH-1, 5 Tomato: NP-5005 Fieldbean : TFB-5 Greengram : LGG-407, 460 Blackgram : LBG-20, T-9, PBG-1	Pigeonpea / Sorghum / Blackgram / Greengram Pigeonpea : LRG-30, 41 Sorghum : CSH-1, 5 Blackgram : LBG-17, 20 Greengram : LGG-407, 460

Kadapa District

Kadapa district falls under Southern agroclimatic zone (AP-4) in Andhra Pradesh. The district receives a mean annual rainfall of 719 mm of which 384 mm is received during south west monsoon and 260 mm during north east monsoon. The dominant soil types in the district are rainfed red and black soils (see map). The district has an area of 188000 ha under rainfed situation (60% of net sown area). The major crops cultivated in the district are groundnut, sunflower, chickpea, cotton and rice.



Normal sowing window for major field crops

Season/Situation	Groundnut	Sunflower	Chickpea	Cotton	Rice
<i>Khariif-Rainfed</i>	1 st week of June to 4 th week of July	1 st week of June to 3 rd week of July	--	1 st week of June to 1 st week of July	--
<i>Khariif-Irrigated</i>	--	--	--	--	1 st week of June to 1 st week of August
<i>Rabi-Rainfed</i>	--	1 st week of September to 1 st week of October	1 st week of October to 1 st week of November	--	--
<i>Rabi-Irrigated</i>	1 st week of November to 1 st week of December	--	--	--	1 st week of November to 1 st week of January

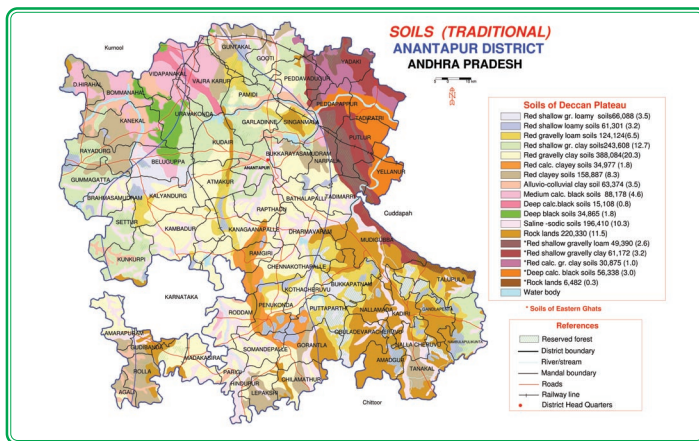
Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops / cropping systems and cultivars			
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)	Delay by 8 weeks (1 st week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Rainfed shallow red soils (30 cm depth)	Groundnut / Groundnut + Pigeonpea (7:1 or 11:1)	Groundnut + Pigeonpea (7:1 or 11:1) Groundnut : Narayani, K-6, Greeshma Pigeonpea : LRG-41	Groundnut + Pigeonpea (7:1 or 11:1) Groundnut : Narayani, K-6, Greeshma Pigeonpea : LRG-41	Groundnut + Pigeonpea (7:1 or 11:1) Groundnut : Narayani, K-6, Greeshma, Abhaya Pigeonpea : LRG-41	Pigeonpea / Field bean / Tomato/Maize/ Sunflower Pigeonpea : LRG 41 Field bean : TFB-5 Tomato: NP-5005 Sunflower : Morden
Rainfed medium red soils (30-50 cm depth)	Groundnut	Groundnut + Pigeonpea (7:1 or 11:1)	Groundnut + Pigeonpea (7:1 or 11:1)	Groundnut + Pigeonpea (7:1 or 11:1)	Sunflower
	Cotton	Cotton (Mahanandi, Raghavendra, LK-861, Priya, NDLHS-240)	Cotton (LRA-5166, LAHH-5, NHH-44, H-8)	Cotton (LRA-5166, LAHH-5, NHH-44, H-8)	Sunflower
	Pigeonpea	Pigeonpea (Lakshmi LRG-30, LRG- 38, 41)	Pigeonpea (Lakshmi LRG-30, LRG- 38, 41)	Pigeonpea (Lakshmi LRG-30, LRG- 38, 41)	
Rainfed black soils (>50 cm depth)	Groundnut	Groundnut + Pigeonpea (7:1 or 11:1)	Groundnut + Pigeonpea (7:1 or 11:1)	Groundnut + Pigeonpea (7:1 or 11:1)	Sorghum / Sunflower Sorghum : CSV-5

(1)	(2)	(3)	(4)	(5)	(6)
	Cotton	Cotton (LK-861, L-389, NHH-44, Lam Hybrid-7, NDLHH-240)	Cotton (LK-861, L-389, NHH-44, Lam Hybrid-7, NDLHH-240)	Cotton (LK-861, L-389, NHH-44, Lam Hybrid-7, NDLHH-240)	Sorghum / Sunflower
	Sunflower	Sunflower (DRSF-108, KBSH-1, 44)	Sunflower (DRSF-108, KBSH-1, 44)	Sunflower (DRSF-108, KBSH-44, PAC-1091, DRSH-1, Jwalamukhi, Sanjan-85)	Fallow- Sunflower / Fallow- Chickpea Chickpea : (JG-11, 130, KAK-2, LBG-7, Pulezi-95311)

Anantapur District

Anantapur district falls under Scarce Rainfall agroclimatic zone (AP-8) in Andhra Pradesh. The district receives a mean annual rainfall of 536 mm of which 310 mm is received during south west monsoon and 146 mm during north east monsoon. The dominant soil types in the district are red gravelly soils (see map). The district has an area of 814000 ha under rainfed situation (73% of net sown area). The major rainfed crops cultivated in the district are groundnut, chickpea, pigeonpea, sunflower, rice and sorghum.



Normal sowing window for major field crops

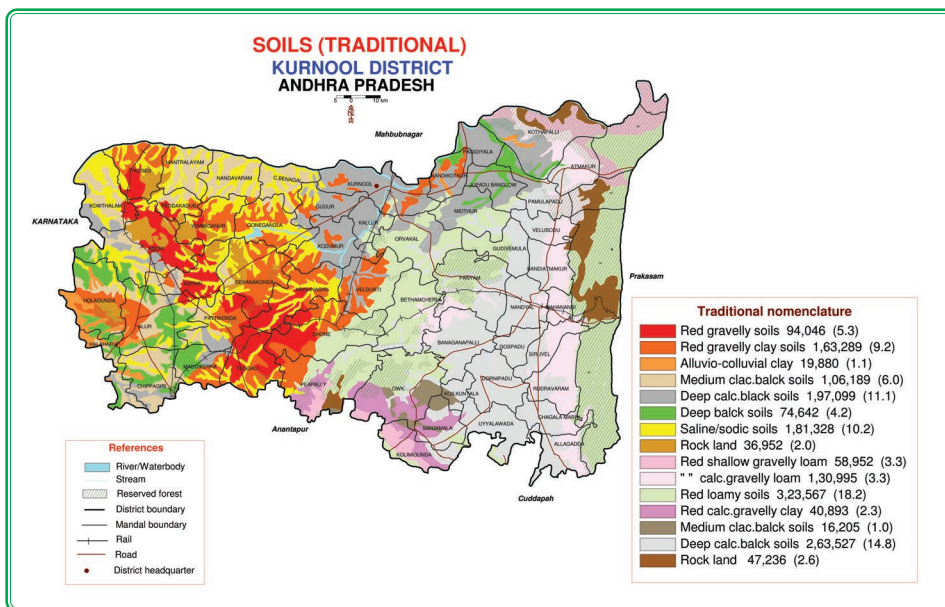
Season/ Situation	Groundnut	Chickpea	Pigeonpea	Sunflower	Rice	Sorghum
<i>Kharif</i> - Rainfed	1 st week of July to 1 st week of August	--	1 st week of June to 1 st week of August	--	--	4 th week of June to 1 st week of July (grain) 1 st week of July to 3 rd week of September (fodder)
<i>Kharif</i> - Irrigated	1 st week of June to 1 st week of August	--	--	--	3 rd week of July to 1 st week of August	--
<i>Rabi</i> - Rainfed	--	3 rd week of October to 1 st week of November	--	1 st week of October to 1 st week of January	--	1 st week of September to 4 th week of September
<i>Rabi</i> - Irrigated	3 rd week of November to to 4 th week of December	--	--	--	1 st week of December to 4 th week of December	--

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (2 nd week of June)	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)	Delay by 8 weeks (2 nd week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Shallow red soils	Groundnut + Pigeonpea (7:1)	Groundnut + Pigeonpea (7:1) Groundnut : Kadiri- 9, Prasuna, Narayani Pigeonpea : LRG-30	Groundnut+ Pigeonpea (7:1) Groundnut : Kadiri- 9, Prasuna, Narayani Pigeonpea : LRG-30	Groundnut / Sorghum Groundnut : Kadiri- 9, Prasuna, Narayani Sorghum : CSH-9,12,13, NTJ-1, 3	Groundnut / Fodder Sorghum / Pearl millet / Horsegram Fodder Sorghum : PGH-1, 2 Pearl millet: ICTP-8203, ICMV-221, ICMH-451 Horsegram : PDM-1, VHG-9, 62
	Pigeonpea	Pigeonpea (Palnadu, LRG-41, Lakshmi, PRG-158)	Pigeonpea (Palnadu, LRG-41, Lakshmi, PRG-158)	Pigeonpea / Pearl millet Pearl millet : ICTP 8203, ICMV-221, ICMH-451	Pearl millet
	Sorghum	Sorghum (PSV-15, 19)	Sorghum (CSH-9, 14, CSV-12)	Sorghum (CSH-9, 14, CSV-12)	Fodder Sorghum (PGH-1, 2)
	Castor	Castor (Kranthi,Jyothi, GCH-4, 6)	Castor (Kranthi,Jyothi, GCH-4, 6)	Castor (Kranthi,Jyothi, GCH-4, 6)	Fodder Sorghum (PGH-1, 2)
Light and medium black soils	Cotton	Cotton (Narsimha, MCU-5, LRA-5166) NHH-44, NDLHH-240)	Cotton (Narsimha, MCU-5, LRA-5166, NHH-44, NDLHH-240)	Cotton (Narsimha, MCU-5, LRA-5166,	Fallow - Chickpea (Annegiri, Swetha, KAK-2)

Kurnool District

Kurnool district falls under Scarce Rainfall agroclimatic zone (AP-8) in Andhra Pradesh. The district receives a mean annual rainfall of 655 mm of which 457 mm is received during south west monsoon and 123 mm during north east monsoon. The dominant soil types in the district are black soils and red soils (see map). The district has an area of 685000 ha under rainfed situation (80% of net sown area). The major crops cultivated in the district are groundnut, sunflower, pigeonpea, chickpea, sorghum and rice.



Normal sowing window for major field crops

Season/ Situation	Groundnut	Sunflower	Pigeonpea	Chickpea	Sorghum	Rice
<i>Khariif</i> - Rainfed	1 st week of July to 1 st week of August	3 rd week of June to 1 st week of July (red soils) 1 st week of August to 4 th week of August (black soils)	3 rd week of June to 4 th week of July	--	1 st week of June to 3 rd week of July	--
<i>Khariif</i> - Irrigated	--	--	--	--	--	3 rd week of July to 1 st week of August

Rabi-Rainfed	--	--	--	3 rd week of October to 1 st week of November	1 st week of September to 4 th week September	--
Rabi-Irrigated	3 rd week of November to 4 th week of December	1 st week of October to 1 st week of November	--	--	1 st week of September to 1 st week of October	1 st week of November to 1 st week of December

Contingency crop plan

Farming situation	Normal crop/cropping system	Suggested contingency crops / cropping systems and cultivars			
		Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)
(1)	(2)	(3)	(4)	(5)	(6)
Rainfed red soils	Groundnut / Groundnut+ Pigeonpea	Groundnut / Groundnut + Pigeonpea Groundnut : Kadiri-5, Anantha, Narayani, Vemana, JCG-88, Abhaya, ICGV-91114 Pigeonpea : LRG 30, Lakshmi, PRG-158	Groundnut / Groundnut + Pigeonpea Groundnut : Vemana, Kadiri-5, 6, 7, 8 Ananta, Narayani Pigeonpea : LRG 30, Lakshmi, PRG-158	Groundnut / Groundnut + Pigeonpea Groundnut : Vemana, Kadiri-5, 6, 7, 8 Ananta, Narayani Pigeonpea : Lakshmi, Abhaya, Maruthi, PRG-100, Durga	Groundnut / Groundnut + Pigeonpea Groundnut : Vemana, Kadiri-5, 6, 7, 8 Ananta, Narayani Pigeonpea : Lakshmi, Abhaya, Maruthi, PRG-100, Durga
	Sunflower	Sunflower (DRSF-108, KBSH-44, PAC-1091, DRSH-1, Jwalamukhi, Sanjan-85)	Sunflower (DRSF-108, KBSH-44, PAC-1091, DRSH-1, Jwalamukhi, Sanjan-85)	Sunflower (Morden, DRSF-108, KBSH-1, 44)	Sunflower (Morden, DRSF-108, KBSH-1, 44)
	Sorghum	Sorghum <i>Kharif</i> (CSV-13, 15,	Sorghum <i>Kharif</i> (CSV-13, 15,	Sorghum <i>Kharif</i> (CSV-13, 15,	Sorghum <i>Kharif</i> (CSV-13, 15,

(1)	(2)	(3)	(4)	(5)	(6)
		CSH-9, 16)	CSH-9, 16)	CSH-9, 16 NTJ-1) Maghi / Rabi (NTJ-3, 14, N-14, NTJ-278, CSV-21R)	CSH-9, 16, NTJ-1) Maghi / Rabi (NTJ-3, 14, N -14, NTJ-278, CSV-21R, Kinnera)
	Pearl millet	Pearl millet	Pearl millet (ICTP-8203, ICMV-221, HHB-67, RHB-121)	Pearl millet (ICTP-8203, ICMV-221, HHB-67, RHB-121)	Pearl millet
Rainfed black soils	Groundnut	Groundnut (Vemana, Tirupati-4, Prasuna)	Groundnut (Vemana, Tirupati-4, Prasuna)	Groundnut (Vemana, Kalahasti, Narayani)	Groundnut (Vemana, Kalahasti, Narayani)
	Pigeonpea	Pigeonpea (LRG-30, 41, Maruthi, Lakshmi, MRG-66, PRG-100)	Pigeonpea (LRG-30, 41, Maruthi, Lakshmi, MRG-66, PRG-100)	Pigeonpea (Abhaya, Durga, Lakshmi, Maruthi, PRG-100)	Pigeonpea (Abhaya, Durga, Lakshmi, Maruthi, PRG-100)
	Groundnut + Pigeonpea(11:1)	Groundnut + Pigeonpea(11:1)	Groundnut + Pigeonpea(11:1)	Groundnut + Pigeonpea(11:1)	Groundnut + Pigeonpea(11:1)
	Sunflower	Sunflower (KBSH-1, 44, NDSH-1, PAC, BSH-1)	Sunflower (KBSH-1, 44, NDSH-1, PAC, BSH-1)	Sunflower (KBSH-1, 44, NDSH-1, PAC, BSH-1)	Sunflower (Morden, DRSF-108, KBSH-53, DRSH-1)
	Sorghum <i>Kharif</i>	Sorghum <i>Kharif</i> (CSV-13, 15, CSH-9,16)	Sorghum <i>Kharif</i> - Maghi/ Rabi Sorghum (<i>Kharif</i>): CSV-13,15, CSH-9,16, NTJ-1 Maghi/ Rabi: NTJ-13, 4, N-14, NTJ-278, CSV-21R	Sorghum <i>Kharif</i> (CSV-13,15, CSH-9,16)	Sorghum <i>Kharif</i> (CSV-13, 15, CSH-9,16)

2.2 KARNATAKA

In Karnataka, contingency crop plans for 25 districts have been included except for 4 districts viz., Kodagu, Udipi, Uttara Kannada and Dakshina Kannada districts considering rainfall and cropping pattern. However, the annual and seasonal rainfall information is furnished for all the districts in the table given below:

District level annual and Seasonal rainfall information*

Districts	Zone	Annual Rainfall (mm)	Rainy days	South West Monsoon (June-Sep)		North East Monsoon (Oct-Dec)	
				RF (mm)	Rainy days	RF (mm)	Rainy days
Kanchipuram	TN-1	1252	56	463	28	697	24
Bidar	KA-1	905	50	720	39	109	6
Gulbarga	KA-2	843	45	640	34	130	6
Raichur	KA-2	680	38	478	27	136	7
Yadgir	KA-2	832	43	640	-	129	-
Bagalkote	KA-3	592	40	366	25	136	8
Belgaum	KA-3	732	50	465	34	148	9
Bellary	KA-3	631	41	386	26	151	8
Bijapur	KA-3	630	39	427	26	131	8
Dharwad	KA-3	785	58	478	39	159	10
Gadag	KA-3	631	42	365	26	150	8
Koppal	KA-3	586	36	385	24	126	7
Davangere	KA-3, 4	662	46	374	30	164	9
Chitradurga	KA-4	535	35	280	20	149	8
Mandya	KA-4	700	42	287	19	227	12
Tumkur	KA-4	693	40	354	22	204	11
Bangalore Rural	KA-5	837	49	429	27	235	13
Chikballapur	KA-5	749	-	412	-	217	-
Kolar	KA-5	738	43	387	23	227	13
Ramanagara	KA-5	858	-	426	-	238	-
Chamrajnagar	KA-6	769	47	304	21	238	13
Hassan	KA-7	1396	80	981	55	227	13
Mysore	KA-7	777	52	342	27	211	12
Shimoga	KA-7	2073	95	1787	77	162	11
Haveri	KA-8	747	58	448	40	162	9
Chikmagalur	KA-9	1802	110	1416	61	213	12
Kodagu	KA-9	2249	110	1716	77	260	16
Uttara Kannada	KA-9, 10	2222	106	1877	89	202	10
Dakshina Kannada	KA-10	3858	122	3304	94	323	17
Udupi	KA-10	1432	123	3846	98	332	15

*based on long-term rainfall data

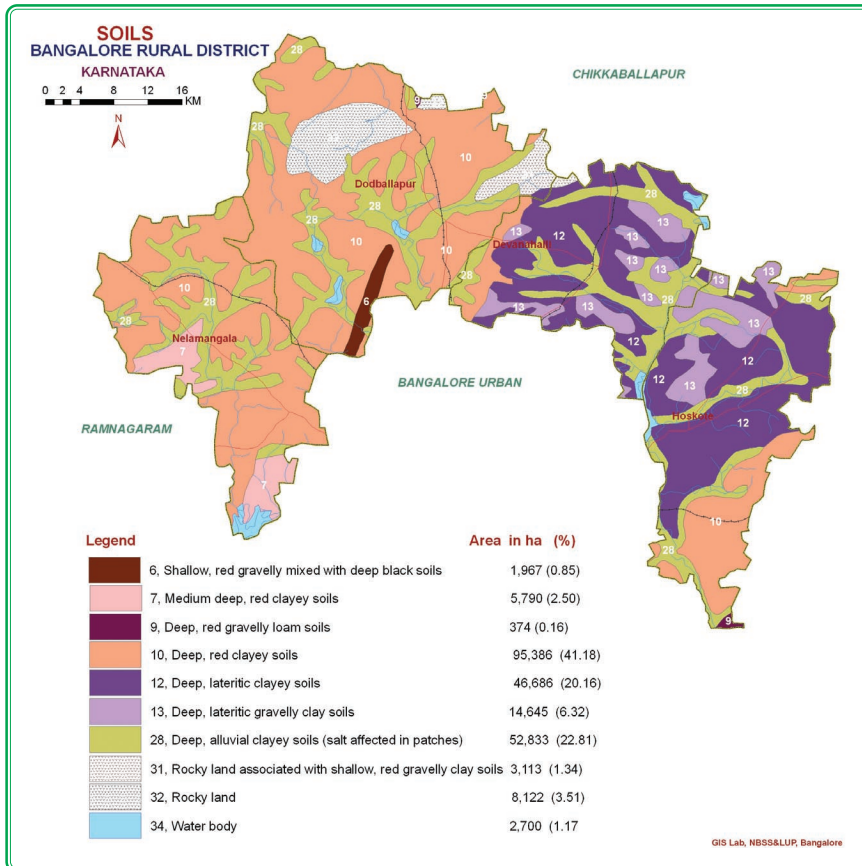
2.2.1 MAJOR CROPS IN SOUTH INTERIOR KARNATAKA

- South interior Karnataka encompasses 11 districts and the major crops cultivated during *kharif* season under rainfed conditions are: Finger millet, Sorghum, Maize, Pigeonpea, Greengram, Blackgram, Horsegram, Field bean, Cowpea, Groundnut and Sunflower. Castor, Sesame and Cotton are also cultivated in some districts.
- Major crops cultivated during *kharif* season under irrigated conditions are: Maize in Davangere, Chikkaballapur, Chamarajnagar, Tumkur districts; Rice in Mysore, Davangere, Mandya, Tumkur, Chamarajnagar, Ramanagara and Chitradurga; Sugarcane in Mandya, Mysore and Chamrajnagar districts.
- Major crops cultivated during *rabi* under rainfed conditions are: *rabi* Sorghum (Chitradurga and Tumkur); Chickpea (Chitradurga and Chamarajnagar).
- Major crops cultivated during *rabi* season under irrigated conditions are: Maize in Dharwad, Chamarajnagar, Tumkur, Mysore districts; Rice in Chitradurga, Tumkur, Chamarajnagar, Chikkaballapur.
- Major crops cultivated during summer season under irrigated conditions are: Sorghum in Davangere, Chitradurga; Rice in Davangere, Mandya, Mysore, Chitradurga; Maize in Davangere; Sunflower in Davangere, Chikkaballapur

<i>Kharif</i> rainfed crops	Districts
Finger millet	Tumkur, Mandya, Ramanagara, Mysore, Kolar, Chitradurga, Chikkaballapur, Bangalore rural, Chamarajnagar, Davangere
Sorghum	Chamarajnagar, Davangere, Mysore, Chitradurga, Tumkur
Maize	Davangere, Chitradurga, Chikkaballapur, Chamarajnagar, Mysore, Tumkur
Pigeonpea	Tumkur, Chitradurga, Davanagere, Chikkaballapur, Ramanagara, Mysore
Greengram	Tumkur, Mysore, Chitradurga
Blackgram	Mysore, Chitradurga
Horsegram	Mysore, Tumkur, Mandya, Chikkaballapura, Ramanagara, Chitradurga
Field bean	Mysore, Tumkur, Ramanagara, Kolar, Mandya, Chitradurga, Bangalore rural, Chamarajnagar
Cowpea	Mysore, Mandya, Tumkur
Groundnut	Chitradurga, Tumkur, Chikkaballapur, Chamarajnagar, Davangere, Kolar, Ramanagara, Mysore
Castor	Tumkur, Mysore, Ramanagara, Chitradurga, Mandya
Sesame	Mysore, Mandya, Chitradurga
Niger	Mysore, Bangalore rural, Mandya, Tumkur, Ramanagara
Sunflower	Chitradurga, Chamarajnagar
Cotton	Mysore, Davangere, Chitradurga

Bangalore Rural District

Bangalore Rural district falls under Eastern Dry agroclimatic zone (KA-5) in south interior Karnataka. The district receives a mean annual rainfall of 837 mm of which 415 mm is received during south west monsoon and 223 mm during north east monsoon. The soil type is predominantly shallow red soil (see map). The district has an area of 179000 ha under rainfed situation (74 % of net sown area). The major crops cultivated in the district are finger millet, maize and pigeonpea.



Normal sowing window for major field crops

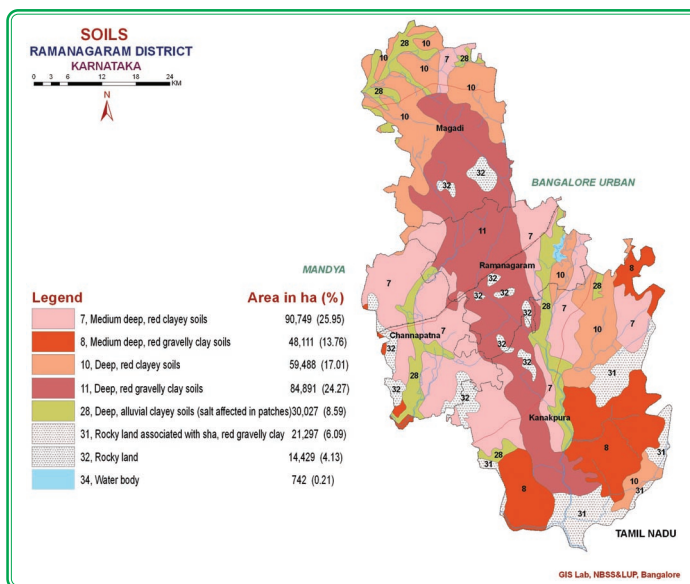
Season/ Situation	Finger millet	Maize	Pigeonpea
<i>Kharif</i> - Rainfed	2 nd week of June to 4 th week of August	4 th week of May to 4 th week of July	4 th week of May to 4 th week of July
<i>Kharif</i> -Irrigated	1 st week of July to 4 th week of August	4 th week of May to 1 st week of August	--
<i>Rabi</i> -Irrigated	2 nd week of December	3 rd week of November	--

Contingency crop plan

Farming situation	Normal crop	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)	Delay by 8 weeks (1 st week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Shallow red soils	Finger millet	Finger millet + Pigeonpea (8:2) Finger millet + Fieldbean (4:1) Finger millet + Niger (4:1) Finger millet : MR-1,6 L-5	Finger millet/ Maize/Maize + Pigeonpea (3:1) Finger millet : MR-1, 6, L-5, HR- 911	Finger millet / Little millet / Foxtail millet Finger millet: GPU-28 Little millet: CO-2, PRC-3 Foxtail millet: RS-118, K-221-1	Finger millet / Little millet / Foxtail millet Finger millet: GPU-28 Little millet: CO-2, PRC-3 Foxtail millet: RS-118, K-221-1
	Maize	Maize / Maize + Pigeonpea (3:1) Maize + Frenchbean (3:1) Maize : Deccan-103, NAC-6004, Ganga-11	Maize (NAC-6002, 6004)	Maize/ Blackgram/ Greengram/ Fieldbean Maize : DHM- 2, Ganga-11, Deccan-103 Fieldbean: HA-3, 4	Maize (DHM-2, Ganga-11, Deccan-103)
	Groundnut	Groundnut (JL-24, K-134) GPBD-4,K-134)	Groundnut (TMV-2, JL-24, GPBD-4,K-134)	Groundnut (JL-24, K-134)	-
	Pigeonpea	Pigeonpea (BRG-2)	Pigeonpea (BRG-2)	Pigeonpea (K-134, VRA-2)	-
	Cowpea	Cowpea (TVX-944-2E, KBC-1, 2)	Cowpea (TVX-944, IT-38956-1)	Niger (No.71)	Fieldbean (HA-3 ,4)

Ramanagara District

Ramanagara district falls under Eastern Dry agroclimatic zone (KA-5) in south interior Karnataka. The district receives a mean annual rainfall of 858 mm of which 426 mm is received during south west monsoon and 230 mm during north east monsoon. The major soil types in the district are red, red sandy and clay loam soils (see map). The district has an area of 156000 ha under rainfed situation (93% of net sown area). The major crops cultivated in the district are finger millet, groundnut, fieldbean, pigeonpea and cowpea.



Normal sowing window for major field crops

Season/ Situation	Finger millet	Groundnut	Fieldbean	Pigeonpea	Cowpea
<i>Kharif</i> - Rainfed	1 st week of July to 4 th week of August	1 st week of May to 4 th week of July	1 st week of August to 4 th week of September	1 st week of May to 4 th week of July	4 th week of May to 2 nd week of June
<i>Kharif</i> - Irrigated	1 st week of July to 4 th week of August	--	--	--	--
<i>Rabi</i> - Irrigated	--	1 st week of December to 4 th week of January	--	--	--

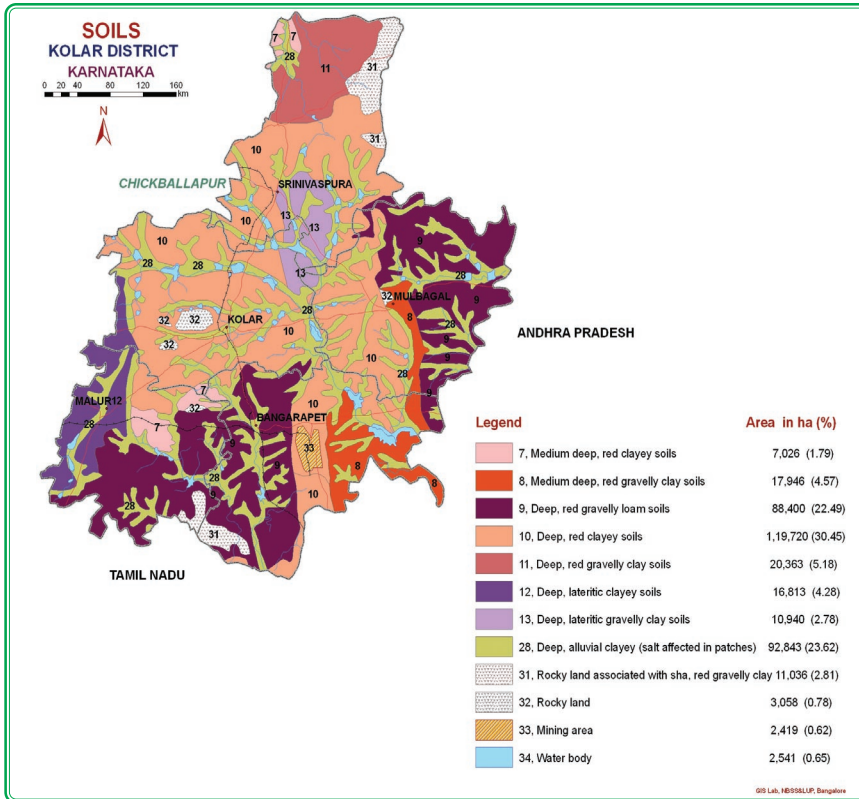
Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars			
		Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)
(1)	(2)	(3)	(4)	(5)	(6)
Deep red clay soils	Finger millet	Finger millet (GPU-28, HR- 911, Indaf-5, MR-1)	Finger millet (GPU-28, HR- 911, Indaf-5, MR-1)	Finger millet (GPU-28, HR- 911, Indaf-5, MR-1)	Finger millet (GPU-28, 26, 48, 66, PR-202)
	Pigeonpea	Pigeonpea (HYD-3C, TTB-7, ICP-7035, BRG-2)	Pigeonpea (HYD-, TTB-7, ICP-7035, BRG-2)	Pigeonpea (HYD-, TTB-7, ICP-7035, BRG-2)	Fieldbean (HA-3,4)
	Groundnut	Groundnut (TMV-2, JL-24, GPBD-4, K-134)	Groundnut (TMV-2, JL-24, GPBD-4, K-134)	Groundnut (TMV-2, JL-24, GPBD-4, K-134)	Fieldbean (HA-3,4)
	Sesame	Pigeonpea / Cowpea Pigeonpea: HYD-3C, TTB-7, ICP-7035, BRG-2 Cowpea : TVX-944, IT-38956-1, KBC-1, 2	Pigeonpea / Cowpea Pigeonpea: HYD-3C, TTB-7, ICP-7035, BRG-2 Cowpea : TVX-944, IT-38956-1, KBC-1, 2	Pigeonpea (HYD-3C, TTB-7, ICP-7035, BRG-2)	Fieldbean (HA-3,4)
Medium deep red soils	Pigeonpea	Pigeonpea (HYD-3C, TTB-7, ICP-7035, BRG-2)	Pigeonpea (HYD-3C , TTB-7, ICP- 7035, BRG-2)	Finger millet (GPU-28, HR- 911, Indaf-5, MR-1)	Finger millet (GPU-28, 26, 48, 66, PR-202)
	Groundnut	Groundnut (TMV-2, JL-24, GPBD-4,K-134)	Groundnut + Fieldbean / Fieldbean	Finger millet	Finger millet

(1)	(2)	(3)	(4)	(5)	(6)
			Groundnut : TMV-2, JL-24, GPBD-4, K-134 Fieldbean : Local, HA-3,4		
Deep red sandy soils	Sesame	Pigeonpea	Pigeonpea	Finger millet	Finger millet
	Groundnut / Groundnut + Pigeonpea / Fieldbean	Groundnut / Groundnut + Pigeonpea / Fieldbean Groundnut : TMV-2, JL-24, GPBD-4, K-134 Pigeonpea : HYD-3C, TTB-7, ICP-7035, BRG-2 Fieldbean: Local, HA-3, 4	Groundnut / Groundnut + Pigeonpea / Fieldbean Groundnut : TMV-2, JL-24, GPBD-4, K-134 Pigeonpea : HYD-3C, TTB-7, ICP-7035, BRG-2 Fieldbean: Local, HA-3, 4	Finger millet	Finger millet
	Finger millet	Finger millet	Finger millet	Finger millet	Finger millet
Shallow red soils	Sesame / Cowpea	Groundnut + Fieldbean Groundnut : TMV-2, JL-24, GPBD-4, K-134 Fieldbean : Local, HA-3, 4	Groundnut + Fieldbean Groundnut : TMV-2, JL-24, GPBD-4, K-134 Fieldbean : Local,HA-3,4	Horsegram (KBH-1, PHG -9)	Horsegram (KBH-1, PHG -9)

Kolar District

Kolar district falls under Eastern Dry agroclimatic zone (KA-5) in south interior Karnataka. The district receives a mean annual rainfall of 738 mm of which 387 mm is received during south west monsoon and 227 mm during north east monsoon. The major soil types in the district are red and sandy loam soils (see map). The district has an area of 215000 ha under rainfed situation (75 % of net sown area). The major crops cultivated in the district are finger millet, groundnut pigeonpea, cowpea and rice.



Normal sowing window for major field crops

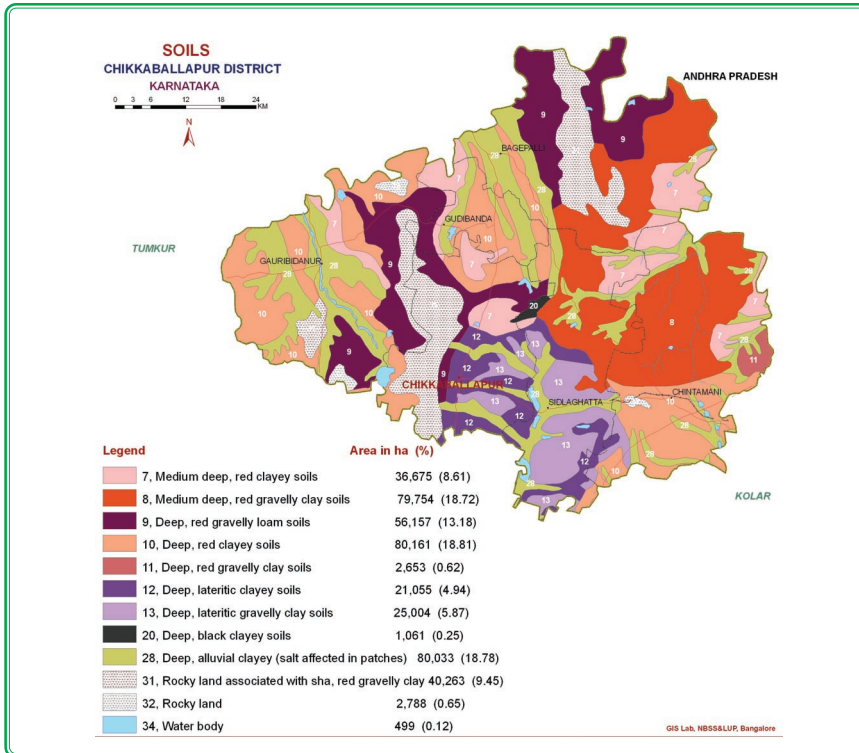
Season/Situation	Finger millet	Groundnut	Pigeonpea	Cowpea	Rice
<i>Kharif-Rainfed</i>	2 nd week of July to 2 nd week of August	2 nd week of June to 1 st week of July	4 th week of May to 2 nd week of July	4 th week of May to 2 nd week of June	3 rd week of June
<i>Kharif-Irrigated</i>	1 st week of June to 4 th week of August	2 nd week of June to 2 nd week of July	--	--	3 rd week of June

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)	Delay by 8 weeks (1 st week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Red soils/ Sandy loam soils	Finger millet + Field bean/ Fodder Sorghum/ Niger	Finger millet + Field bean Finger millet: L-5, MR-1, 6 Field bean: Hebbal-3	Finger millet (GPU -28, 26, HR-911, PR-202)	Finger millet	Finger millet (GPU -28, 26, HR-911, PR-202)
	Groundnut	Groundnut	Groundnut + Pigeonpea	Finger millet (GPU -28, 26, HR-911, PR-202)	Horsegram: KBH-1, PHG9
	Pigeonpea	Pigeonpea (HYD-3C, TTB-7, ICP-7035, BRG-2)	Pigeonpea (HYD-3C, TTB-7, ICP-7035, BRG-2)	Horsegram: KBH-1, PHG-9	Horsegram

Chikkaballapur District

Chikkaballapur district falls under Eastern Dry agroclimatic zone (KA-5) in south interior Karnataka. The district receives a mean annual rainfall of 749 mm of which 412 mm is received during south west monsoon and 217 mm during north east monsoon. The major soil types in the district are red soils and sandy loam soils (see map). The district has an area of 125000 ha under rainfed situation (73 % of net sown area). The major crops cultivated in the district are finger millet, maize, groundnut and pigeonpea.



Normal sowing window for major field crops

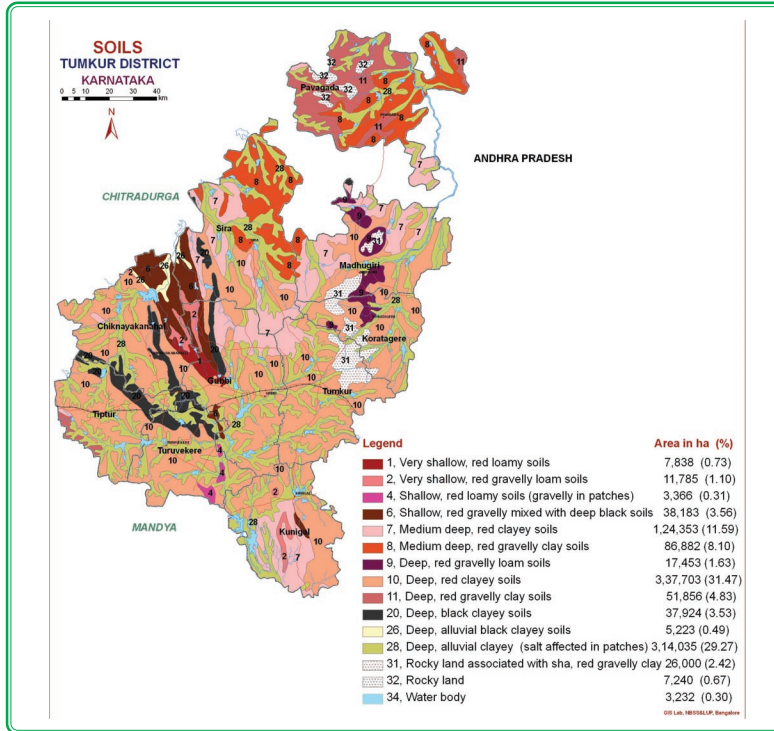
Season/ Situation	Finger millet	Maize	Groundnut	Pigeonpea
<i>Kharif</i> - Rainfed	2 nd week of June to 2 nd week of August	4 th week of May to 4 th week of July	2 nd week of June to 1 st week of July	4 th week of May to 2 nd week of July
<i>Kharif</i> - Irrigated	1 st week of June to 4 th week of August	2 nd week of May to 4 th week of August	2 nd week of June to 2 nd week of July	--
<i>Rabi</i> - Irrigated	2 nd week of December to 2 nd week of January	1 st week of October to 2 nd week of January	--	--

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)	Delay by 8 weeks (1 st week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Red soils/ Sandy loamy soils	Finger millet + Fieldbean/ Fodder Sorghum/ Niger/Mustard	Finger millet+ Field bean/ Fodder Sorghum/ Niger Finger millet: L-5, MR-1,6, GPU -28, 66, HR-911 Fieldbean: Hebbal-3 Fodder Sorghum: Pusachari, SET-3,SSV-74 Niger: No.71	Finger millet+ Field bean/ Fodder Sorghum/Niger Finger millet: L-5, MR-1,6, GPU -28, 66, HR-911 Field bean: Hebbal-3 Fodder Sorghum: Pusachari, SET-3,SSV-74 Niger: No.71	Finger millet (GPU-45, 46, PR- 202)	Finger millet (GPU-45, 46, PR- 202)
	Maize	Maize (Nithyashree, NAC- 6004)	Maize (Nithyashree, NAC- 6004)	Maize (Nithyashree, NAC- 6004)	Maize (Nithyashree, NAC- 6004)
	Groundnut	Groundnut (JL-24, TMV-2)	Groundnut + Pigeonpea Groundnut: JL-24, TMV-2 Pigeonpea: BRG-2	Finger millet (GPU-45, 46, PR-202)	Cowpea/ Horsegram Cowpea:C-152, TVX-944-02E, KVC-1,3 Horsegram : KBH-1,PHG-9
	Pigeonpea	Pigeonpea (BRG-2)	Pigeonpea (BRG-2)	Cowpea/ Niger/ Horsegram Cowpea:C-152, TVX-944-02E, KVC-1,3 Niger :No.71 Horsegram: KBH-1,PHG-9	Cowpea/ Niger/ Horsegram Niger :No.71

Tumkur District

Tumkur district falls under Central Dry agroclimatic zone (KA-4) in south interior Karnataka. The district receives a mean annual rainfall of 693 mm of which 354 mm is received during south west monsoon and 204 mm during north east monsoon. The dominant soil types in the district are red and sandy loam soils (see map). The district has an area of 464000 ha under rainfed situation (80% of net sown area). The major crops cultivated in the district are finger millet, groundnut, pigeonpea, maize and greengram.



Normal sowing window for major field crops

Season/Situation	Finger millet	Groundnut	Pigeonpea	Maize	Greengram
<i>Kharif</i> -Rainfed	1 st week of June to 2 nd week of July	1 st week of June to 4 th week of July	3 rd week of May to 1 st week of July	4 th week of May to 1 st week of August	4 th week of May to 3 rd week of June
<i>Kharif</i> -Irrigated	1 st week of June to 2 nd week of August	1 st week of June to 4 th week of July	--	4 th week of May to 1 st week of August	--
<i>Rabi</i> -Irrigated	--	2 nd week of December to 2 nd week of January	--	3 rd week of November	--

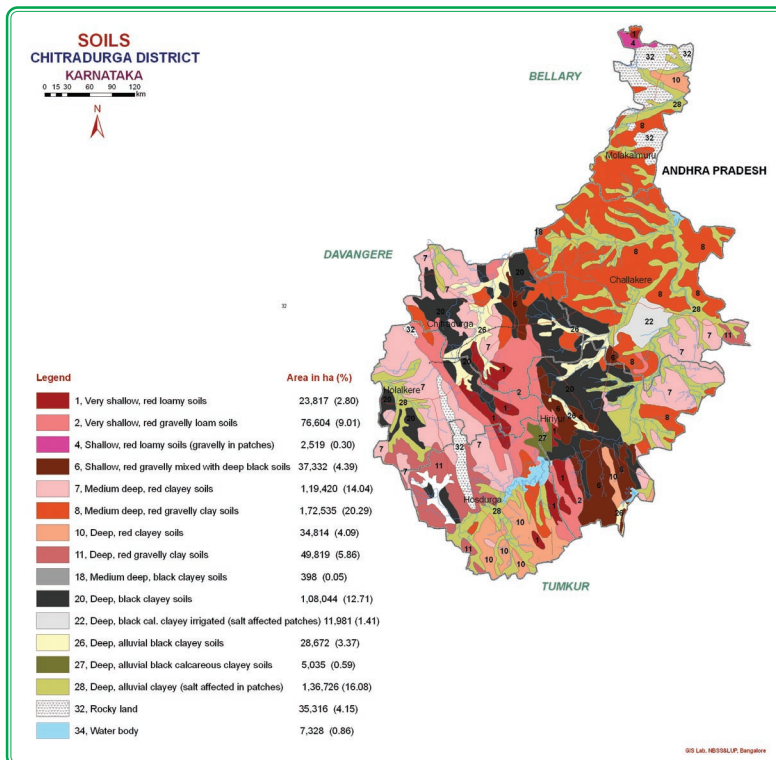
Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)	Delay by 8 weeks (1 st week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Red and Sandy loam soils	Finger millet + Pigeonpea/ Fieldbean	Finger millet + Pigeonpea / Fieldbean Finger millet: GPU-28, 66, MR-6 Pigeon pea: BRG-2, TTB-7 Field bean: HA-3	Finger millet + Pigeonpea / Fieldbean Finger millet: GPU-28, 66, MR-6 Pigeon pea: BRG-2, TTB-7 Field bean: HA-3	Finger millet (GPU-28, HR-911, L-5)	Finger millet (GPU-45 ,46, 48, Indaf-5, PR-202, GPU-26)
	Groundnut	Groundnut (GPBD-4, TMV-2)	Groundnut + Pigeonpea Groundnut : TMV-2, GPBD-4 Pigeonpea : BRG-2, TTB-7	Groundnut + Pigeonpea Groundnut : TMV-2, GPBD-4 Pigeonpea : BRG-2, TTB-7	Cowpea/ Horsegram/ Finger millet Cowpea: TVX-944 Horsegram : PHG-9 Finger millet : GPU-28, HR-911,PR-202
	Pigeonpea	Pigeonpea (BRG-2)	Pigeonpea (BRG-2)	Cowpea/ Soybean/ Horsegram/ Little millet/ Foxtail millet Cowpea:C-152 Horsegram: PHG-9 Little millet: CO-2 Foxtail millet : RS-118	Cowpea/ Soybean / Horsegram/ Minor millets Cowpea:C-152 Soybean : Hardy, KB-79 Horsegram: KBH-1, PHG-9

(1)	(2)	(3)	(4)	(5)	(6)
	Greengram / Castor/ Sesame	Greengram / Castor/ Sesame Greengram : PDM-84, 178 Castor: Aruna, GCH-4, 48, 1 Sesame: TMV-3	Finger millet/ Little millet/ Foxtail millet Little millet: Co-2, OLM-201 Foxtail millet: RS-118, K-221-1 Finger millet: HR-911, L-5, GPU-28	Finger millet / Little millet/ Foxtail millet Finger millet: Indaf-8, MR-2, L-5 Little millet: Co-2, OLM-201 Foxtail millet: RS-118, K-221-	Finger millet / Little millet/ Foxtail millet Finger millet: Indaf-8, MR-2, L-5 Little millet: Co-2, OLM-201 Foxtail millet: RS-118, K-221-

Chitradurga District

Chitradurga district falls under Central Dry agroclimatic zone (KA-4) in south interior Karnataka. The district receives a mean annual rainfall of 535 mm of which 280 mm is received during south west monsoon and 149 mm during north east monsoon. The major soil types in the district are red and black soils (see map). The district has an area of 341000 ha under rainfed situation (79% of net sown area). The major rainfed crops cultivated in the district are groundnut, maize, sunflower, finger millet and pigeonpea.



Normal sowing window for major field crops

Season/ Situation	Groundnut	Maize	Sunflower	Finger millet	Pigeonpea
<i>Kharif</i> - Rainfed	4 th week of May to 4 th week of July	1 st week of June to 3 rd week of July	1 st week of June to 4 th week of July	2 nd week of July to 1 st week of August	4 th week of May to 2 nd week of July
<i>Kharif</i> - Irrigated	--	1 st week of June to 2 nd week of July	2 nd week of June to 4 th week of July	2 nd week of June to 4 th week of July	--
<i>Rabi</i> - Rainfed	--	--	2 nd week of September to 2 nd week of October	--	--
<i>Rabi</i> - Irrigated	4 th week of December to 2 nd week of January	2 nd week of September to 2 nd week of October	2 nd week of September to 2 nd week of October	2 nd week of September to 2 nd week of October	--

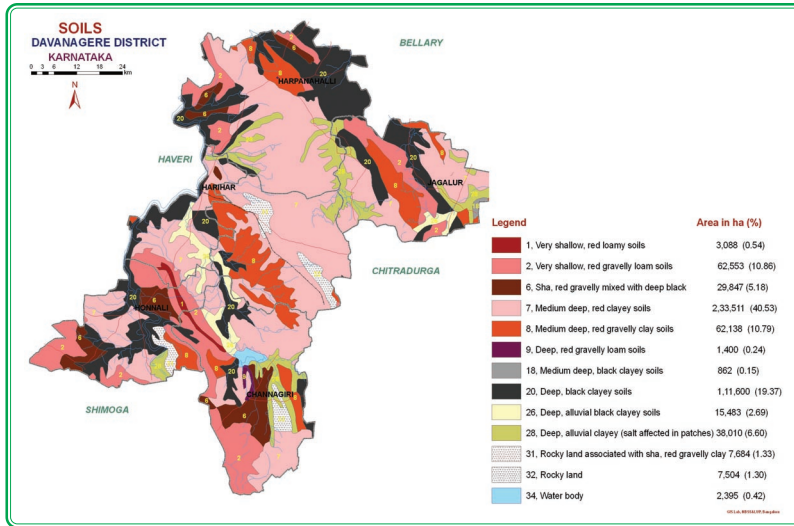
Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)	Delay by 8 weeks (1 st week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Red soils	Groundnut Groundnut + Pigeonpea / Castor	Groundnut / Groundnut + Pigeonpea / Castor Groundnut GPBD-4, TMV-2, Pigeonpea : BRG-1,2, TTB-7 Castor : DCS-9	Groundnut / Groundnut + Pigeonpea / Castor Groundnut GPBD-4, TMV-2, Pigeonpea : BRG-1,2, TTB-7 Castor : DCS-9	Groundnut / Groundnut + Castor Groundnut GPBD-4, TMV-2, Pigeonpea : BRG-1,2, TTB-7 Castor : DCS-9	Foxtail millet / Finger millet -

(1)	(2)	(3)	(4)	(5)	(6)
	Finger millet +Fieldbean/ Pigeonpea	Finger millet + Fieldbean / Pigeonpea	Finger millet + Fieldbean / Pigeonpea	Fingermillet + Fieldbean / Horsegram/Niger Horsegram: GPU-28, HR-911, Indaf-5 Niger : No-71	Horsegram / Cowpea / Fieldbean Horsegram: GPU-28, HR- 911,Indaf-5 Cowpea:C-152 Fieldbean : HA-3,4
	Pigeonpea	Pigeonpea (TTB-7, BRG-1, 2)	Pigeonpea (TTB-7, BRG-1, 2)	Finger millet + Fieldbean	Fieldbean Horsegram / Cowpea
Black soils	Sunflower	Sunflower (KBSH-1, 41, 42, 44 , 53)	Sunflower + Pigeonpea Sunflower: KBSH-1, 41, 42, 44 , 53 Pigeonpea: TTB-7,BRG-1,2	Sunflower + Pigeonpea Sunflower: KBSH-1, 41, 42, 44 , 53 Pigeonpea: TTB-7,BRG-1,2	
	Maize	Maize + Pigeonpea Maize : NAH- 2049, 1137, NAC-6004, 6002	Maize Maize : NAH- 2049, 1137, NAC-6004 , 6002 Pigeonpea: TTB-7,BRG-1,2	Maize Maize : NAH- 2049, 1137, NAC-6004 , 6002	
	Maize+Field bean/Castor	Maize + Fieldbean	Maize+Castor Castor: DCS-9, 48-1	Maize+Castor Castor: DCS-9, 48-1	-

Davangere District

Davanagere district falls under Northern Dry agroclimatic zone (KA-3) and Central Dry agroclimatic zone (KA-4) in south interior Karnataka. The district receives a mean annual rainfall of 662 mm of which 394 mm is received during south west monsoon and 164 mm during north east monsoon. The soil types in the district are mixed red and black soils and red sandy soils (see map). The district has an area of 241000 ha under rainfed situation (62% of net sown area). The major crops cultivated in the district are maize, sorghum, groundnut, finger millet, sunflower, rice and sugarcane.



Normal sowing window for major field crops

Season/Situation	Maize	Sorghum	Groundnut	Finger millet	Sunflower
<i>Kharif</i> -Rainfed	1 st week of June to 3 rd week of July	1 st week of June to 4 th week of June	1 st week of June to 2 nd week of July	1 st week of June to 1 st week of August	1 st week of June to 4 th week of July
<i>Kharif</i> -Irrigated	4 th week of May to 3 rd week of July	--	--	--	--
<i>Rabi</i> -Rainfed	--	3 rd week of September to 3 rd week of October	4 th week of December to 1 st week of January	--	2 nd week of September to 1 st week of October
<i>Rabi</i> -Irrigated	--	--	--	--	4 th week of December to 2 nd week of January

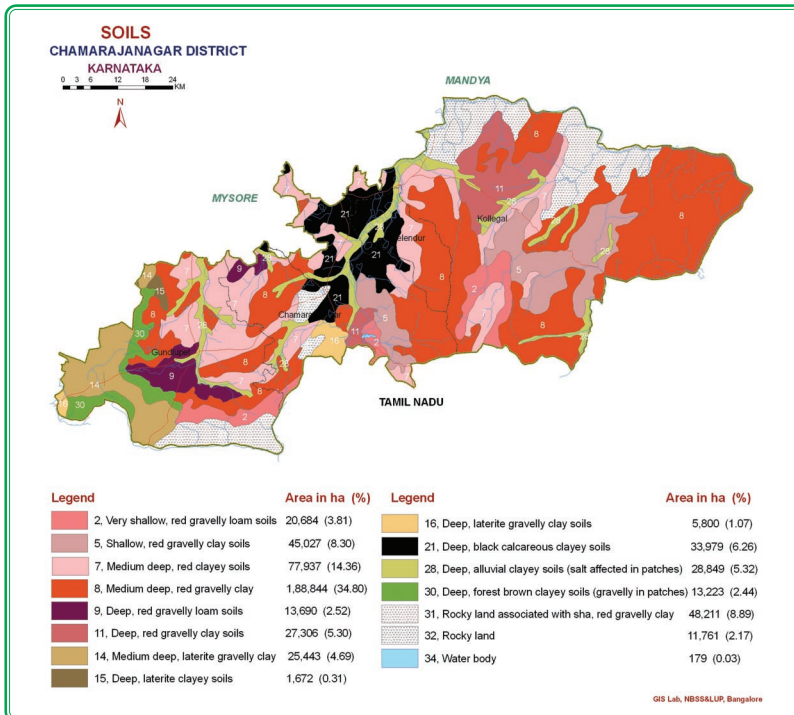
Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)	Delay by 8 weeks (1 st week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Red sandy soils	Maize	Maize (Deccan -103, Ganga-11, G-25, NAC-6002, NAH-2049)	Maize + Pigeonpea Pigeonpea : BRG-2	Fingermillet + Horsegram / Sunflower (Higher seed rate by 20%) Finger millet : GPU-28 Horsegram : PHG-9, KBH-1 Sunflower : KBSH-53	Fingermillet + Horsegram Horsegram : GPU-28, GPU-26, GPU-46
	Finger millet+ Fieldbean / Finger millet+ Pigeonpea (8:2)	Finger millet + Pigeonpea (8:2) Finger millet : GPU-28 Pigeonpea : BRG-1, 2	Finger millet + Avare (8:1) Finger millet : GPU-48, GPU-45	Little millet / Foxtail millet Little millet : CO-2, PRC-3 Foxtail millet: RS-118, K-221	Sunflower (KBSH-53)
	Pigeonpea / Sorghum + Pigeonpea- Horsegram	Sorghum + Pigeonpea Pigeonpea: TTB-7, HYD-3C, ICP-7035 Sorghum: CSH-16,18	Finger millet + Pigeonpea (8:1) Fingermillet : GPU-28 Pigeonpea : BRG-2	Finger millet + Niger (6:1)	Little millet / Foxtailmillet / Fodder maize Littlemillet : CO-2, PRC-3 Foxtailmillet: RS-118, K-221-1
Deep to medium deep black soils	Maize	Maize + Pigeonpea (8:1) Pigeonpea : BRG-1, 2	Maize + Pigeonpea Pigeonpea : BRG-2	Maize + Pigeonpea Pigeonpea : BRG-2	Horsegram / Fieldbean Horsegram : PHG-9 Fieldbean : HA-3, HA-4

(1)	(2)	(3)	(4)	(5)	(6)
	Cotton	Cotton + Bhendi/Cotton + Groundnut (1:3) Cotton : CPD-1, NAH-44, DHH-11	Sunflower / Maize / Pigeonpea	Sunflower / Castor Sunflower : KBSH-44, 53 Castor : DCS-9	Sunflower / Horsegram / Fieldbean Sunflower : KBSH-44, 53 Horsegram : PHG-9 Fieldbean : HA-3, HA-4

Chamrajnagar District

Chamrajnagar district falls under Southern Dry agroclimatic zone (KA-6) in south interior Karnataka. The district receives a mean annual rainfall of 769 mm of which 304 mm is received during south west monsoon and 238 mm during north east monsoon. The major soil types in the district are red sandy loam and medium black soils (see map). The district has an area of 124000 ha under rainfed situation (65 % of net sown area). The major crops cultivated in the district are finger millet, maize, sorghum, groundnut and pulses (horsegram and blackgram). Sorghum, Finger millet, cowpea, pigeonpea, greengram and green manure crops are sown with pre-monsoon showers. Alternate crops are given for continguous situation such as delay or insufficient rains due to pre-monsoon showers and delay in monsoon onset for this district.



Normal sowing window for major field crops

Season/ Situation	Finger millet	Maize	Sorghum	Groundnut	Pulses
Pre- monsoon <i>Kharif</i> - Rainfed	1 st week of May to 2 nd week of May	2 nd week of May to 1 st week of August	1 st week of April to 2 nd week of June	4 th week of July to 1 st week of August	1 st week of May to 2 nd week of June
<i>Kharif</i> - Irrigated	1 st week of August to 1 st week of September	1 st week of August to 2 nd week of September	--	--	--
<i>Rabi</i> - Rainfed	1 st week of September to 1 st week of October	1 st week of September to 1 st week of October	--	--	1 st week of September to 1 st week of October
<i>Rabi</i> - Irrigated	1 st week of January to 1 st week of February	1 st week of January to 2 nd week of February	--	1 st week of January to 1 st week of February	1 st week of January to 1 st week of February

Contingency crop plan

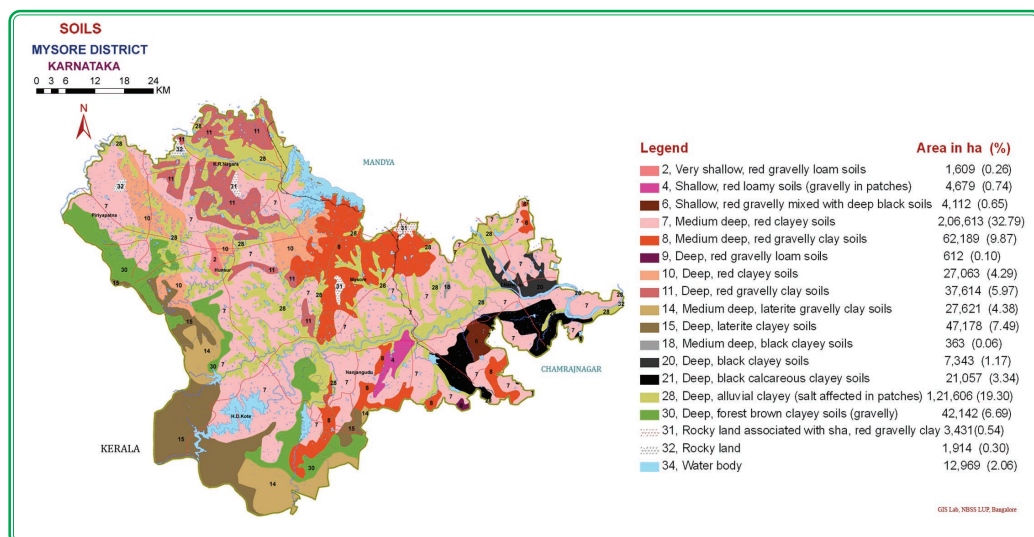
Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (2 nd week of June)	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)	Delay by 8 weeks (2 nd week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Red sandy loam soils	Finger millet	Finger millet	Finger millet (KMR-301, GPU-28, HR-911, Indaf-5)	Finger millet (KMR-301, GPU-28, HR-911, Indaf-5)	Finger millet (KMR-301, GPU-28, HR-911, Indaf-5)
	Maize	Maize	Maize (NAH -2049, NAH-1137, NAC-6002, 6004)	Maize (NAC-6002, 6004, NAH- 2049)	--

(1)	(2)	(3)	(4)	(5)	(6)
	Sorghum	Groundnut/ Pigeonpea/ Finger millet/ Cowpea/Maize	Groundnut/ Pigeon pea/ Finger millet/ Cowpea/Maize/ Sunflower Groundnut: JL-24, K-134 Pigeonpea: BRG-2, Hyd-3C, ICP-7035, TTB-7 Finger millet : KMR-301, GPU-28, HR-911, Indaf-5 Cowpea : TVX -944 Maize : NAC-6002, 6004, NAH- 2049 Sunflower : BSH-1, Morden	Sunflower/ Maize/ Finger millet/ Cowpea Sunflower : BSH-1,Morden Maize : NAC-6004, 6002, NAH-2049 Finger millet : KMR-301, GPU-28, HR-911, Indaf-5 Cowpea : TVX -944	--
	Groundnut	Groundnut	Groundnut (JL-24, K-134)	Sunflower/ Finger millet/ Cowpea/ Horsegram Sunflower : BSH-1,Morden Finger millet : KMR-301, GPU-28, HR-911, Indaf-5 Cowpea : TVX -944 Horsegram: PHG-9, KBH-1	--

(1)	(2)	(3)	(4)	(5)	(6)
	Pigeonpea	Maize/ Finger millet/ Cowpea	Cowpea/ Horsegram	Cowpea/ Horsegram	--
Medium black soils	Greengram- Maize/Rice	Maize/ Finger millet	Rice/Maize	Rice	--

Mysore District

Mysore district falls under Southern Transition agroclimatic zone (KA-7) in south interior Karnataka. The district receives a mean annual rainfall of 777 mm of which 342 mm is received during south west monsoon and 211 mm during north east monsoon. The major soil types in the district are red and black soils (see map). The district has an area of 182000 ha (53% of net sown area) under rainfed situation. The major crops cultivated in the district are finger millet, cotton, maize, pulses and rice.



Normal sowing window for major field crops

Season/ Situation	Finger millet	Cotton	Maize	Pulses	Rice
Premonsoon <i>Kharif</i> - Rainfed	3 rd week of May to 4 th week of July	1 st week of June to 1 st week of July	4 th week of May to 3 rd week of July	2 nd week of April to 2 nd week of June	--
<i>Kharif</i> - Irrigated	3 rd week of July to 4 th week of July	--	--	--	3 rd week of July to 2 nd week of August

Contingency crop plan

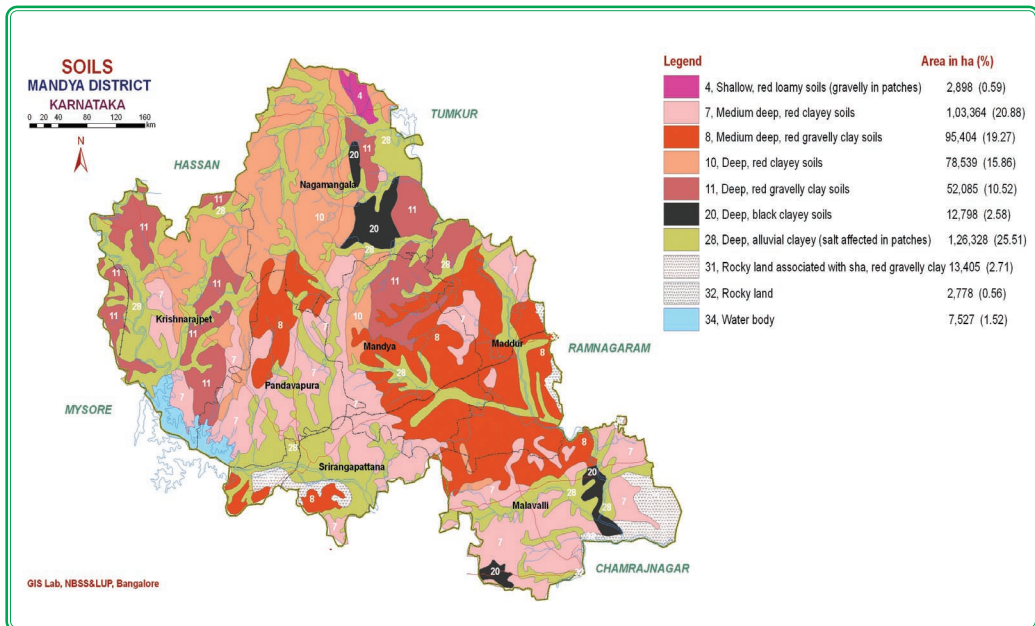
Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)	Delay by 8 weeks (1 st week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Red & Shallow soils (H D Kote, Periyaptna & Hunsur taluks) Transition zone	Finger millet – Horsegram / Pigeonpea - Horsegram	Finger millet – Horsegram/ Pigeonpea – Horsegram Finger millet : Indaf-8,9, MR-1 Pigeonpea: BRG-2, ICP-7035, HYD-3C Horsegram : PHG-9, KBH-1	Finger millet - Horsegram / Pigeonpea – Horsegram Finger millet: Indaf- 5 Pigeonpea: BRG-2, ICP-7035, HYD-3C Horsegram : PHG-9, KBH-1	Maize+ Pigeonpea Maize : NAC-6004, 6002 , NAH-2049 Pigeonpea : BRG-2	Finger millet / Maize Finger millet : Indaf- 8, L-5, MR-2, GPU-28, 45 Maize: NAC-6004, 6002, NAH-2049
	Maize - Horsegram	Maize - Horsegram Maize : NAC-6004, 6002, NAH-2049 Horsegram : PHG-9, KBH-1	Maize + Pigeonpea / Cowpea/ Field bean Fieldbean: HA3, 4 Maize: DHM-2, Ganga-11 Pigeonpea: ICPC-87, GS-1 Cowpea: C-152	Finger millet+ Field bean Finger millet: Indaf -8, MR-2, 6 Fieldbean : BRG-2	Finger millet (Indaf- 8, L-5, MR-2, GPU-28, 45)
	Cotton	Cotton	Cotton	Maize+ Pigeonpea Maize : NAC-6004, 6002 , NAH-2049 Pigeonpea : BRG-2	Finger millet (Indaf- 8, L-5, MR-2 GPU-28,45) Horsegram PSC-6, KBH-1

(1)	(2)	(3)	(4)	(5)	(6)
Black Soils (Dry Zone-Z6)	Castor/ Castor + Finger millet	Castor - Chickpea/ Finger millet Castor: DCS-9, Aruna , Kranti Chickpea: Annegiri, Vishal, JG-11, ICCV-2, 10 Finger millet : Indaf- 8, MR-2, L-5	Castor - Chickpea Castor : DCS- 9, Aruna , Kranti Chick pea: Annegiri, JG-11	--	Fallow- Chickpea
	Finger millet - Chickpea	Finger millet – Chickpea Finger millet : Indaf-8, MR-2 , L-5 Chickpea: Annegiri, Vishal, JG-11, ICCV-2, 10	Finger millet – Chickpea Finger millet : Indaf 8, MR-2 , L-5 Chickpea: Annegiri, JG-11, ICCV-2,10	--	Fallow- Chickpea
	Greengram – Chickpea	Blackgram - Chickpea Blackgram : T-9, Rashmi Chickpea : JG-11	Fallow - Chickpea Chickpea: ICCV-2	Castor	Fallow- Chickpea
	Sorghum- Chickpea	Sorghum- Chickpea Sorghum : CSH-9, CSV-15,4, DSV-2 Chickpea:JG-11	Foxtail millet - Chickpea Foxtail millet: RS-118, PSC-1 Chick pea: Annegiri, JG-11, ICCV-2,10	Finger millet	Fallow- Chickpea
Red soils (Dry Zone, Z-6)	Finger millet – Horsegram	Finger millet (Indaf-8, MR-2, 6)	Finger millet (Indaf-8, MR-2, 6)	Finger millet / Cowpea Finger millet: Indaf-8, MR-2, 6	Finger millet / Horsegram Finger millet: Indaf-8, MR-2,GPU-28,45

(1)	(2)	(3)	(4)	(5)	(6)
				Cow pea: BC-1,KBC-2	Horsegram: PSC-9, KBH-1
	Sorghum + Pigeonpea - Horsegram	Sorghum + Pigeonpea / Sorghum: CSH-16, 16, 18 Pigeonpea: ICP-8863, TS-3R	Finger millet+ Pigeonpea Finger millet: Indaf-8, MR-2, L-5 Pigeonpea : BRG-2	Finger millet / Finger millet: GPU-28, 48	Horsegram (PSC-9, KBH-1)

Mandya District

Mandya district falls under Central Dry agroclimatic zone (KA-4) in south interior Karnataka. The district receives a mean annual rainfall of 700 mm of which 287 mm is received during south west monsoon and 227 mm during north east monsoon. The soil types in the district are red gravely sandy soils and red sandy loam soils (see map). The district has an area of 98000 ha under rainfed situation (44% of net sown area). The major crops cultivated in the district are finger millet, maize, horsegram, rice and sugarcane.



Normal sowing window for major field crops

Season/ Situation	Finger millet	Maize	Horsegram	Rice	Sugarcane
<i>Kharif</i> - Rainfed	2 nd week of June to 1 st week of August	1 st week of June to 4 th week of July	1 st week of June to 3 rd week of July	--	--
<i>Kharif</i> - Irrigated	2 nd week of July to 2 nd week of August	July 2 nd week to 4 th week of August	3 rd week of September to 1 st week of October	2 nd week of July to 2 nd week of August	1 st week of June to 4 th week of August
<i>Rabi</i> - Irrigated	3 rd week of October to 2 nd week of November	3 rd week of September to 1 st week of October	--	--	3 rd week of October to 2 nd week of November

Contingency crop plan

Farming situation	Normal crop	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (2 nd week of June)	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)	Delay by 8 weeks (2 nd week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Red gravelly & sandy soils	Finger millet	Finger millet + Pigeonpea (8:2) /Soybean (4:2) Finger millet : MR-1, 6, GPU-28, L-5, HR-911, Indaf-8, KMR-301 Pigeonpea: BRG-2 Soybean: Hardy- KE-79	Finger millet + Pigeonpea (8:2) Finger millet : MR-1, 6, GPU-28, L-5, HR-911, Indaf-8, KMR-301 Pigeonpea: BRG-2	Finger millet (MR-1,GPU-28, L-5, HR-911, Indaf-8, KMR-301)	Finger millet (PR-202, GPU-26, Indaf-5 ,9)

(1)	(2)	(3)	(4)	(5)	(6)
Red sandy & loamy soils	Maize	Maize (NAC-6004, Hema, NAH-2049)	Maize (NAC-6004, Hema, NAH-2049)	Maize + Cowpea/ Soybean/ Field bean (2:2) Maize: NAC-6004, Hema, NAH-2049 Cowpea: TVX-944-02E Soybean: Hardy-KB-79 Fieldbean : Hebbel-3	Cowpea/ Fieldbean/ Kodo millet/ Foxtail millet/ Barnyard millet Maize: NAC-6002 Fieldbean: HA- 3, 4, Arka vijay Foxtail millet (Navane): RS- 118, K-221 Kodo millet: PSC-1, GSK-364 Barnyard millet CO-2, PRC-3

2.2.2. MAJOR CROPS IN NORTH INTERIOR KARNATAKA

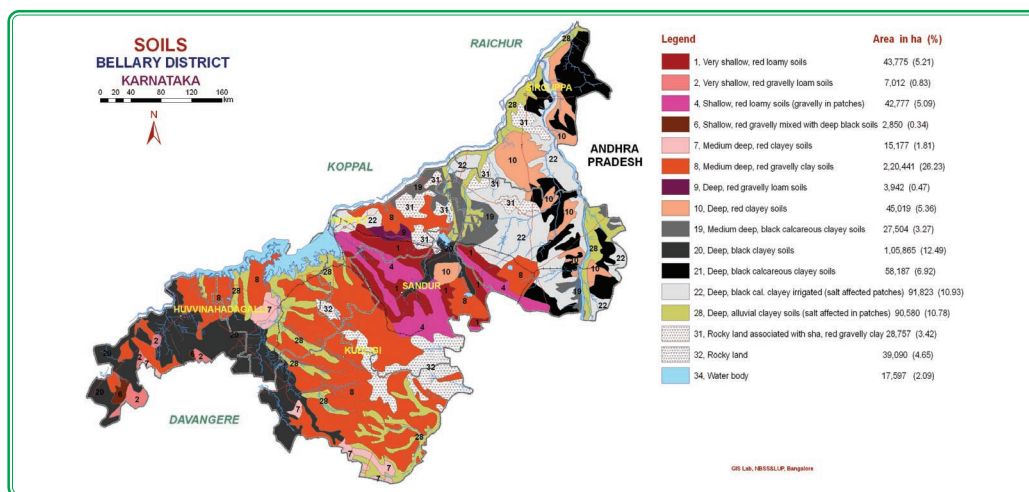
- North interior Karnataka encompasses 12 districts and the major crops cultivated during *kharif* season under rainfed conditions are: Pearl millet, Sorghum, Maize, Pigeonpea, Greengram, Blackgram, Horsegram, Groundnut, Sesame, Sunflower, Niger, Soybean and Cotton.
- Rice is cultivated predominantly in Belgaum, Dharwad and Haveri and to some extent in Bidar district under un-irrigated conditions during *Kharif* season .
- Major crops cultivated during *kharif* season under irrigated conditions are:
 - Maize in Belgaum, Bagalkote, Bijapur, Gadag, Bidar, Koppal, Haveri
 - Rice in Raichur, Bellary, Gulbarga, Koppal, Haveri
 - Sugarcane in Belgaum, Bagalkote, Bijapura, Bidar and Gulbarga
 - Groundnut in Bijapur, Belgaum, Bellary, Koppal, Raichur
 - Sunflower in Raichur, Bijapur, Koppal, Bellary, Belgaum, Gulbarga and Gadag
 - Cotton in Dharwad, Gadag, Belgaum, Bellary, Koppal, Raichur and Gulbarga
- Major crops cultivated during *rabi* under rainfed conditions are: Sorghum, Chickpea, Wheat, Greengram and Sunflower
- Major crops cultivated during *rabi* season under irrigated conditions are:
 - Maize in Belgaum, Bagalkote, Bijapur, Gadag, Koppal, Haveri and Bellary

- Rice in Gulbarga, Bellary, Sorghum in Bijapur, Gulbarga, Bagalokote, Raichur, Belgaum and Bellary
- Pearl millet in Bellary
- Wheat in Bijapur, Belgaum, Bagalkote, Gadag, Gulbarga and Dharwad
- Sunflower in Bagalkote, Belgaum, Bijapur, Gulbarga and Gadag
- Major crops cultivated during Summer season under irrigated conditions are:
 - Rice in Raichur, Bellary, Gulbarga, Koppal and Haveri
 - Sorghum in Koppal, Raichur and Bellary
 - Maize in Bijapur, Belgaum, Koppal, Haveri and Bellary
 - Sunflower in Bijapur, Bellary, Bagalkote, Koppal, Belgaum,

Kharif rainfed crops	Districts
Pearl millet	Koppal, Bijapur, Raichur, Bagalkote, Gulbarga, Belgaum, Bidar, Gadag
Sorghum	Bidar, Belgaum, Bellary, Haveri, Koppal, Gadag, Dharwad, Gulbarga,
Maize	Haveri, Bellary, Dharwad, Belgaum, Koppal, Gadag, Bagalkote
Pigeonpea	Gulbarga, Bijapura, Bidar, Bellary, Koppal, Raichur, Bagalkote, Belgaum
Greengram	Gulbarga, Gadag, Bidar, Bagalkote, Dharwad, Belgaum, Bijapura, , Koppal, Haveri, Raichur
Blackgram	Bidar, Gulbarga, Belgaum
Horsegram	Bijapura, Koppal, Bellary, Belgaum
Groundnut	Gadag, Bellary, Dharwad, Bijapura, Koppal, Haveri, Gulbarga, Raichur, Bagalkote
Sesame	Gulbarga, Koppal, Bidar, Raichur
Soybean	Belgaum, Dharwad, Bidar, Haveri, Bagalkote
Niger	Bidar
Sunflower	Gulbarga, Raichur, Bijapura, Koppal, Bagalkote, Belgaum
Cotton	Dharwad, Gadag, Belgaum, Bellary, Koppal, Raichur, Gulbarga
Rabi rainfed crops	
Sorghum	Gulbarga, Bijapur, Belgaum, Raichur, Bagalkote, Gadag, Koppal, Dharwad , Haveri, Bidar, Bellary
Maize	Belgaum
Chickpea	Gulbarga, Bijapur, Raichur, Belgaum, Gadag, Dharwad, Koppal, Bidar, Bellary
Wheat	Bijapur, Dharwad, Gadag, Belgaum, Gulbarga, Koppal
Greengram	Dharwad, Haveri, Belgaum
Sunflower	Bijapur, Raichur, Koppal, Gadag, Gulbarga, Bellary, Bagalkote
Safflower	Gulbarga, Bidar, Bijapur, Dharwad, Belgaum, Koppal, Gadag, Raichur

Bellary District

Bellary district falls under Northern Dry agroclimatic zone (KA-3) in north interior Karnataka. The district receives a mean annual rainfall of 631 mm of which 365 mm is received during south west monsoon and 150 mm during north east monsoon. The major soil types in the district are shallow to medium deep black and red sandy soils and deep black soils (see map). The district has an area of 493000 ha under rainfed situation (67% of net sown area). The major irrigated crops cultivated in the district are maize, groundnut, sorghum, sunflower, pearl millet, cotton and rice.



Normal sowing window for major field crops

Season/ Situation	Maize	Groundnut	Sorghum	Sunflower	Pearl millet
<i>Kharif</i> - Rainfed	2 nd week of June to 4 th week of June	2 nd week of June to 4 th week of June	2 nd week of June to 4 th week of June	2 nd week of June to 4 th week of June	4 th week of June to 4 th week of July
<i>Kharif</i> - Irrigated	1 st week of May to 4 th week of June	1 st week of June to 4 th week of July	1 st week of May to 4 th week of June	1 st week of August to 4 th week of August	4 th week of June to 2 nd week of August
<i>Rabi</i> - Rainfed	--	--	1 st week of October to 4 th week of November	1 st week of September to 4 th week of October	--
<i>Rabi</i> - Irrigated	1 st week of September- end of October; 1 st week of January to end of February	1 st week of December to 4 th week of January	1 st week of October to 4 th week of November	1 st week of September to end of October; 1 st week of December-end of January	--

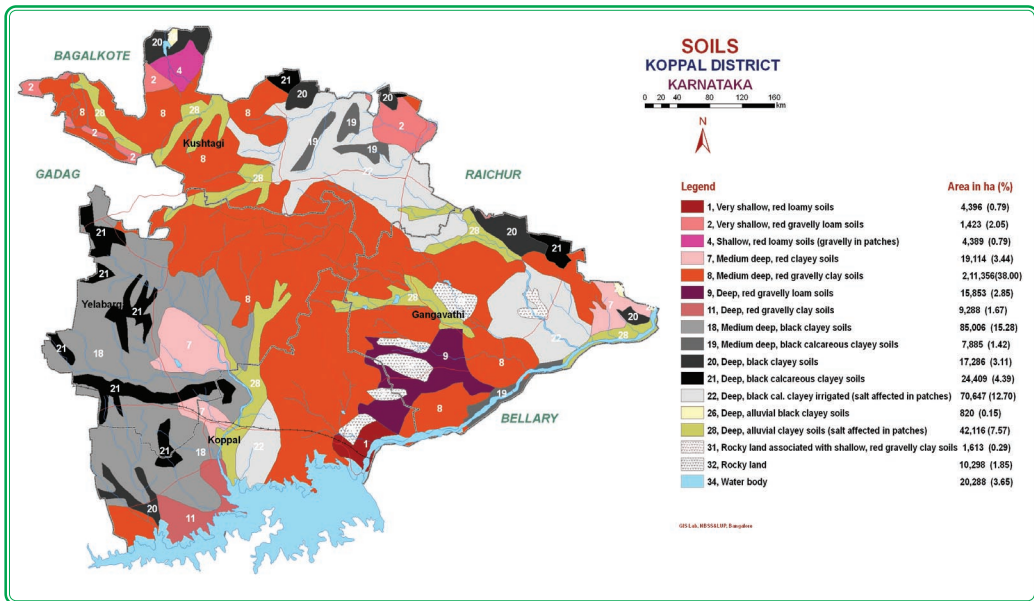
Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (2 nd week of June)	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)	Delay by 8 weeks (2 nd week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Shallow black soils and red sandy soils (<i>kharif</i>)	Maize	Maize (Deccan-103)	Pearl millet/ Pigeonpea/ Groundnut/ Sunflower Pearlmillet : ICTP-8203, ICMV-221, TS-3 Pigeonpea : GS-1, BJ-221, GC-11-39 Groundnut : DSG-1, S-230	Pearl millet / Pigeonpea / Groundnut / Sunflower Pearlmillet : ICTP-8203, ICMV-221, TS-3 Groundnut : DSG-1, S230	Sunflower (Morden, KBSH-1,41)
	Pearl millet	Pearl millet (ICTP-8203, ICMV-221, MH-946)	Pearl millet	Pearl millet	Sunflower (Morden, KBSH-1,41) Foxtailmillet (RS-118)
	Sorghum	Sorghum (CSH-14, 16, 18, DSV-1, 6, SSV-74)	Pearl millet / Pigeonpea / Groundnut / Sunflower	Pearl millet / Pigeonpea/ Groundnut/ Sunflower	Sunflower / Horsegram (GPM-6)
	Groundnut / Pigeonpea	Groundnut/ Pigeonpea Groundnut : TMV-2, S-206, JL-24, R-8808, R-2001-3 Pigeonpea : ICP-8863, TS-3R, WRP-1	Groundnut / Pigeonpea Groundnut: TMV-2, S-206, JL-24, R-8808, R-2001-3 Pigeonpea : ICP-8863, TS-3R, WRP-1	Groundnut- Bunch varieties	Hosegram / Foxtailmillet/ Sunflower

(1)	(2)	(3)	(4)	(5)	(6)
	Foxtail millet + Pigeonpea (4:2)	Foxtail millet + Pigeonpea (4:2) Foxtailmillet : HMT-100-1	Sunflower (KBSH-1,41, 44, MSFH-17, RSFH-1,SH-41)	Sunflower	Sunflower
	Sorghum + Groundnut (2:4)	Sorghum + Groundnut (2:4)	Pearl millet + Pigeonpea (2:1)	Pearl millet + Pigeonpea (2:1)	Horsegram / Foxtail millet / Sunflower
	Pearl millet + Pigeonpea (2:1)	Pearl millet + Pigeonpea (2:1)	Foxtail millet + Pigeonpea (4:2)	Foxtail millet + Pigeonpea (4:2)	Horsegram / Foxtail millet / Sunflower

Koppal District

Koppal district falls under Northern Dry agroclimatic zone (KA-3) in north interior Karnataka. The district receives a mean annual rainfall of 586 mm of which 385 mm is received during south west monsoon and 126 mm during north east monsoon. The major soil types in the district are shallow to medium deep black and red sandy soils (see map). The district has an area of 272000 ha under rainfed situation (78% of net sown area). The major rainfed crops cultivated in the district are pearl millet, sunflower, groundnut, sorghum, maize and rice.



Normal sowing window for major field crops

Season/ Situation	Pearlmillet	Sunflower	Groundnut	Sorghum	Maize
<i>Kharif</i> - Rainfed	1 st week of June to 4 th week of July	1 st week of June to 4 th week of August	1 st week of June to 4 th week of July	1 st week of May to 4 th week of June	2 nd week of June to 2 nd week of July
<i>Kharif</i> - Irrigated	--	--	1 st week of June to 4 th week of July	--	--
<i>Rabi</i> - Rainfed	--	--	--	3 rd week of September to 3 rd week of October	--
<i>Rabi</i> - Irrigated	--	1 st week of October to 4 th week of October	--	--	--

Contingency crop plan

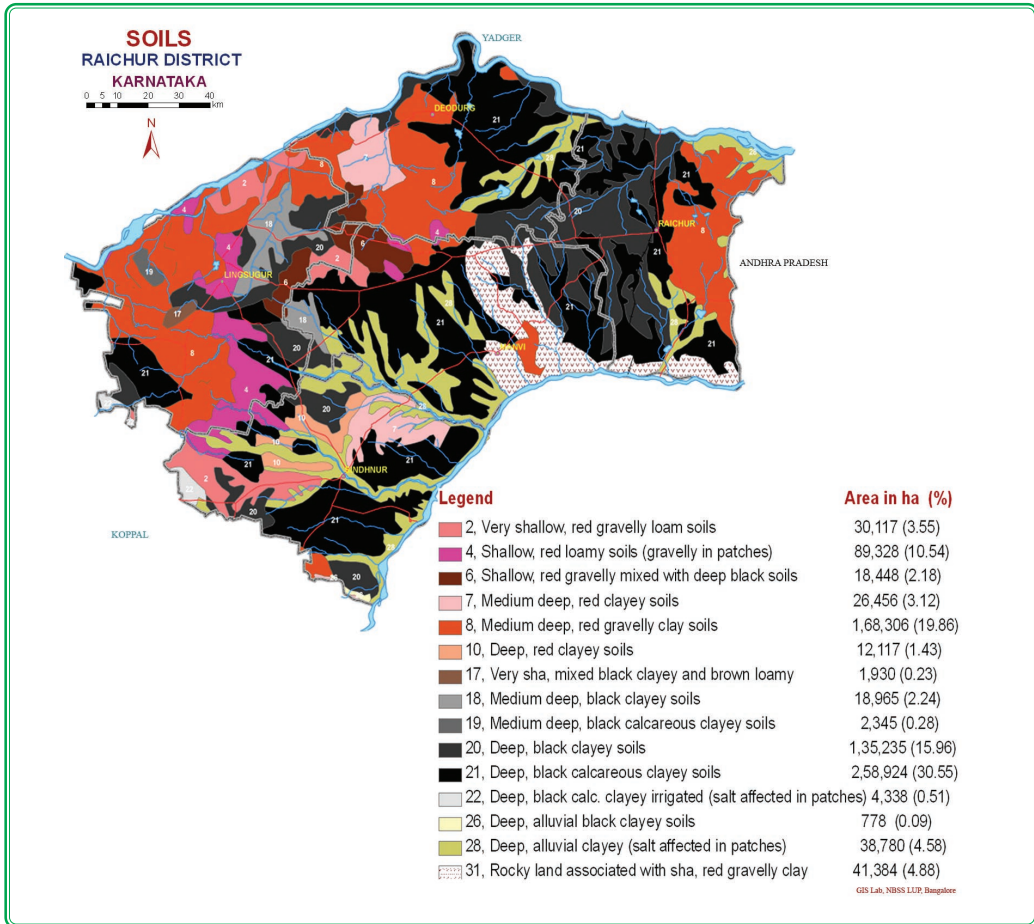
Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (2 nd week of June)	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)	Delay by 8 weeks (2 nd week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Rainfed <i>Kharif</i> Shallow black/Red sandy soils	Pearl millet	Pearl millet (ICTP-8203, ICMV-221, Maruthi, Asha, TS-3)	Pearl millet (ICTP-8203, ICMV-221, Maruthi, Asha, TS-3)	Pearl millet	Horsegram / Foxtail millet / Sunflower Horsegram : GPM-6 Foxtail millet : RS-118 Sunflower : Morden, KBSH-1, KBSH-41

(1)	(2)	(3)	(4)	(5)	(6)
	Sorghum	Sorghum (CSV-1, 6, 15, DSA-3, SSV-74, CSH-14, 16,18)	Pigeonpea (GS-1, BJ-221, Maruthi, Asha, TS-3, ICPC-87)	Pigeonpea (Pragathi)	Horsegram / Foxtail millet / Sunflower
	Groundnut	Groundnut (TMV-2, R-8808, S-206, 230, GPBD-4)	Groundnut (TMV-2, R-8808, S-206, 230, GPBD-4)	Groundnut - Spreading (S-230, DSG-1)	Horsegram / Foxtail millet / Sunflower Horsegram : GPM-6 Foxtail millet : RS-118 Sunflower : Morden, KBSH-1, 41
	Sunflower	Sunflower (Morden, KBSH-1,41,44, MSFH-17, RSFH-1, SH-41)	Sunflower (Morden, KBSH-1, 41,44, MSFH-17, RSFH-1, SH-41)	Sunflower (Morden, KBSH-1, DSH-1)	Sunflower (Morden, KBSH-1, DSH-1)
	Maize	Maize (Deccan-103, Ganga- 11, DHM-2, G-25)	Maize (Deccan-103, Ganga-11, DHM-2, G-25, KH-5991, 9541, Madhuri, Priya)	Foxtail millet (RS-118)	Horsegram / Foxtail millet / Sunflower
	Pigeonpea	Pigeonpea (GS-1, BJ-221, Maruthi, Asha, TS-3, ICPC-87)	Pigeonpea (GS-1, BJ-221, Maruthi, Asha, TS-3, ICPC-87)	Pigeonpea (Pragathi)	Sunflower
	Sesame	Sesame (E-8, DS-9, T-7)	Sunflower (Morden, KBSH-1, DSH-1)	Sunflower (Morden, KBSH-1, DSH-1)	Sunflower (Morden, KBSH-1, DSH-1)
	Pearl millet + Pigeonpea (2:1)	Pearl millet + Pigeonpea (2:1)	Pearl millet + Pigeonpea (2:1)	Pearl millet + Pigeonpea (2:1)	Sunflower (Morden, KBSH-44, DSH-1)

(1)	(2)	(3)	(4)	(5)	(6)
	Groundnut + Pigeonpea (2:1 or 3:1 or 4:2) / Sorghum + Groundnut	Groundnut + Pigeonpea (3:1 or 4:2) / Sorghum + Groundnut	Groundnut + Pigeonpea (3:1 or 4:2)	Pearl millet + Pigeonpea (2:1) / Groundnut + Pigeonpea (3:1 or 4:2)	Sunflower
Rainfed cropping <i>Kharif</i> and <i>Rabi</i> medium to deep black / sandy clay soils	Pigeonpea (GS-1, BJ-221, Maruthi, Asha, TS-3, ICPC-87) Greengram	Pigeonpea (GS-1, BJ-221, Maruthi, Asha, TS-3, ICPC-87) Greengram (Chinamung, Pusa-Baisakhi, Sel-4, PS-16, TS-3)	Pigeonpea (GS-1, BJ-221, Maruthi, Asha, TS-3, ICPC-87) Fallow	Fallow Fallow	Fallow-Rabi Sorghum (M35-1, DSV-4, 5, 6) Fallow
	Castor	Castor (RC-8, 48-1, GCH-4, DCH-32)	Fallow-rabi crops	Fallow-rabi crops	Fallow-rabi crops
	Groundnut	Groundnut (RC-8, 48-1, GCH-4, DCH-32)	Fallow-rabi crops	Fallow-rabi crops	Fallow-rabi crops
	Sunflower	Sunflower (Morden, KBSH-1, 41, 44, MSFH-17, RSFH-1, SH-41)	Sunflower (Morden, KBSH-1, 41, 44, MSFH-17, RSFH-1, SH-41)	Fallow-rabi crops	Fallow-rabi crops

Raichur District

Raichur district falls under North East Dry agroclimatic zone (KA-2) in north interior Karnataka. The district receives a mean annual rainfall of 680 mm of which 478 mm is received during south west monsoon and 136 mm during north east monsoon. The major soil types in the district are black and red clay loamy soils (see map). The district has an area of 405000 ha under rainfed situation (72% of net sown area). The major crops and cropping systems cultivated in the district are pearl millet, sunflower, pigeonpea, groundnut, greengram and rice during *kharif* in shallow to medium deep black and red clay soils while cotton (upto late *kharif*), and sorghum, chickpea and safflower are grown during *rabi* in medium to deep black soils.



Normal sowing window for major field crops

Season/ Situation	Pearl millet	Sunflower	Rice	Sorghum	Chickpea
<i>Kharif</i> - Rainfed	1 st week of June to 4 th week of July	1 st week of June to 4 th week of August	--	1 st week of June to 4 th week of June	--
<i>Kharif</i> - Irrigated	--	--	1 st week of June to 4 th week of June	--	--
<i>Rabi</i> - Rainfed	--	1 st week of September to 4 th week of October	--	3 rd week of September to 3 rd week of October	1 st week of October to 4 th week of November
<i>Rabi</i> - Irrigated/ Summer	1 st week of January to 4 th week of January (Summer)	1 st week of January to 4 th week of January (Summer)	--	--	1 st week of September to 1 st week of October

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)	Delay by 8 weeks (1 st week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Shallow to medium deep black and red clay loamy soils (<i>Kharif</i> and <i>Rabi</i>)	Pearl millet	Pearl millet (ICTP-8203, ICMV-221, Maruthi, Asha, TS-3)	Pearl millet (ICTP-8203, ICMV-221, Maruthi, Asha, TS-3)	Pearl millet (ICTP-8203, ICMV-221, Maruthi, Asha, TS-3)	Sunflower / Horsegram / Foxtail millet Sunflower: Morden, KBSH-1,41,44, MSFH-17, RSFH-1,SH-41 Horsegram : GPM-6 Foxtailmillet : RS-118

(1)	(2)	(3)	(4)	(5)	(6)
	Sunflower	Sunflower (Morden, KBSH-1,41,44, MSFH-17, RSFH-1, SH-41)	Sunflower (Morden, KBSH-1,41,44, MSFH-17, RSFH-1, SH-41)	Sunflower (Morden, KBSH-1,41,44, MSFH-17, RSFH-1,SH-41)	Sunflower / Horsegram / Foxtail millet Sunflower : Morden, KBSH-1, 44, DSH-1, RFSH-1,SH-41 Horsegram : GPM-6 Foxtail millet : RS-118
	Pigeonpea	Pigeonpea (GS-1, BJ-221, Maruthi, Asha, TS-3, ICPC-87)	Pigeonpea (GS-1, BJ-221, Maruthi, Asha, TS-3, ICPC-87)	Pigeonpea (GS-1, BJ-221, Maruthi, Asha, TS-3, ICPC-87)	Sunflower / Horsegram / Foxtail millet
	Pigeonpea + Greengram (1:2 or 2:4)	Pigeonpea + Greengram (1:2 or 2:4)	Pigeonpea + Greengram (1:2 or 2:4)	Pigeonpea / Pearl millet / Sunflower	Sunflower / Horsegram / Foxtail millet
	Pigeonpea + Pearl millet(1:2)	Pigeonpea + Pearl millet(1:2)	Pigeonpea + Pearl millet(1:2)	Groundnut (Spreading)	Sunflower / Horsegram / Foxtail millet
	Pigeonpea + Sorghum (1:2)	Pigeonpea + Sorghum (1:2)	Sorghum + Pigeonpea (2:1)	Groundnut (Spreading)	
	Pigeonpea + Groundnut(2:4)	Pigeonpea + Groundnut(2:4)	Pigeonpea + Groundnut(2:4)	Groundnut (Spreading)	Sunflower / Horsegram / Foxtail millet
	Groundnut	Groundnut (TMV-2, R-8808, S-206, S-230, GPBD-4)	Groundnut (TMV-2, R-8808, S-206, S-230, GPBD-4)	Groundnut / Pigeonpea / Sunflower / Castor Groundnut : DSG-1, S-230	Sunflower / Horsegram / Foxtail millet Horsegram : GPM-6 Foxtail millet : RS-118
	Sorghum	Sorghum (CSH-14, 16, CSH-18, CSV-6,15,SSV-74)	Pigeonpea / Pearl millet / Sunflower / Groundnut	Pigeonpea / Pearl millet / Sunflower / Groundnut	Sunflower / Horsegram / Foxtail millet
Medium to deep	Fallow-Sorghum	Fallow-Sorghum	Fallow-Sorghum	Fallow-Sorghum	Fallow-Sorghum

(1)	(2)	(3)	(4)	(5)	(6)
blacksoils (<i>Rabi</i>)		(M35-1, 54-1, 54-2, DSV-4)	(M35-1, 54-1, 2, DSV-4)	(M35-1, 54-1, 2, DSV-4)	(M35-1, 54-1, 2, DSV-4)
	Fallow- Safflower	Fallow- Safflower (A-1, 2, 300, S-144, H-2)	Fallow- Safflower (A-1, 2, 300, S-144, H-2)	Fallow- Safflower (A-1, 2, 300, S-144, H-2)	Fallow- Sunflower
	Fallow- Chickpea	Fallow- Chickpea (A-1, ICCV-10, JG-11, Vishal)	Fallow- Chickpea (A-1, ICCV-10, JG-11, Vishal)	Fallow- Chickpea (A-1, ICCV-10, JG-11, Vishal)	Fallow- Chickpea (A-1, ICCV-10, JG-11, Vishal)
	Fallow- Sorghum + Chickpea (2:1)	Fallow- Sorghum + Chickpea (2:1)	Fallow- Sunflower	Fallow- Sunflower	Fallow- Sorghum + Chickpea (2:1)
	Fallow- Chickpea + Safflower (4:2) Pulses (Greengram <i>in situ</i> green manuring - <i>Rabi</i> crops) Greengram: Chinamung, Pusa Baisaki, Sel-4, PS-16	Fallow- Chickpea + Safflower (4:2) Pulses (Greengram <i>in situ</i> green manuring - <i>Rabi</i> crops) Greengram: Chinamung, Pusa Baisaki, Sel-4, PS-16	Fallow- Sorghum + Chickpea (2:1) Fallow – <i>Rabi</i> crops Chickpea + Safflower (4:2) Chickpea : A-1, 3100, ICCV-10, JG-11	Fallow- Sorghum + Chickpea (2:1) Chickpea + Safflower (4:2)	Fallow- Chickpea + Safflower (4:2) Fallow- <i>Rabi</i> crops Sorghum, Chickpea, Safflower, Coriander

Contingency crop plan

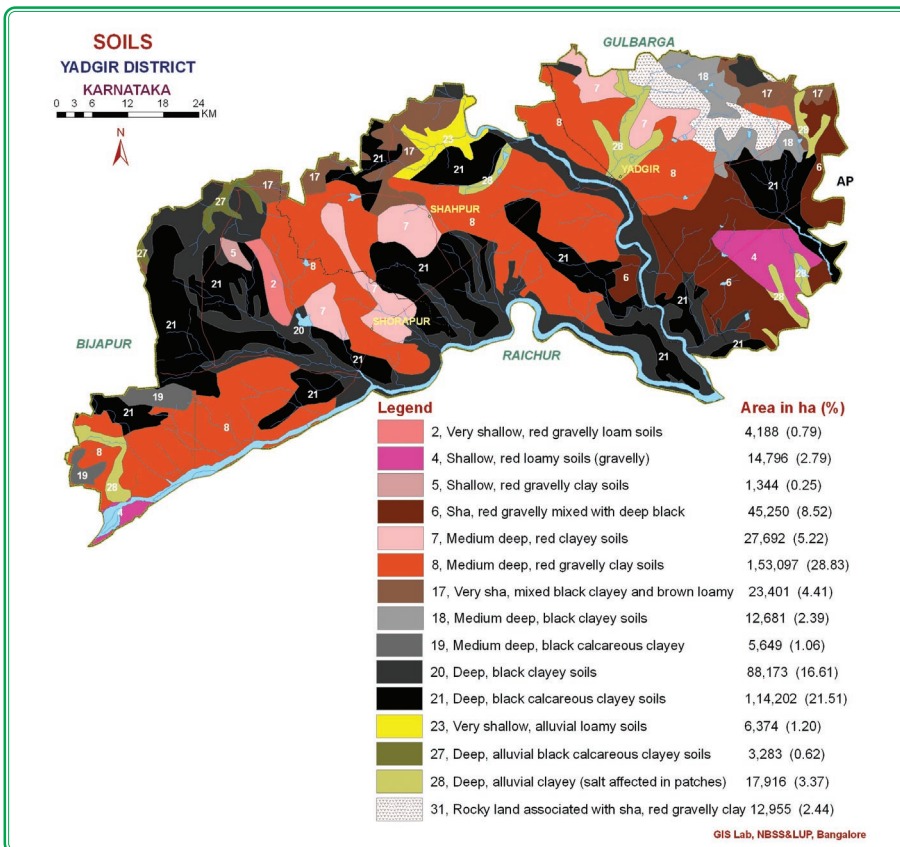
Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)	Delay by 8 weeks (1 st week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Shallow to medium deep black and red clay loams (<i>Kharif</i> and <i>Rabi</i>)	Pigeonpea	Pigeonpea (TTB-7, HYD-3C, BRG-2, ICP-7035)	Pigeonpea (TTB-7, HYD-3C, BRG-2, ICP-7035)	Pigeonpea/ Pearl millet/ Sunflower/ Groundnut (spreading) Pearl millet: WCC-75 Sunflower : KBSH-1,42,44 Groundnut (spreading) : (JL-24, K-134, VRI-2)	Sunflower/ Horsegram/ Navane Sunflower : Morden, KBSH-1 Horsegram: KBH-1, PHG-9, KBSH-1 Navane: RS - 118, PS-4, SIA-326
	Pigeonpea + Greengram/ Blackgram (2:4 or 1:2)	Pigeonpea + Greengram/ Blackgram (2:4 or 1:2) Greengram: Pusabaisaki, PDM-84,178 Blackgram: Kargaon-3, Rashmi, K-7, LBG-65	Pigeonpea + Sunflower	Pigeonpea + Sunflower	Sunflower/ Horsegram/ Navane
	Pearl millet+ Pigeonpea (2:1)	Pearl millet+ Pigeonpea (2:1)	Pearl millet + Pigeonpea (2:1)	Pigeonpea + Sunflower	Sunflower/ Horsegram/ Navane
	Pigeonpea + Sorghum (1:2)	Pigeonpea + Pearl millet(1:2)	Pigeonpea + Pearl millet(1:2)	Pigeonpea + Sunflower	Sunflower/ Horsegram/ Navane
	Pigeonpea + Groundnut(2:4)	Pigeonpea+ Groundnut(2:4)	Pigeonpea+ Groundnut(2:4)	Pigeonpea + Sunflower	Sunflower/ Horsegram/ Navane

(1)	(2)	(3)	(4)	(5)	(6)
	Pigeonpea + Soybean (2:4)	Pigeonpea + Soybean (2:4) Soybean : KBSB-2, Monetta, KB-79	Pigeonpea + Soybean(2:4) Soybean : KBSB-2, Monetta, KB-79	Pigeonpea (BRG-2, ICP-7035) + Sunflower Pigeonpea: BRG-2, ICP-7035	Sunflower/ Horsegram/ Navane Sunflower : Morden, KBSH-1, Horsegram : KBH-1, PHG-9, Navane: RS-118, SIA-326
	Pearl millet	Pearl millet (ICTP-8203, ICMV-221, Asha, TS-3)	Pearl millet (ICTP-8203, ICMV-221, Asha, TS-3)	Pearl millet (ICTP-8203, ICMV -221, Asha, TS-3)	Sunflower/ Horsegram/ Navane
	Sorghum	Sorghum (CHS-9, CSV-4, DSV-2, 4)	Sorghum (CHS-9, CSV-4, DSV-2, 4)	Sunflower/ Pearl millet/ Groundnut (spreading)	Sunflower/ Horsegram/ Navane
	Pearl millet + pigeonpea (2:1)	Pigeonpea + Greengram / Blackgram / Soybean (2:4 or 1:2)	Pigeonpea + Greengram / Blackgram / Soybean (2:4 or 1:2)	Pigeonpea + Sunflower	Sunflower/ Horsegram/ Navane
	Sunflower	Sunflower (KBSH-1,4,41, 42,44)	Sunflower (KBSH-1,4,41, 42,44, Morden)	Sunflower	Sunflower
	Groundnut	Groundnut (bunch) (R-8808, S-206, 230, GPBD-4)	Groundnut (bunch) (R-8808, S-206, 230, GPBD-4)	Groundnut (Spreading)/ Sunflower/ Castor/ Foxtail millet/ Horsegram	Sunflower/ Castor/ Foxtail millet/ Niger/ Horsegram
	Groundnut (spreading)	Groundnut (spreading) (DSG-1, S-230)	Groundnut (spreading) (DSG-1, S-230)	Pearlmillet	Foxtail millet/ Niger / Horsegram
	Sesame	Castor/Soybean Castor : RC-8, 48-1, GCH-4	Castor / Foxtail millet Castor : RC-8, 48-1, GCH-4	Groundnut (Spreading)/ Sunflower/ Castor/ Foxtail millet/ Horsegram	Foxtail millet/ Niger / Horsegram

(1)	(2)	(3)	(4)	(5)	(6)
Medium to deep black soils(rabi)	Fallow-Chickpea/rabi crops	Fallow-Chickpea/rabi crops	Fallow-Chickpea/rabi crops	Fallow-Chickpea/rabi crops	Fallow-Chickpea/rabi crops

Yadgir District

Yadgir district falls under North East Dry agroclimatic zone (KA-2) in north interior Karnataka. The district receives a mean annual rainfall of 832 mm of which 640 mm is received during south west monsoon and 129 mm during north east monsoon. The major soil types in the district are medium deep black and red clay loam soils (see map). The district has an area of 182000 ha under rainfed situation (59% of net sown area).The major crops cultivated in the district are pigeonpea, greengram, blackgram, sunflower, pearl millet, sorghum and groundnut during *khariif* in shallow to medium deep black and red clay loams while sorghum and chickpea and irrigated groundnut are grown during *rabi* in medium to deep black soils.



Normal sowing window for major field crops

Season/ Situation	Pigeonpea	Greengram	Sunflower	Pearl millet	Sorghum
<i>Kharif</i> - Rainfed	1 st week of June to 4 th week of July	1 st week of June to 4 th week of June	3 rd week of August to 3 rd week of September	3 rd week of June to 3 rd week of July	1 st week of June to 3 rd week of June
<i>Rabi</i> - Rainfed	--	--	1 st week of October to 3 rd week of October	--	3 rd week of September to 1 st week of October

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars			
		Normal onset of monsoon 2 nd week of June	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)
(1)	(2)	(3)	(4)	(5)	(6)
Medium deep black and red clay loam soils (<i>kharif</i> and <i>rabi</i>)	Pigeonpea	Pigeonpea (TS-3 R, ICTP-863, BSMR-736, WRP-1, Asha)	Pigeonpea (TS-3 R, ICTP-8863, BSMR-736, WRP-1, Asha)	Pigeonpea (Durga, GC11-39, Maruti, VT-221)	Sunflower/ Horsegram/ Navane Sunflower: Morden, KBSH-44, SH-41 Horsegram : JPM-6 Navane: RS-118, HMT-100-1
	Pigeonpea + Greengram/ Blackgram (2:4 or 1:2)	Pigeonpea + Greengram/ Blackgram (2:4 or 1:2) Greengram: Pusabaisaki, PDM-84,178 Blackgram:	Pigeonpea + Sunflower	Pigeonpea + Sunflower	Sunflower/ Horsegram/ Navane

(1)	(2)	(3)	(4)	(5)	(6)
		Kargaon-3, Rashmi, K-7, LBG-65			
	Pearl millet+ Pigeonpea (2:1)	Pearl millet+ Pigeonpea (2:1)	Pearl millet+ Pigeonpea (2:1)	Pigeonpea + Sunflower	Sunflower/ Horsegram/ Navane
	Pigeonpea + Sorghum (1:2)	Pigeonpea + Pearl millet(1:2)	Pigeonpea + Pearl millet(1:2)	Pigeonpea + Sunflower	Sunflower/ Horsegram/ Navane
	Pigeonpea + Groundnut(2:4)	Pigeonpea+ Groundnut(2:4)	Pigeonpea+ Groundnut(2:4)	Pigeonpea + Sunflower	Sunflower/ Horsegram/ Navane
	Pigeonpea + Soybean (2:4)	Pigeonpea + Soybean (2:4) Soybean : KBSB-2, Monetta,KB-79	Pigeonpea+ Soybean (2:4) Soybean : KBSB-2, Monetta,KB-79	Pigeonpea + Sunflower Pigeonpea : BRG-2, ICP-7035	Sunflower/ Horsegram/ Navane
	Pigeonpea + Sunflower (1:1)	Pigeonpea + Sunflower (1:1)	Pigeonpea / Pearlmillet/ Sunflower/ Groundnut (Spreading)	Sunflower/ Horsegram/ Navane	Pigeonpea + Sunflower (1:1)
	Greengram	Greengram (S-4, China mung, Pusa baisaki)	Pigeonpea / Pearlmillet/ Sunflower/ Groundnut (Spreading)	Pigeonpea/ Pearl millet/ Sunflower/ Groundnut (Spreading) Groundnut: DSG-1, S-230	Sunflower/ Horsegram/ Navane Sunflower: Morden,KBSH- -44, SH-41 Horsegram : JPM-6 Navane: RS-118, HMT-100-1
	Pearl millet	Pearl millet (ICTP-8203)	Pearl millet (ICTP-8203)	Pearl millet (ICTP-8203)	Sunflower/ Horsegram/ Navane Sunflower: Morden, KBSH-44, SH-41

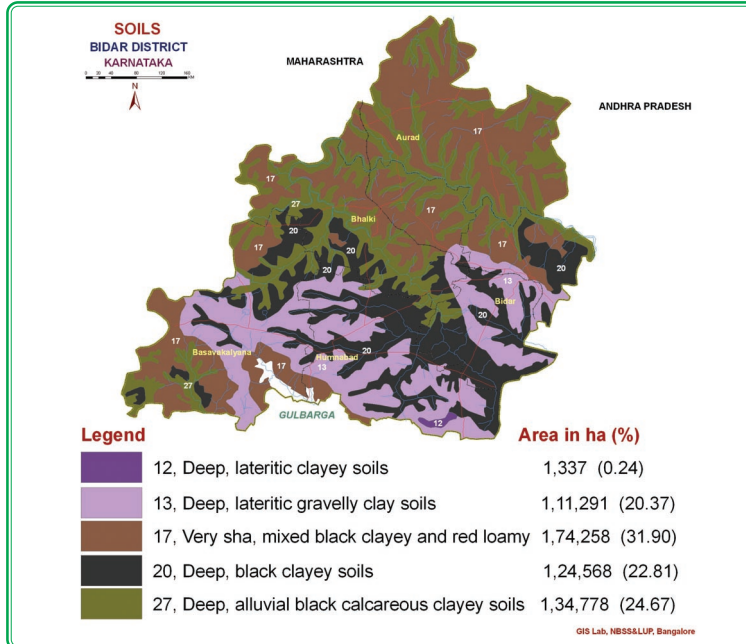
(1)	(2)	(3)	(4)	(5)	(6)
					Horsegram : JPM-6 Navane: RS-118, HMT-100-1
	Sorghum	Sorghum (CSH-14,16, 18, DSV-1, SSV-74)	Sorghum (CSH-14, 16, 18, DSV-1, SSV-74)	Pigeonpea/ Pearl millet/ Sunflower/ Groundnut (Spreading) Pigeonpea : Durga, GC11-39, Maruti, VT- 221 Pearl millet: ICTP-8203 Sunflower: (Morden, KBSH-44, SH-41) Groundnut: DSG-1,S-230	Sunflower/ Horsegram/ Navane Sunflower: Morden, KBSH-44, SH-41 Horsegram : GC11-39, Navane: RS-118, HMT-100-1
	Sunflower	Sunflower (KBSH-41,44, RSFH-1,44, DSH-1, RSFV-901, Morden)	Sunflower (KBSH-41,44, RSFH-1, 44, DSH-1, RSFV-901, Morden)	Sunflower (KBSH-41,44, RSFH-1,44, DSH-1, RSFV-901, Morden)	Sunflower/ Horsegram/ Navane Sunflower: Morden, KBSH-44, SH-41 Horsegram : GPM-6 Navane: RS11-8, PS-4, SIA-326, HMT100-1

(1)	(2)	(3)	(4)	(5)	(6)
	Sesame	Sesame (E-8, DS-1, DSH-9)	Sesame (E-8, DS-1, DSH-9)	Sunflower (Morden, KBSH-44, SH-41)	Sunflower/ Horsegram/ Navane Sunflower: Morden, KBSH-44, SH-41 Horsegram : GPM-6 Navane: RS11-8, PS-4, SIA-326, HMT100-1
	Groundnut (bunch)	Groundnut (bunch) (S-206, TMV-2, R-8808, JL-24, R-2001-3)	Groundnut	Groundnut – spreading (DSG-1, S-230)	Sunflower/ Horsegram/ Navane
	Groundnut (spreading)	Groundnut (spreading) (S-230)	Groundnut (spreading) (S-230)	Groundnut (Spreading)/ Sunflower/ Castor/ Foxtail millet/ Horsegram	Sunflower/ Castor/ Foxtail millet/ Niger/ Horsegram
	Castor	Castor (48-1, GCH-4)	Castor (48-1, GCH-4)	Groundnut (spreading) DSG-1, S-230	Sunflower/ Castor/Foxtail millet/Niger/ Horsegram
Medium to deep black soils (<i>rabi</i>)	Fallow-Rabi Sorghum	Fallow-Rabi Sorghum (M-35-1,5-4-1, DSV-5)	Fallow-Rabi Sorghum (M-35-1,5-4-1, DSV-5)	Fallow-Rabi Sorghum	Fallow-Rabi Sorghum
	Fallow- Sunflower	Fallow- Sunflower (KBSH-41,44, RSFH-1,44, DSH-1, RSFV-901, Morden)	Fallow- Sunflower (KBSH-41,44, RSFH-1 44, DSH-1, RSFV-901, Morden)	Fallow- Safflower	Fallow- Safflower

(1)	(2)	(3)	(4)	(5)	(6)
	Fallow-Chickpea	Fallow-Chickpea (JG-11, A-1)	Fallow-Chickpea (JG-11, A-1)	Fallow-Chickpea (JG-11, A-1)	Fallow-Chickpea (JG-11, A-1)
	Cotton	Cotton (DB-3-12, RAS-299-1)	Cotton (DB-3-12, RAS-299-1)	Sunflower (Morden, KBSH-1)	-
	Fallow-Rabi Sorghum+ Chickpea(1:2)	Fallow-Rabi Sorghum + Chickpea(1:2)	Fallow-Rabi Sorghum + Chickpea(1:2)	Fallow-Rabi Sorghum + Chickpea(1:2)	Fallow-Rabi Sorghum + Chickpea (1:2)
	Fallow-Chickpea+ Safflower(4:2)	Fallow-Chickpea+ Safflower(4:2)	Fallow-Chickpea + Safflower(4:2)	Fallow-Rabi Sorghum+ Chickpea (1:2)	Fallow-Chickpea + Safflower (4:2)
	Fallow-Greengram/ in situ green manure-Rabi crops	Fallow-Greengram/ insitu green manure-Rabi crops	Fallow-Rabi crops	Fallow-Chickpea + Safflower (4:2)	Fallow-Greengram/ in situ green manure-Rabi crops

Bidar District

Bidar district falls under North East Transition agroclimatic zone (KA-1) in north interior Karnataka. The district receives a mean annual rainfall of 905 mm of which 720 mm is received during south west monsoon and 109 mm during north east monsoon. The dominant soil types in the district are laterite red soils and shallow to medium black soils (see map). The district has an area of 308000 ha under rainfed situation (86.7% of net sown area). The major rainfed crops cultivated in the district are pigeonpea, blackgram, greengram, soybean and sesame during kharif and sorghum, chickpea and safflower during rabi season in kharif fallows.



Normal sowing window for major field crops

Season/ Situation	Pigeonpea	Blackgram/ Greengram	Soybean	Sunflower	Sesame
<i>Kharif</i> - Rainfed	1 st week of June to 4 th week of July	1 st week of June to 1 st week of July	1 st week of June to 4 th week of July	1 st week of June to 4 th week of June	1 st week of June to 3 rd week of July
<i>Kharif</i> - Irrigated	--	--	--	1 st week of August to 4 th week of August	--
<i>Rabi</i> - Rainfed	--	--	--	1 st week of October to 4 th week of November	--

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)	Delay by 8 weeks (1 st week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Laterite red soil and shallow to medium black soils	Pigeonpea	Pigeonpea (VT-221, Maruthi, Asha, TS-3, ICP-7035)	Pigeonpea (VT-221, Maruthi, TS-3, ICP-7035)	Pigeonpea (Durga, WRG-1, Maruthi, VT-221)	Sunflower/ Horsegram/ Cowpea/ Navane/ Foxtail millet Sunflower: Mordern, KBSH-1, 44, DSH-1 Cowpea:C-152, KBC-2 Navane: PS-4SIA-326 Foxtail millet: PSC-1
	Pigeonpea + Blackgram (1:5 or 2:6)	Pigeonpea + Blackgram (1:5 or 2:6)	Pigeonpea + Blackgram (1:5 or 2:6)	Pigeonpea (Durga, Maruti, ICP-7035)	Sunflower/ Horsegram/ Cowpea/ Navane/
	Pigeonpea+ Greengram (1:5 or 2:6)	Pigeonpea+ Greengram (1:5 or 2:6)	Pigeonpea+ Greengram (1:5 or 2:6) Greengram: Sel-4, Pusa baisaki, PS-16	Pigeonpea	Sunflower/ Horsegram/ Navane/
	Pigeonpea + Soybean (1:5 or 2 : 6)	Pigeonpea + Soybean (1:5 or 2 : 6)	Pigeonpea + Soybean (1:5 or 2 : 6)	Pigeonpea	Sunflower/ Horsegram
	Pigeonpea + Sorghum (1:5 or 2:6)	Pigeonpea + Sorghum (1:5 or 2:6)	Pigeonpea + Sorghum (1:5 or 2:6)	Fallow- Rabi Sorghum	Fallow- Rabi Sorghum

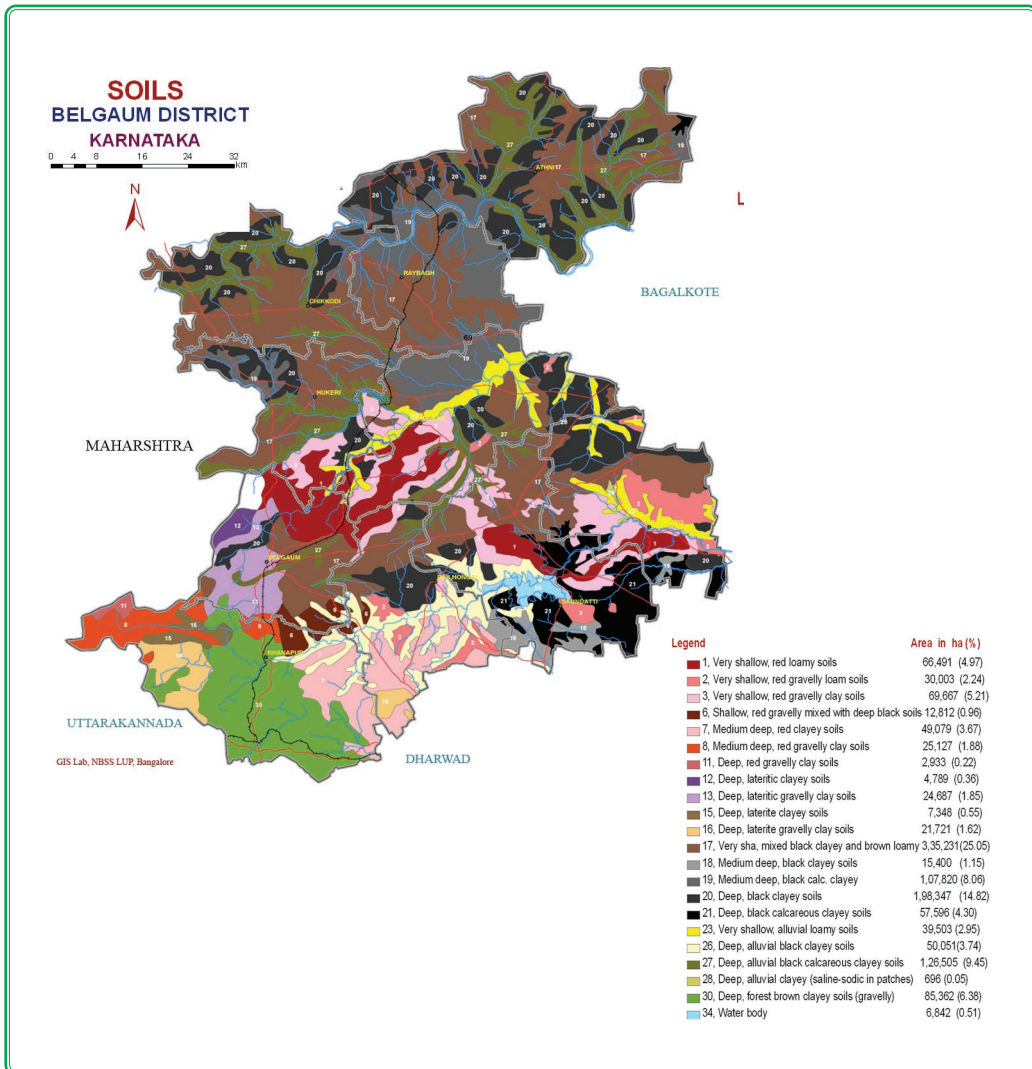
(1)	(2)	(3)	(4)	(5)	(6)
	Blackgram	Blackgram (Kargoan-3, T-9, LBG-625, Rasmi)	Blackgram (Kargoan-3, T-9, LBG-625, Rasmi)	Sesame/ Horsegram/ Foxtail millet/ Pearl millet Sesame: TMV-3, Navel, T-7 Horsegram : PHG-9, KBH-1 Foxtail millet: PSC-1, RS-118 Pearl millet: ICTP-8203, ICMV-3221, TS-3	Horsegram/ Foxtail millet
	Greengram	Greengram (Sel-4, Pusa Baisaki, PS-16)	Greengram (Sel-4, Pusa baisaki, PS-16)	Pigeonpea/ Sesame/ Horsegram/ Foxtail millet / Pearl millet Pigeonpea: Durga, Maruti, ICP-7035 Sesame: DS-1, DS-9 Horsegram: PHG-9, KBH-1 Pearl millet: ICTP-8203, ICMB221, Maruti	Horsegram/ Foxtail millet/
	Soybean	Soybean (JS-335,DSB-1, KSHB-2)	Soybean (JS-335,DSB-1, KSHB-2)	Pigeonpea / Sesame/ Horsegram/ Foxtail millet/ Pearl millet	Horsegram/ Foxtail millet
Medium to deep black soil	Sunflower	Sunflower (KBHS-1, 44, DSH-1,	Sunflower (KBHS-1, 44, DSH-1,	Fallow / Sunhemp	Fallow

(1)	(2)	(3)	(4)	(5)	(6)
<i>(Kharif and rabi)</i>	Green gram	RSFH-1, SH-41) Greengram (Chinamung, Pusabaisaki, PS-16, K-7, PDM-84, 178)	RSFH-1, SH-41) Green gram (Chinamung, Pusabaisaki, PS-16, K-7, PDM-84, 178)	Fallow / Sunhemp	Fallow
	Soybean	Soybean (Hardy, KSHB-2, Monetta, KB-79)	Soybean (Hardy, KSHB-2, Monetta, KB-79)	Fallow / Sunhemp	Fallow
	Sesame	Sesame (TMV-3, DS-9, T-7)	Sesame (TMV-3, DS-9, T-7)	Fallow / Sunhemp	Fallow
	Soybean	Soybean (Hardy, KSHB-2, Monetta, KB-79)	Soybean (Hardy, KSHB-2, Monetta, KB-79)	Fallow / Sunhemp	Fallow
	Sesame	Sesame (TMV-3, DS-9, T-7)	Sesame (TMV-3, DS-9, T-7)	Fallow / Sunhemp	Fallow
Medium to deep black soils <i>(rabi Season/ Situation)</i>	Fallow-Rabi Sorghum	Fallow-Rabi Sorghum Rabi Sorghum: M-35-1, 5-4-1, DSV-4, 5,6	Fallow-Rabi Sorghum Rabi Sorghum: M-35-1, 5-4-1, DSV-4, 5,6	Fallow-Safflower	Fallow-Rabi Sorghum
	Fallow-Safflower	Fallow-Safflower Safflower: A-1,300, S-144,H-2	Fallow-Safflower Safflower: A-1,300, S-144,H-2	Fallow-Safflower Safflower: A-1,300, S-144,H-2	Fallow-Safflower
	Fallow-Chickpea	Fallow-Chickpea	Fallow-Chickpea	Fallow-Chickpea	Fallow-Chickpea
	Fallow-	Fallow-	Fallow-	Fallow-	Fallow –

(1)	(2)	(3)	(4)	(5)	(6)
	Greengram/ Blackgram/ insitu green manuring – Rabi crops	Greengram/ Blackgram/ insitu green manuring – Rabi crops	Chickpea Chickpea: ICCV-10, JBS-964, JG-11, BG, DBG-103, KAK2, Vishal	Chickpea Chickpea: ICCV-10, JBS-964, JG-11, BG, DBG-103, KAK2, Vishal	Rabi crops
	Fallow- Rabi Sorghum +Chickpea(2:1)	Fallow- Rabi Sorghum +Chickpea(2:1)	Fallow- Rabi Sorghum +Chickpea(2:1)	Fallow- Rabi Sorghum +Chickpea(2:1)	Fallow- Rabi Sorghum +Chickpea(2:1)
	Fallow- Safflower + Chickpea (2:4) Safflower: A-1, 300, 2 Chickpea : ICCV-10, JBS-964,JG-11, BG, DBG-103, KAK-2, Vishal	Fallow- Safflower + Chickpea (2:4) Safflower: A-1, 300, 2 Chickpea : ICCV-10, JBS-964, JG-11, BG, DBG-103, KAK-2, Vishal	Fallow- Safflower + Chickpea (2:4) Safflower: A-1, 300, 2 Chickpea : ICCV-10, JBS-964,JG-11, BG,DBG-103, KAK-2, Vishal	Fallow- Safflower + Chickpea (2:4) Safflower: A-1, 300, 2 Chickpea : ICCV-10, JBS-964,JG-11, BG,DBG-103, KAK-2, Vishal	Fallow- Safflower + Chickpea (2:4) Chickpea : ICCV-10, JBS-964,JG-11, BG,DBG-103, KAK-2, Vishal

Belgaum District

Belgaum district falls under Northern Dry agroclimatic zone (KA-3) in north interior Karnataka. The district receives a mean annual rainfall of 732 mm of which 465 mm is received during south west monsoon and 148 mm during north east monsoon. The soil types in the district are medium deep black and red loamy soils (see map). The district has an area of 410000 ha under rainfed situation (49% of net sown area). The major rainfed crops cultivated in the district are maize, soybean, groundnut, greengram, sorghum, sunflower and cotton during *kharif* season while sorghum, chickpea and safflower are grown during *rabi* season. Sugarcane and rice are the two dominant irrigated crops in the district.



Normal sowing window for major field crops

Season/ Situation	Maize	Soybean	Groundnut	Greengram	Sorghum
<i>Kharif</i> - Rainfed	2 nd week of June to 1 st week of July	2 nd week of June to 1 st week of July	2 nd week of June to 3 rd week of July	2 nd week of June to 2 nd week of July	2 nd week of June to 4 th week of June
<i>Kharif</i> - Irrigated	1 st week of June to 1 st week of July	1 st week of May to 1 st week of July	3 rd week of May to 3 rd week of July	--	1 st week of June to 4 th week of June
<i>Rabi</i> - Rainfed	1 st week of October to 1 st week of November	--	1 st week of December to 1 st week of January	--	1 st week of September to 4 th week of October
<i>Rabi</i> - Irrigated	1 st week of October to 1 st week of November	1 st week of December to 1 st week of January	1 st week of December to 1 st week of January	--	--

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (2 nd week of June)	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)	Delay by 8 weeks (2 nd week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Medium deep black soils	Groundnut	Groundnut (R-8808, S-206, S-230, GPBD-4)	Groundnut (JL-24, GPBD-4)	Maize / Sunflower / Tobacco + Onion (1:2) / Cotton / Green fodder crops + Cowpea Maize : G-25, Deccan-103 Sunflower : Morden,	Maize / Sunflower / Tobacco + Onion (1:2) / Horsegram / Castor / Desi Cotton / Sesamum / Green fodder crops+Cowpea Horsegram: PHG-9

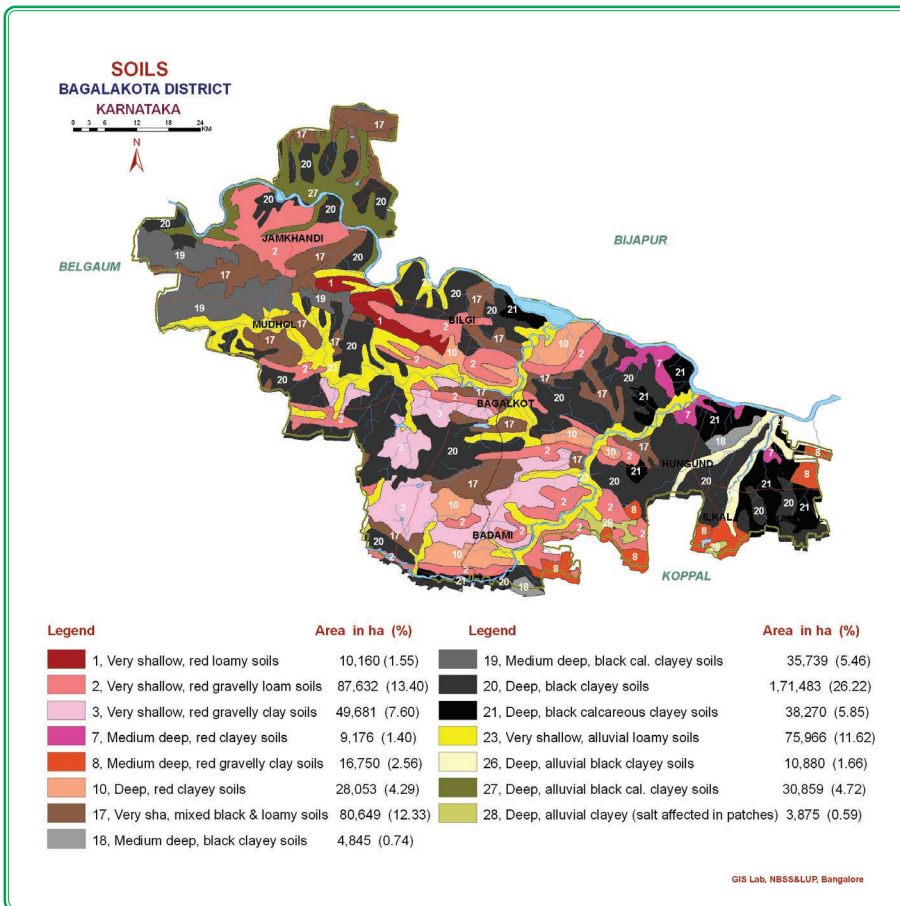
(1)	(2)	(3)	(4)	(5)	(6)
				DSH-1, KBSH-41 Cotton : Varalakshmi, NHH-44 Green fodder crops : SA Tall Cowpea: C-152	Castor : Jyothi, 48-1, GCH-4 Desi Cotton : DHB-105, Jayadhar, Renuka, Sesamum : DS-1 Green fodder crops : SA Tall
	Soybean	Soybean (DSB-1, JS-335)	Tobacco / Groundnut / Cotton / Transplanted Chilli/Bt.Cotton +Pigeonpea (1:2)/ Maize + Pigeonpea / Tobacco + Onion (1:2) Tobacco : 9 KST-19 Pigeonpea : TS 3R Maize : Arjun, 900- M Tobacco : Bhagyashree Onion : Nashik Red	Sunflower / Tobacco+ Onion (1:2) / Cotton / Green fodder crops + Cowpea	Sunflower / Tobacco + Onion (1:2) / Horsegram / Castor / Desi Cotton / Sesamum / Green fodder crops + Cowpea
	<i>Kharif</i> Sorghum	<i>Kharif</i> Sorghum (CSH-14,16, CSV- 6, 15)	Maize/ Cowpea/ Sunflower Maize : Arjun, 900-M, Deccan-103, Ganga-11, DHM-2 Sunflower : KBSH-1,14, 41, Morden	Sunflower / Tobacco + Onion (1:2) / Cotton / Green fodder crops+Cowpea Cotton : DHB-105, NHH-44, RAHC-87	Sunflower / Tobacco + Onion (1:2) / Horsegram / Castor / Desi Cotton / Sesamum / Green fodder crops+Cowpea Sunflower : KBSH-1, 14,

(1)	(2)	(3)	(4)	(5)	(6)
				Green fodder crops : SA Tall	41, Morden Castor : Jyothi, 48-1, GCH-4 Sesamum:DS-9 Green fodder crops : SA Tall
	Greengram	Greengram– Sorghum	Sunflower / Cowpea/Maize Sunflower : Morden,SB-275 Cowpea:C-152 Maize:Arjun, 900-M	Green fodder crops+ Cowpea	Rabi crops: Sorghum/ Chickpea/ Wheat/ Safflower
	Sunflower	Sunflower (KBSH-1, 14, 44, Morden, RSFH-130)	Sunflower (Morden, SB- 275)	Sunflower / Tobacco+ Onion (1:2) / Cotton / Green fodder crops+Cowpea	Sunflower / Tobacco + Onion(1:2) / Horsegram / Castor / Desi Cotton Sesamum / Green fodder crops + Cowpea
	Blackgram	Blackgram (R-8808, S-206, S-230,GPBD-4)	Maize/Cowpea/ Sunflower Maize : Arjun, 900-M, Ganga-11 Cowpea:C-152 Sunflower : KBSH-1, 14, 41, Morden	Sunflower Maize : Arjun, 900-M, Ganga-11 Sunflower : KBSH-1, 14, 41, Morden	Sunflower (KBSH-1, 14, 41, Morden)
	Cotton	Cotton	Cotton	Cotton	Sunflower
	Maize- Chickpea	Maize – Chickpea Maize hybrid: PEMH-2 Maize composites : Renuka	Maize- Chickpea	Sunflower Chickpea	Horsegram Chickpea

(1)	(2)	(3)	(4)	(5)	(6)
	Fallow– Safflower / Chickpea	Fallow - Safflower / Chickpea Safflower : A-2, 300 Chickpea : ICCV-10, BG-1105	Fallow - Safflower / Chickpea Safflower : A-2, 300 Chickpea : ICCV-10, BG-1105	Fallow-Wheat (Bijaga Yellow, DWR-2006)	Fallow-Wheat (Bijaga Yellow, DWR-2006)
Red loamy soils	Hybrid Sorghum + Pigeonpea(4:2)	Hybrid Sorghum + Pigeonpea (4:2) Pigeonpea: Maruthi	Pigeonpea / Horsegram/ Cowpea / Castor / Sunflower Pigeonpea : Maruthi Horsegram: Local Cowpea:C-152 Castor:GCH-4 Sunflower : Morden,SB-275	Sunflower / Horsegram Sunflower : Morden, SB-275, DSH-1 Horsegram : PHG- 9	-
	Groundnut	Groundnut + Pigeonpea (4:1)	Horsegram / Cowpea/ Castor/ Sunflower Horsegram : Local Cowpea:C-152 Castor: GCH-4 Sunflower : Morden, SB-27, KBSH-41	-do-	-

Bagalkote District

Bagalkote district falls under Northern Dry agroclimatic zone (KA-3) in north interior Karnataka. The district receives a mean annual rainfall of 592 mm of which 366 mm is received during south west monsoon and 136 mm during north east monsoon. The major soil types in the district are shallow black and red soils and medium to deep black soils (see map). The district has an area of 245000 ha under rainfed situation (53% of net sown area). The major rainfed crops cultivated in the district are pearl millet, maize, greengram, groundnut, sunflower during *kharif* season in shallow to medium soils while sorghum, cotton, safflower, chickpea, sunflower and maize during *rabi* in deep black soils. Sugarcane is the dominant irrigated crop.



Normal sowing window for major field crops

Season/ Situation	Pearl millet	Maize	Greengram	Groundnut	Sunflower
<i>Kharif</i> - Rainfed	2 nd week of June to 4 th week of July	2 nd week of June to 1 st week of July	2 nd week of May to 2 nd week of June	1 st week of June to 3 rd week of July	1 st week of June to 1 st week of July
<i>Kharif</i> - Irrigated	1 st week of July to 3 rd week of August	1 st week of June to 3 rd week of July	--	1 st week of June to 3 rd week of July	1 st week of June to 1 st week of July
<i>Rabi</i> - Rainfed	--	--	--	--	1 st week of September to 4 th week of October
<i>Rabi</i> - Irrigated	1 st week of September to 4 th week of October	1 st week of October to 3 rd week of November	--	1 st week of December to 1 st week of January	--

Contingency crop plan

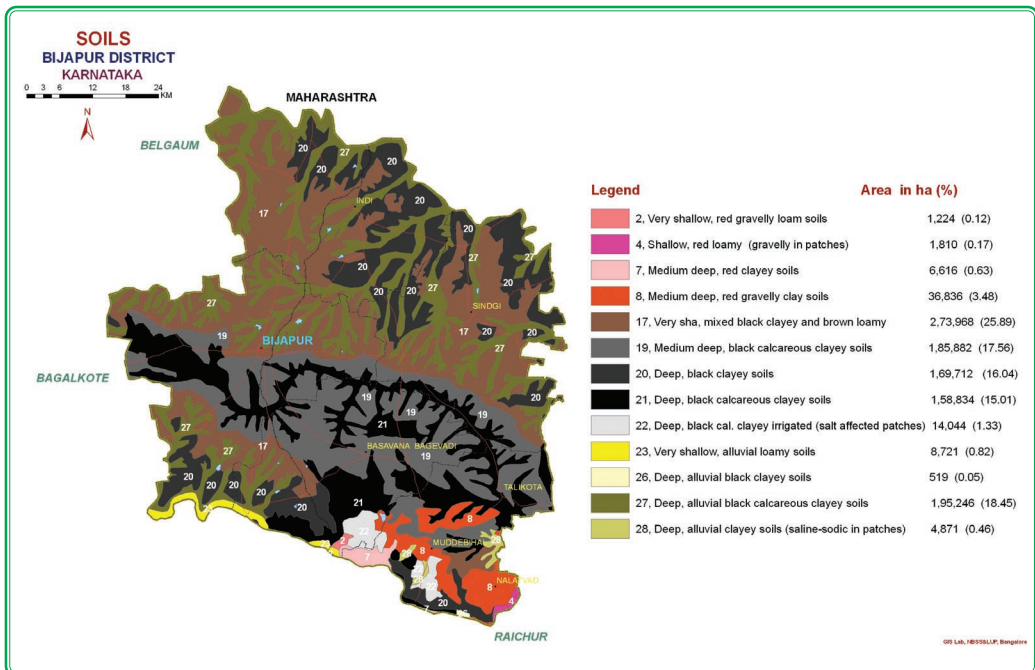
Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (2 nd week of June)	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)	Delay by 8 weeks (2 nd week of August)
(1)	(2)	(3)	(4)	(5)	(6)
<i>Kharif</i> cropping area in shallow black soils and red soils	Pearl millet	Pearl millet (ICTP- 8203, ICMV- 221)	Pearl millet (ICTP- 8203, ICMV- 221)	Pearl millet (ICTP-8203, ICMV-221, Asha, TS-3)	Horsegram (GPM-6)
	Pearl millet + Pigeonpea (2:1)	Pearl millet + Pigeonpea (2:1) Pigeonpea : GS-1, BJ-221, Maruthi, ICPC-87	Pearl millet + Pigeonpea (2:1) Pigeonpea : GC-11, 39, ICPL-87	Pearl millet + Pigeonpea (2:1) Pigeonpea : GC-11, 39, ICPL-87	Horsegram (GPM-6)

(1)	(2)	(3)	(4)	(5)	(6)
	Greengram	Greengram (Chinamung, PusaBaisakhi, Sel-4, PS-16)	Sunflower (KBSH-41, 53)	Sunflower (KBSH-41, 53)	Sunflower (KBSH-1, 53)
	Sunflower	Sunflower (KBSH-1, 44, DSH-1,RSFH-1, MSFH-17, SH-41)	Sunflower (KBSH-1, 44, DSH-1,RSFH-1, MSFH-17, SH-41)	Sunflower (KBSH-1, 44, DSH-1,RSFH-1, MSFH-17, SH-41)	Sunflower (KBSH-1, 44, DSH-1,RSFH-1, MSFH-17, SH-41)
	Groundnut (bunch/ spreading)	Groundnut (bunch / spreading) (TMV-2, R-8808, S-206)	Pearl millet (ICTP- 8203, ICMV- 221)	Groundnut - Spreading (TMV-2, R-8808,S-206)	Sunflower (KBSH-1, KBSH-53)
	Groundnut (bunch / spreading) + Pigeonpea(4:2)	Groundnut (bunch / spreading) + Pigeonpea(4:2)	Pigeonpea (Maruthi, TS3R)	Pigeonpea (KBSH-41,53)	Sunflower (KBSH-1, 53)
	Pigeonpea	Pigeonpea (GS-1, BJ-221, ICPC-87)	Pigeonpea (GS-1, BJ-221, ICPC-87)	Pigeonpea (GS-1, BJ-221, ICPC-87)	Horsegram (GPM-6)
Cropping area in <i>Rabi</i> Season/ Situation in deep black soils	Fallow-Rabi Sorghum / Safflower / Sunflower / Cotton / Chickpea / <i>Rabi</i> Sorghum+ Chickpea (2:1)/ Chickpea + Safflower (4:2)	Fallow-Rabi Sorghum / Safflower / Sunflower / Cotton / Chickpea / <i>Rabi</i> Sorghum+ Chickpea(2:1)/ Chickpea + Safflower (4:2) Rabi Sorghum: M-35-1, 5-4-1, DSV-4, 5, 6 Safflower : A-1, 3100, S-144, H-2 Sunflower : KBSH-1, 44, RSFH-1, SH-41	Fallow-Rabi Sorghum / Safflower / Sunflower / Cotton / Chickpea / <i>Rabi</i> Sorghum+ Chickpea(2:1)/ Chickpea+ Safflower (4:2) Rabi Sorghum: M-35-1, 5-4-1, DSV-4, 5, 6 Safflower : A-1, 3100, S-144, H-2 Sunflower : KBSH-1, 44, RSFH-1,SH-41	Fallow-Rabi Sorghum / Safflower / Sunflower / Cotton / Chickpea / <i>Rabi</i> Sorghum+ Chickpea(2:1)/ Chickpea + Safflower (4:2) Rabi Sorghum: M-35-1, 5-4-1, DSV-4, 5, 6 Safflower : A-1, 3100, S-144, H-2 Sunflower : KBSH-1, 44, RSFH-1,SH-41	Fallow-Rabi Sorghum / Safflower / Sunflower / Cotton / Chickpea / <i>Rabi</i> Sorghum+ Chickpea(2:1)/ Chickpea + Safflower (4:2) Rabi Sorghum: M-35-1, 5-4-1, DSV-4, 5, 6 Safflower : A-1, 3100, S-144, H-2 Sunflower : KBSH-1, 44, RSFH-1, SH-41

(1)	(2)	(3)	(4)	(5)	(6)
		Cotton : Suyodhar, NHHN-44, DHH-11, LRA-516 Chickpea : ICCV-10, JBS-964, ICCV-2, Vishal	Cotton : Suyodhar, NHHN-44, DHH-11, LRA-516 Chickpea : ICCV-10, JBS-964, ICCV-2, Vishal	Cotton : Suyodhar, NHHN-44, DHH-11, LRA-516 Chickpea : ICCV-10, JBS-964, ICCV-2, Vishal	Cotton : Suyodhar, NHHN-44, DHH-11, LRA-516 Chickpea : ICCV-10, JBS-964, ICCV-2, Vishal

Bijapur District

Bijapur district falls under Northern Dry agroclimatic zone (KA-3) in north interior Karnataka. The district receives a mean annual rainfall of 630 mm of which 427 mm is received during south west monsoon and 131 mm during north east monsoon. The major soil types in the district are shallow black and red soils (see map). The district has an area of 635000 ha under rainfed situation (73% of net sown area). The major crops cultivated in the district are pigeonpea, pearl millet, greengram, sunflower and horsegram. Groundnut and maize are predominantly grown as irrigated crops during both *kharif* and *rabi* season. Sugarcane is another dominant irrigated crop. Sorghum, sunflower, chickpea and safflower are the dominant rainfed crops in the *rabi* season with some area under irrigated situation as well.



Normal sowing window for major field crops

Season/ Situation	Pigeonpea	Pearlmillet	Greengram	Sunflower	Maize / Groundnut
<i>Kharif</i> - Rainfed	1 st week of June to 2 nd week of August	1 st week of June to 4 th week of July	2 nd week of June to 4 th week of June	1 st week of June to 3 rd week of August	1 st week of June to 4 th week of July
<i>Kharif</i> - Irrigated	--	--	--	--	1 st week of June to 4 th week of July
<i>Rabi</i> - Rainfed	--	--	--	1 st week of September to 4 th week of September	--
<i>Rabi</i> - Irrigated	--	--	--	1 st week of December to 4 th week of January	1 st week of January to 4 th week of February

Contingency crop plan

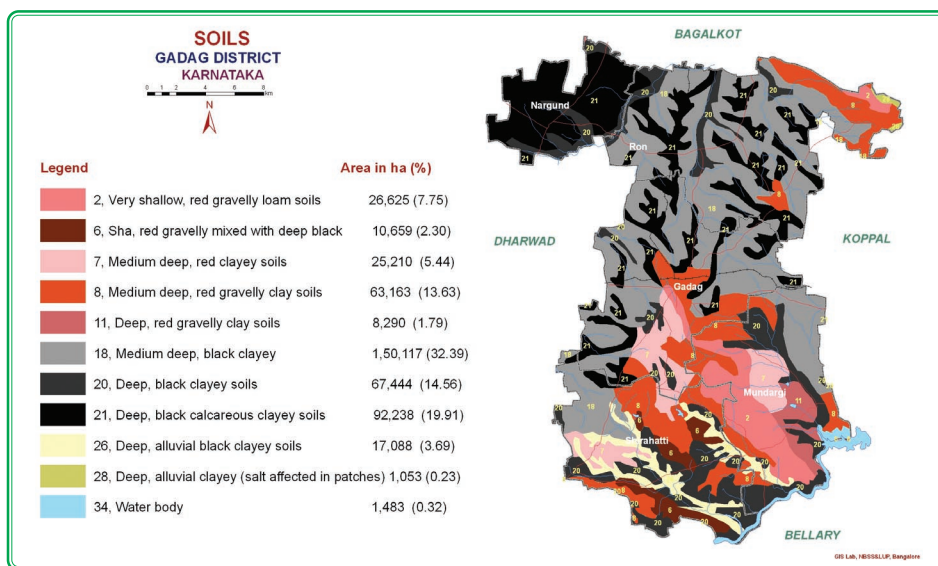
Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (2 nd week of June)	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)	Delay by 8 weeks (2 nd week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Shallow to black and red soils (<i>Kharif</i> cropping area)	Pigeonpea	Pigeonpea (GS-1, BJ-221, Maruthi, Asha, TS-3, ICPC-87)	Pigeonpea (GS-1, BJ-221, Maruthi, Asha, TS-3, ICPC-87)	Pigeonpea (Durga, GC-11, 39,WRG-1)	Pigeonpea (Durga, GC-11, 39,WRG-1)
	Groundnut + Pigeonpea (4:2)	Groundnut (spreading) + Pigeonpea Groundnut : S-230, Mardur local	Groundnut (spreading) + Pigeonpea (4:2) Groundnut : S-230, Mardur local	Pigeonpea / Sunflower Pigeonpea : ICPL-87, Maruthi, TS 3 R Sunflower : KBSH- 1, 53	Groundnut (bunch) + Pigeonpea (4:2)

(1)	(2)	(3)	(4)	(5)	(6)
	Pearl millet	Pearl millet (ICTP-8203, ICMV-221, Maruthi, Asha, TS-3)	Pearl millet (ICTP-8203, ICMV-221, Maruthi, Asha, TS-3)	Pearl millet (ICTP-8203, ICMV-221, Maruthi, Asha, TS-3)	Horsegram / Foxtail millet Horsegram : GPM-6 Foxtail millet : RS-118, HMT 100-1
	Pearl millet + Pigeonpea(2:1)	Pearl millet + Pigeonpea(2:1)	Pearl millet + Pigeonpea(2:1)	Pearl millet + Pigeonpea(2:1)	Pearl millet + Pigeonpea(2:1)
	Sunflower	Sunflower (KBSH-1, 44, DSH-1, RSFH-1, MSFH-17, SH-41)	Sunflower (KBSH-1,44, DSH-1, RSFH-1, MSFH-17, SH-41)	Sunflower (KBSH-1,44, DSH-1, RSFH-1, MSFH-17, SH-41)	Sunflower (KBSH-1, 44, DSH-1, RSFH-1, MSFH-17, SH-41)
	Groundnut (bunch)	Groundnut – bunch (TMV-2, R-8808,S-206, 230, GPBD-4)	Groundnut – spreading (S-230, Mardur local)	Sunflower (KBSH-1, 53)	Groundnut (bunch)
Medium deep black soils (both <i>kharif</i> and <i>rabi</i> cropping areas)	Greengram – Rabi Sorghum/ Safflower/ Sunflower	Fallow- Rabi Sorghum/ Safflower	Fallow- Rabi Sorghum/ Safflower	Fallow- Rabi Sorghum/ Safflower	Fallow- Rabi Sorghum/ Safflower
	Groundnut - Rabi Sorghum/ Safflower/ Sunflower	Groundnut – spreading (S-230, Mardur local)	Sunflower	Sunflower	Sunflower
	Pigeonpea	Pigeonpea (GS-1, BJ-221, Maruthi, Asha, TS-3, ICPC-87)	Pigeonpea (GS-1, BJ-221, Maruthi, Asha, TS-3, ICPC-87)	Pigeonpea (GS-1, BJ-221, Maruthi, Asha, TS-3, ICPC-87)	Fallow

(1)	(2)	(3)	(4)	(5)	(6)
Deep black soils (Rabi cropping areas)	<i>Khariif-Fallow</i> During <i>Rabi</i> - <i>Rabi</i> Sorghum/ Safflower / Sunflower / Chickpea / Chickpea + Safflower(4:2)/ <i>Rabi</i> Sorghum+ Chickpea(2:1)/ Cotton / Horsegram	<i>Khariif-Fallow</i> During <i>Rabi</i> - <i>Rabi</i> Sorghum/ Safflower / Sunflower / Chickpea / Chickpea + Safflower (4:2)/ <i>Rabi</i> Sorghum+ Chickpea(2:1)/ Cotton / Horsegram Chickpea : A-1 Cotton : DCH-32, RAHC-87, Varalakshmi, Renuka, RAHS-14, DLSA-17 Horsegram: GPM-6	<i>Khariif-Fallow</i> During <i>Rabi</i> - <i>Rabi</i> Sorghum/ Safflower / Sunflower / Chickpea + Safflower / <i>Rabi</i> Sorghum+ Chickpea(2:1)/ Cotton / Horsegram Horsegram : GPM-6	<i>Khariif-Fallow</i> During <i>Rabi</i> - <i>Rabi</i> Sorghum/ Safflower / Sunflower / Chickpea + Safflower / <i>Rabi</i> Sorghum+ Chickpea (2:1)/ Cotton / Horsegram Sorghum : M35-1, 5-4-1, DSV-4, 5, 6 Safflower : A-1, 300, S-144, H-2 Sunflower : KBSH-1, 44, RSFH-1, SH-41, MSFH-17	<i>Khariif-Fallow</i> During <i>Rabi</i> - <i>Rabi</i> Sorghum/ Safflower / Sunflower / Chickpea + Safflower / <i>Rabi</i> Sorghum+ Chickpea(2:1)/ Cotton / Horsegram

Gadag District

Gadag district falls under Northern Dry agroclimatic zone (KA-3) in north interior Karnataka. The district receives a mean annual rainfall of 631 mm of which 365 mm is received during south west monsoon and 150 mm during north east monsoon. The soil types in the district are shallow black and red soils and medium to deep black soils (see map). The district has an area of 310000 ha under rainfed situation (81% of net sown area). The major rainfed crops cultivated in the district are greengram, groundnut, sunflower, sorghum and maize



Normal sowing window for major field crops

Season/ Situation	Greengram	Groundnut	Sunflower	Sorghum	Maize	Cotton
<i>Kharif</i> - Rainfed	3 rd week of May to 4 th week of June	1 st week of June to 4 th week of July	4 th week of June to 4 th week of July	1 st week of June to 4 th week of June	--	4 th week of June to 2 nd week of July
<i>Kharif</i> - Irrigated	--	--	2 nd week of July to 4 th week of July	--	1 st week of July to 4 th week of Aug.	--
<i>Rabi</i> - Rainfed	--	--	1 st week of September to 4 th week of October	1 st week of September to 4 th week of October	--	--
<i>Rabi</i> - Irrigated	--	--	--	--	1 st week of November to 4 th week of December	--

Contingency crop plan

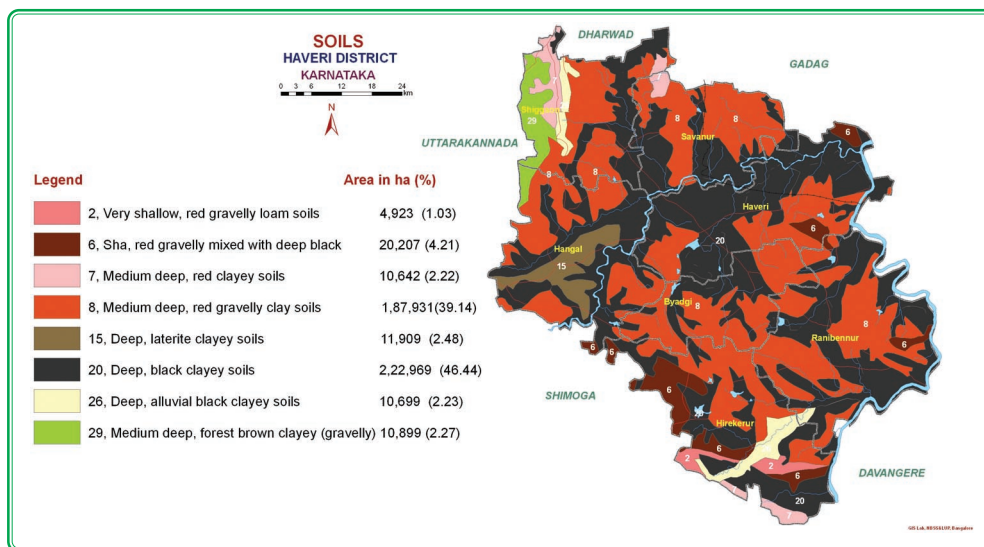
Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (2 nd week of June)	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)	Delay by 8 weeks (2 nd week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Rainfed <i>Kharif</i> cropping area in shallow black soils and red soils	Greengram	Sunflower (KBSH-1, 44, DSH-1, RSFH-1, MSFH-17, SH-41)	Sunflower (KBSH-1, 44, DSH-1, RSFH-1, MSFH-17, SH-41)	Sunflower (KBSH-1, 44, DSH-1, RSFH-1, MSFH-17, SH-41)	Sunflower (Morden, KBSH-1, DSH-1)
	Groundnut (bunch / spreading)	Groundnut Spreading (DSG-1,S-230)	Groundnut (DSG-1, S-230)	Sunflower (KBSH-1, 44, DSH-1, RSFH-1, MSFH-17, SH-41)	Sunflower (Morden, KBSH-1, DSH-1)
	Sorghum	Sorghum (CSH-14,16,18, CSV-6, 15, SSV-74, DSS-4)	Sunflower (KBSH-1, 44, DSH-1, RSFH-1, MSFH-17, SH-41)	Sunflower (KBSH-1, 44, DSH-1, RSFH-1, MSFH-17, SH-41)	Sunflower
	Maize	Maize (Deccan 103, DHM-2, Ganga-11, NAC-6002)	Maize (Deccan 103, DHM-2, Ganga-11, NAC-6002)	Sunflower (Morden, KBSH-1, DSH-1)	Sunflower (Morden, KBSH-1, DSH-1)
	Chilli+Onion+ Desi Cotton	Chilli + Desi Cotton	Chilli + Desi Cotton	Chilli + Desi Cotton	-

(1)	(2)	(3)	(4)	(5)	(6)
Cropping area in <i>Rabi</i> Season/ Situation in Deep black soils and both <i>Kharif</i> and <i>Rabi</i> in medium deep black soils	Greengram - Sorghum / Safflower / Sunflower / Chickpea / Maize / Sorghum + Chickpea (2:1) Chickpea + Safflower(4:2)	Chilli+ Onion+ Desi Cotton - Sorghum / Safflower / Sunflower / Chickpea/Maize / Sorghum + Chickpea (2:1) Chickpea + Safflower(4:2) Chilli : Bydagi Onion : 9 Bellary Red Sorghum : M35-1, 5-4-1, DSV-4 Safflower :A-1, 300,S-144, H-2 Sunflower : Morden, KBSH-1, 44, DSH-1,FRSH-1, MSFH-17 Chickpea : Annegiri-1, ICCV-2, 10, JG-11,BG-1105, Vishal, Kak-2 Maize : Deccan-103, DHM-2, Ganga-11,G-25	Chilli+ Onion+ Cotton - Sorghum / Safflower / Sunflower / Chickpea/Maize / Sorghum + Chickpea (2:1) Chickpea + Safflower(4:2) Sorghum : M35-1, 5-4-1, DSV-4 Safflower : A-1, 300, S-144, H-2 Sunflower : Morden, KBSH-1, 44, DSH-1, FRSH-1, MSFH-17 Chickpea : Annegiri-1, ICCV-2, 10, JG-11, BG-1105, Vishal, Kak-2 Maize : Deccan -103, DHM-2, Ganga-11,G-25	Desi Cotton - Sorghum / Safflower / Sunflower / Chickpea / Maize / Sorghum + Chickpea (2:1) Chickpea + Safflower (4:2) Sorghum : M35-1, 5-4-1, DSV-4 Safflower : A-1, 300, S-144, H-2 Sunflower : Morden, KBSH-1, 44, DSH-1, FRSH-1, MSFH-17 Chickpea : Annegiri-1, ICCV-2, 10, JG-11, BG-1105, Vishal, Kak-2 Maize : Deccan -103, DHM-2, Ganga-11,G-25	Cotton / Sorghum / Safflower / Sunflower / Chickpea / Maize / Sorghum + Chickpea (2:1) Chickpea + Safflower (4:2) Sorghum : M35-1, 5-4-1, DSV-4 Safflower : A-1, 300, S-144, H-2 Sunflower : Morden, KBSH-1, 44, DSH-1, FRSH-1, MSFH-17 Chickpea : Annegiri-1, ICCV-2, 10, JG-11, BG-1105, Vishal, Kak-2 Maize : Deccan -103, DHM-2, Ganga-11,G-25
	Groundnut - Sorghum / Safflower / Sunflower / Chickpea / Maize/Sorghum +Chickpea(2:1) Chickpea + Safflower(4:2)	Fallow- Sorghum / Safflower / Sunflower / Chickpea / Sorghum + Chickpea (2:1) Chickpea + Safflower (4:2)	Fallow - Sorghum / Safflower / Sunflower / Chickpea / Maize/Sorghum +Chickpea(2:1) Chickpea + Safflower (4:2)	Fallow - Sorghum / Safflower / Sunflower / Chickpea / Maize/Sorghum +Chickpea(2:1) Chickpea + Safflower (4:2)	Fallow- Sorghum / Safflower / Sunflower / Maize/Sorghum +Chickpea(2:1) Chickpea + Safflower (4:2)

(1)	(2)	(3)	(4)	(5)	(6)
	Maize- Sorghum / Safflower / Sunflower / Chickpea / Sorghum + Chickpea (2:1) Chickpea + Safflower (4:2)	Maize- Sorghum / Safflower / Sunflower / Chickpea / Sorghum + Chickpea (2:1) Chickpea + Safflower (4:2)	Fallow - Sorghum / Safflower / Sunflower / Chickpea / Maize / Sorghum + Chickpea (2:1) Chickpea + Safflower (4:2)	Fallow- Sorghum / Safflower / Sunflower / Maize / Sorghum + Chickpea (2:1) Chickpea + Safflower (4:2)	Fallow- Sorghum / Safflower / Sunflower / Chickpea / Maize / Sorghum + Chickpea (2:1) Chickpea + Safflower (4:2)
	Cotton - Sorghum / Safflower / Sunflower / Chickpea / Maize / Sorghum + Chickpea (2:1) Chickpea + Safflower (4:2)	Cotton - Sorghum / Safflower / Sunflower / Chickpea / Maize / Sorghum + Chickpea (2:1) Chickpea + Safflower (4:2) Cotton: Jayadhar, Renuka, Suyodhar, RAHS-14, DLSA-17, NHH-44, DHH-543, Banni, Bt 1, 2	Cotton - Sorghum / Safflower / Sunflower / Chickpea / Maize / Sorghum + Chickpea (2:1) Chickpea + Safflower (4:2) Cotton : Jayadhar, Renuka, Suyodhar, RAHS-14, DLSA-17, NHH-44, DHH-543, Banni, Bt 1, 2	Fallow- Sorghum / Safflower / Sunflower / Maize / Sorghum + Chickpea (2:1) Chickpea + Safflower (4:2)	Fallow - Sorghum / Safflower / Sunflower / Chickpea / Maize / Sorghum + Chickpea (2:1) Chickpea + Safflower (4:2)
	Sunflower - Sorghum / Safflower / Chickpea / Maize / Sorghum + Chickpea (2:1) Chickpea + Safflower (4:2)	Sunflower- Sorghum / Safflower / Chickpea / Maize / Sorghum + Chickpea (2:1) Chickpea + Safflower (4:2)	Sunflower- Sorghum / Safflower / Chickpea / Maize / Sorghum + Chickpea (2:1) Chickpea + Safflower (4:2)	Chickpea- Sorghum / Safflower / Sunflower / Maize / Sorghum + Chickpea (2:1) Chickpea + Safflower (4:2)	Chickpea - Sorghum / Safflower / Sunflower / Chickpea / Maize / Sorghum + Chickpea (2:1) Chickpea + Safflower (4:2)

Haveri District

Haveri district falls under Northern Transition agroclimatic zone (KA-8) in north interior Karnataka. The district receives a mean annual rainfall of 747 mm of which 448 mm is received during south west monsoon and 162 mm during north east monsoon. The major soil types in the district are red loamy and medium to deep black soils (see map). The district has an area 303000 ha under rainfed situation (83%). The major rainfed crops cultivated in the district are maize, cotton, sorghum, soybean, greengram during *kharif* season while groundnut and rice are the major irrigated crops. During *rabi*, sorghum, chickpea and safflower are the major rainfed crops.



Normal sowing window for major field crops

Season/ Situation	Maize	Cotton	Sorghum	Soybean/ Greengram	Groundnut
<i>Kharif</i> - Rainfed	1 st week of June to 3 rd week of July	1 st week of June to 2 nd week of July	1 st week of June to 3 rd week of June	1 st week of June to 4 th week of June	1 st week of June to 2 nd week of July
<i>Kharif</i> - Irrigated	2 nd week of May to 2 nd week of July	2 nd week of May to 2 nd week of July	--	--	--
<i>Rabi</i> - Rainfed	--	--	3 rd Week of September to 2 nd week of October	--	--
<i>Rabi</i> - Irrigated	--	--	3 rd Week of September to 2 nd Week of October	--	2 nd week of December to 2 nd week of January

Contingency crop plan

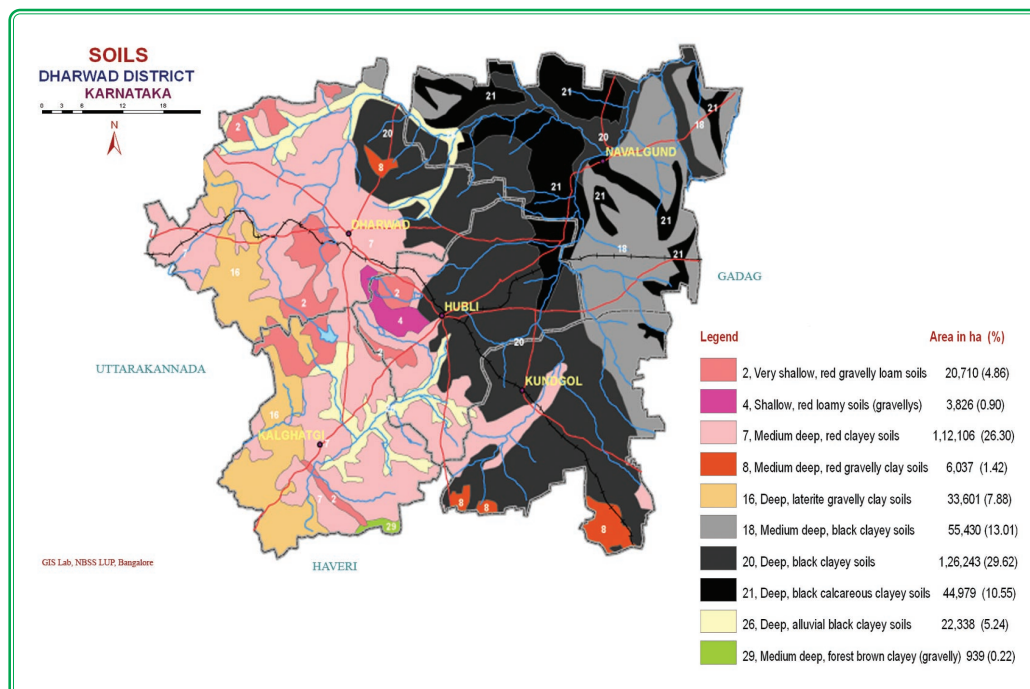
Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)	Delay by 8 weeks (1 st week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Medium to deep black soils	Maize – Rabi Sorghum / Chickpea	Maize – Rabi Sorghum Maize : Deccan103, DHM-2, Ganga11, ESG-43, 4042, G-5 Rabi Sorghum : M35-1, DSV-4, 5, 6	Maize – Rabi Sorghum Maize : Deccan103, DHM-2, Ganga-11, ESG-43, 4042, G-5 Rabi Sorghum : M35-1, DSV-4, 5, 6	Maize – Rabi sorghum Maize : Deccan103, DHM-2, Ganga11, ESG-43, 4042, G-5 Rabi Sorghum : M-35-1, DSV-4, 5, 6	Sunflower (KBHS-1, 44, DSH-1, RSFH-1, SH-41, Morden)
	Maize + Pigeonpea	Maize + Pigeonpea Maize : Deccan103, DHM-2, Ganga11, ESG-43, 4042, G-5 Pigeonpea : VT-221, BRG-2, Maruti, Asha, TS-3) (6:2)	Maize + Pigeonpea(6:2) Maize : Deccan103, DHM-2, Ganga11, ESG-43, 4042, G-5 Pigeonpea : VT-221, BRG-2, Maruti, Asha, TS-3) (6:2)	Maize + Pigeonpea(6:2) Pigeonpea: Maruti, Durga, GC11-39 (6:2)	Sunflower (KBHS-1, 44, DSH-1, RSFH-1, SH-41, Morden)
	Hybrid cotton (Bt)	Hybrid cotton (Bt)	Hybrid cotton (Bt)	Hybrid cotton (Bt)	Kharif Fallow- Rabi Sorghum
	Rice – Greengram/ Blackgram	Rice - Greengram/ Blackgram Rice : Rasi, Avinasha, MTU-1001,	Rice - Green gram/ Blackgram Rice : Rasi, Avinasha, MTU-1001,	-	-

(1)	(2)	(3)	(4)	(5)	(6)
		Amrutha, Abhilasha, IIT-7564 Greengram: Pusabaisaki, SEL-4, PDM-84,178 Blackgram: K-7, P-9	Amrutha, Abhilasha, IIT-7564 Greengram: Pusabaisaki, SEL-4, PDM-84, 178 Blackgram: K-7, P-9		
	Groundnut – Rabi Sorghum/ Chickpea	Groundnut – Rabi Sorghum/ Chickpea Groundnut : R-8808,S-206, S-230,GPBD-4 Rabi Sorghum : M 35-1, DSV-4, 5, 6 Chickpea : Annegiri-1, ICCV-2, 10, JG-11, BG-1105, Vishal, Kak-2	Groundnut – Rabi Sorghum/ Chickpea Groundnut : R-8808, S-206, S- 230,GPBD-4 Rabi Sorghum : M 35-1, DSV-4, 5, 6 Chickpea : Annegiri-1, ICCV-2, 10, JG-11, BG-1105, Vishal, Kak-2	Sunflower- Rabi Sorghum/ Chickpea Sunflower : KBHS-1, 44, DSH-1, RSFH-1, SH-41, Morden Chickpea : Annegiri-1, ICCV-2, 10, JG-11, BG-1105, Vishal, Kak-2	-
	Soybean	Soybean– Rabi Sorghum/ Chickpea / Safflower Soybean: JS-335, KHSB-2 Chickpea : Annegiri-1, ICCV-2, 10, JG-11, BG-1105, Vishal, Kak-2 Safflower : A-1, 300, S-144, H-2	Fallow- Rabi Sorghum/ Chickpea / Safflower Chickpea : Annegiri-1, ICCV-2, 10, JG-11, BG-1105, Vishal, Kak-2 Safflower : A-1, 300, S-144, H-2	Sunflower - Rabi Sorghum/ Chickpea / Safflower Chickpea : Annegiri-1, ICCV-2, 10, JG-11, BG-1105, Vishal, Kak-2 Safflower : A-1, 300, S-144, H-2	-

(1)	(2)	(3)	(4)	(5)	(6)
	Greengram - Sorghum	Greengram – Sorghum Greengram: Pusabaisaki, SEL-4, PDM-84, 178	Fallow- Rabi Sorghum	Sunflower- Rabi Sorghum	-
	Chilli + Desi cotton	Chilli + Desi cotton Chilli : NP-46A, Pusa Jwala, Bhagya laxmi	Chilli + Desi cotton Chilli : NP-46A, Pusa Jwala, Bhagya laxmi	Chilli + Desi cotton Chilli : NP-46A, Pusa Jwala, Bhagya laxmi	-
Red loamy soils	Maize	Maize (Ganga-11, Deccan-103, DHM-2, G-25)	Maize (Ganga-11, Deccan-103, DHM-2, G-25)	Sunflower/ Pearl millet/ Horsegram	Desi Cotton / Sunflower/ Horsegram/ Kharif fallow- Rabi Sorghum
	Sorghum + Pigeonpea (5:1 and 4:2)	Sorghum + Pigeonpea (5:1 and 4:2) Sorghum : CSH-18, 9, DSV-2, DSS-4, CSS-15 Pigeonpea: BRG-2, ICP-7035, Maruti, Asha	Hybrid cotton (NHH-44, DHH-543, Bunny, LRA-5166)	Desi cotton/ Sun flower	Desi Cotton/ Sunflower/ Horsegram/ Kharif fallow- Rabi Sorghum
	Groundnut (Spreading) (DSG-1,S-230)	Groundnut (Spreading) (DSG-1,S-230)	Sorghum + Pigeonpea (5:1 and 4:2)	Desi cotton/ Sun flower	Desi Cotton, Sunflower/ Horse gram/ Kharif fallow Rabi Sorghum
	Little Millet + Pigeonpea	Little Millet + Pigeonpea Pigeonpea : BRG-2, ICP-7035 (6:1)	Groundnut Spreading (DSG-1)	Desi cotton/ Sun flower	Desi Cotton, Sunflower/ Horse gram/ Kharif fallow- Rabi Sorghum

Dharwad District

Dharwad district falls under Northern Dry agroclimatic zone (KA-3) in north interior Karnataka. The district receives a mean annual rainfall of 785 mm of which 478 mm is received during south west monsoon and 159 mm during north east monsoon. The soil types in the district are medium deep black soils (see map). The district has an area of 257000 ha under rainfed situation (83% of net sown area). The major crops cultivated in the district are cotton, maize, soybean, greengram and groundnut.



Normal sowing window for major field crops

Season/ Situation	Cotton	Maize	Soybean	Greengram	Groundnut
<i>Kharif</i> - Rainfed	1 st week of May to 2 nd week of July	1 st week of June to 4 th week of July	1 st week of June to 1 st week of July	1 st week of June to 3 rd week of June	1 st week of June to 4 th week of July
<i>Kharif</i> - Irrigated	--	1 st week of June to 4 th week of August	--	--	--
<i>Rabi</i> - Irrigated	1 st week of September to 4 th week of October	--	--	--	--

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)	Delay by 8 weeks (1 st week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Medium to deep black soils	Maize	Maize + Pigeonpea / Groundnut + Pigeonpea (4:2) Pigeonpea : GSS-1, BJ-221, Asha, ICPC-87 Groundnut : S-206, DSG-1, S-230	Maize + Pigeonpea(4:2) / Groundnut + Pigeonpea (4:2)	Sunflower hybrids- Chickpea	Sunflower hybrids- Chickpea
	Soybean	Maize + Pigeonpea / Groundnut + Pigeonpea (4:2) Pigeonpea : GSS-1, BJ-221, Asha, ICPC-87 Groundnut : S-206, DSG-1, S-230	Maize + Pigeonpea (4:2) / Groundnut + Pigeonpea (4:2)	Sunflower hybrids- Chickpea	Sunflower hybrids- Chickpea
	Groundnut– Rabi Sorghum/ Wheat	Maize + Pigeonpea/ Groundnut + Pigeonpea (4:2) Pigeonpea : GSS-1, BJ-221, Asha, ICPC-87 Groundnut : S-206, DSG-1, S-230	Maize + Pigeonpea(4:2) / Groundnut+ Pigeonpea (4:2)	Sunflower hybrids- Chickpea	Sunflower hybrids- Chickpea

(1)	(2)	(3)	(4)	(5)	(6)
	Greengram- <i>Rabi</i> Sorghum/ Wheat	Maize + Pigeonpea / Groundnut + Pigeonpea (4:2) Pigeonpea : GSS-1,BJ-221, Asha, ICPC-87 Groundnut : S-206, DSG-1, S-230	Maize + Pigeonpea (4:2) / Groundnut + Pigeonpea (4:2)	Sunflower hybrids- Chickpea	Sunflower hybrids- Chickpea
	Chilli + Desi Cotton + Onion	Maize + Pigeonpea / Groundnut + Pigeonpea (4:2) Pigeonpea : GSS-1,BJ-221, Asha, ICPC-87 Groundnut : S-206, DSG-1, S-230	Maize + Pigeonpea (4:2) / Groundnut + Pigeonpea(4:2)	Sunflower hybrids- Chickpea	Sunflower hybrids- Chickpea
	Hybrid Cotton (Bt)		Maize + Pigeonpea / Groundnut + Pigeonpea(4:2) Pigeonpea : GSS-1,BJ-221, Asha, ICPC-87 Groundnut : S-206, DSG-1, S-230	Sunflower hybrids- Chickpea	Fallow- <i>Rabi</i> Sorghum / Fieldbean / Littlemillet
Rainfed drilled paddy situation	Rice – Greengram / Blackgram / Avare	Rice – Greengram / Blackgram / Avare	Rice – Greengram / Blackgram / Avare	Rice/ Sunhemp / Fodder Maize Rice : Amrut, MGD-101, MTU-1001	Rice (in low lands) Rice : Amrut, MGD-101, MTU-1001 Sunhemp / Fodder Maize (in mid lands)

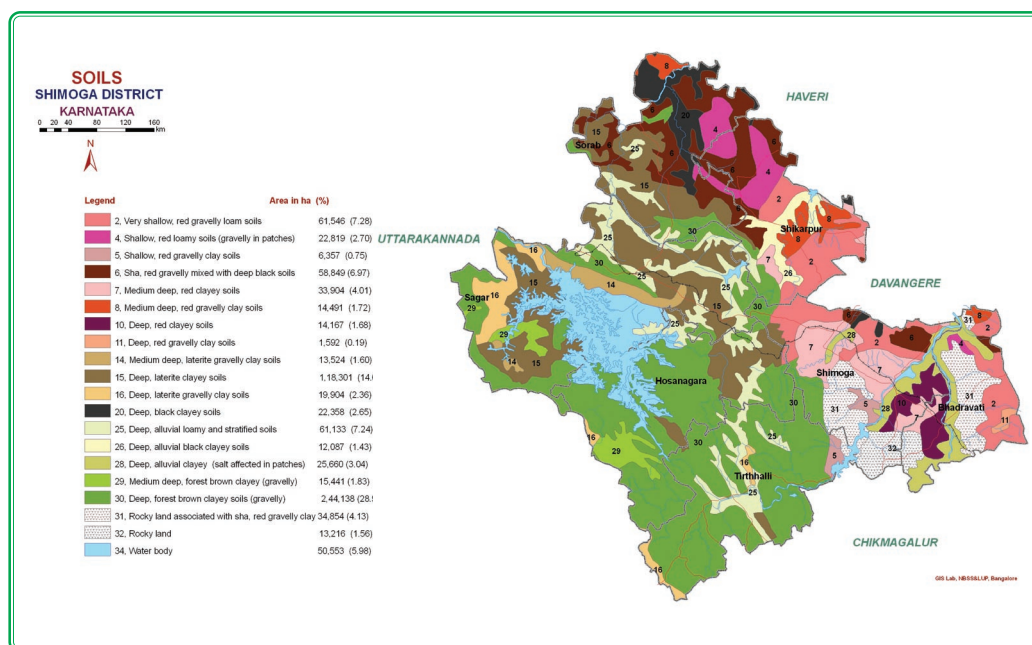
2.2.3 MAJOR CROPS IN MALNAD REGION

- Malnad region in Karnataka encompasses 4 districts (Shimoga, Hassan, Chikkamagalur, Kodagu). The major field crops cultivated during *kharif* season under rainfed conditions are: Finger millet, Maize, Field bean, Castor, Sesame, Cowpea and Sunflower. In Kodagu plantation cowpea crop are dominant and hence contingency crop plan is not given.
- Rice is cultivated predominantly in Shimoga and chikkamagalur and to some extent in Hassan under un-irrigated conditions during *kharif* season.
- Rice is the major irrigated crop cultivated during *kharif* in Shimoga, Hassan and Chikkamagalur
- Major crops cultivated during *rabi* under rainfed conditions are: chickpea
- Major crops cultivated during *rabi* under irrigated conditions are: Rice in Hassan; Maize in Hassan
- Major crops cultivated during Summer under irrigated conditions are: Rice in Shimoga, Chikkamagalur: Maize in Shimoga

<i>Kharif</i> rainfed crops	Districts
Finger millet	Hassan, Chikkamagalur
Maize	Shimoga, Hassan, Chikkamagalur
Sorghum	Chikkamagalur, Hassan
Field bean	Hassan
Cowpea	Hassan
Niger	Hassan
Sesame	Chikkamagalur
Greengram	Hassan, Chikkamagalur
Castor	Hassan
Groundnut	Chikkamagalur
Sunflower	Hassan
<i>Rabi</i> rainfed crops	
Sorghum	Chikkamagalur,
Chickpea	Chikkamagalur, Hassan, Shimoga

Shimoga District

Shimoga district falls under Southern Transition agroclimatic zone (KA-7) in Malnad region of Karnataka. The district receives a mean annual rainfall of 2073 mm of which 1787 mm is received during south west monsoon and 162 mm in north east monsoon. The major soil types in the district are mixed red and black soils, red sandy and loamy soils (see map). The district has an area of 89000 ha under rainfed situation (40%). The major crops cultivated in the district are rice, maize, groundnut and pigeonpea.



Normal sowing window for major field crops

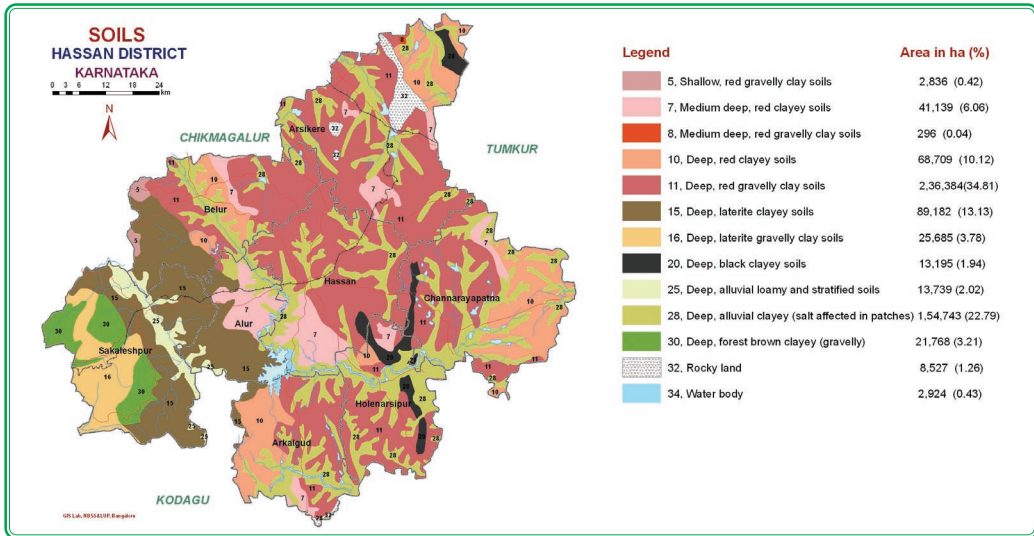
Season/ Situation	Rice	Maize	Groundnut	Pigeonpea
<i>Kharif</i> - Rainfed	1 st week of June to 1 st week of July	1 st week of May to 4 th week of June	1 st week of May to 2 nd week of June	1 st week of May to 4 th week of June
<i>Kharif</i> - Irrigated	1 st week of June to 4 th week of July	1 st week of June to 4 th week of July	1 st week of June to 2 nd week of June	--
<i>Rabi</i> - Rainfed	--	--	2 nd week of November to 2 nd week of January	--
<i>Rabi</i> - Irrigated	--	--	4 th week of December to 2 nd week of January	--

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)	Delay by 8 weeks (1 st week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Red gravelly mixed with deep black soils	Maize	Maize (Deccan-103, DHM-2, Ganga-11, G-5, NAC-6004,)	Maize + Pigeonpea (3:1) Maize: Deccan103, DHM-2, Ganga-11, G-5, NAC-6004 Pigeonpea : BRG-2	Maize + Cowpea / Blackgram/ Greengram / Fieldbean Maize: Deccan103, DHM-2, Ganga-11, G-5, NAC-6004 Cowpea: KBC1,3 Blackgram: LBG-625, Karoan-3 Greengram: Pusa Baisaki, PDM-84, 178	Finger millet/ Cowpea / Soybean / Sunflower / Blackgram Sunflower: KBSH-1,44 Blackgram: LBG- 625, Kargoan-3 Cowpea: KBC-1,2, TVX - 944
Red sandy soils under heavy and assured rainfall situation	Rice	Drill sown Rice (IET-7191, KHP-2, 5, IET-13901)	Drill sown Rice (IET-7191, KHP-2, 5, IET-13901)	In low land – Prefer short duration Rice varieties Up land - change to pulse crops viz., Greengram, Blackgram, Cowpea, Fieldbean	In low land – Rice (short duration) Up land – Cowpea/ Soybean Soybean: Hebbal Avare 3 , 4

Hassan District

Hassan district falls under Southern Transition agroclimatic zone (KA-7), Hill agroclimatic zone (KA-9) and Central Dry agroclimatic zone (KA-4) in Karnataka. The district receives a mean annual rainfall of 1396 mm of which 981mm is received during south west monsoon and 227 mm during north east monsoon. The major soil types in the district are very deep red soils in both hills and plains (see map). The district has an area of 254000 ha under rainfed situation (94% of net sown area). The major crops cultivated in the district are finger millet, maize, potato, sunflower and rice.



Normal sowing window for major field crops:

Season/ Situation	Finger millet	Maize	Potato	Sunflower	Rice
<i>Kharif</i> - Rainfed	1 st week of May to 1 st week of August	1 st week of May to 1 st week of August	1 st week of June to 2 nd week of June	2 nd week of May to 3 rd week of May	2 nd week of July to 1 st week of August
<i>Kharif</i> - Irrigated	1 st week of July to 1 st week of August	1 st week of June to 1 st week of July	3 rd week of May to 4 th week of May	1 st week of May to 2 nd week of May	1 st week of July to 1 st week of August
<i>Rabi</i> - Rainfed	1 st week of September to 2 nd week of September	1 st week of September to 2 nd week of September	--	1 st week of August to 2 nd week of August	--
Summer	--	--	--	--	1 st week of December to 1 st week of January

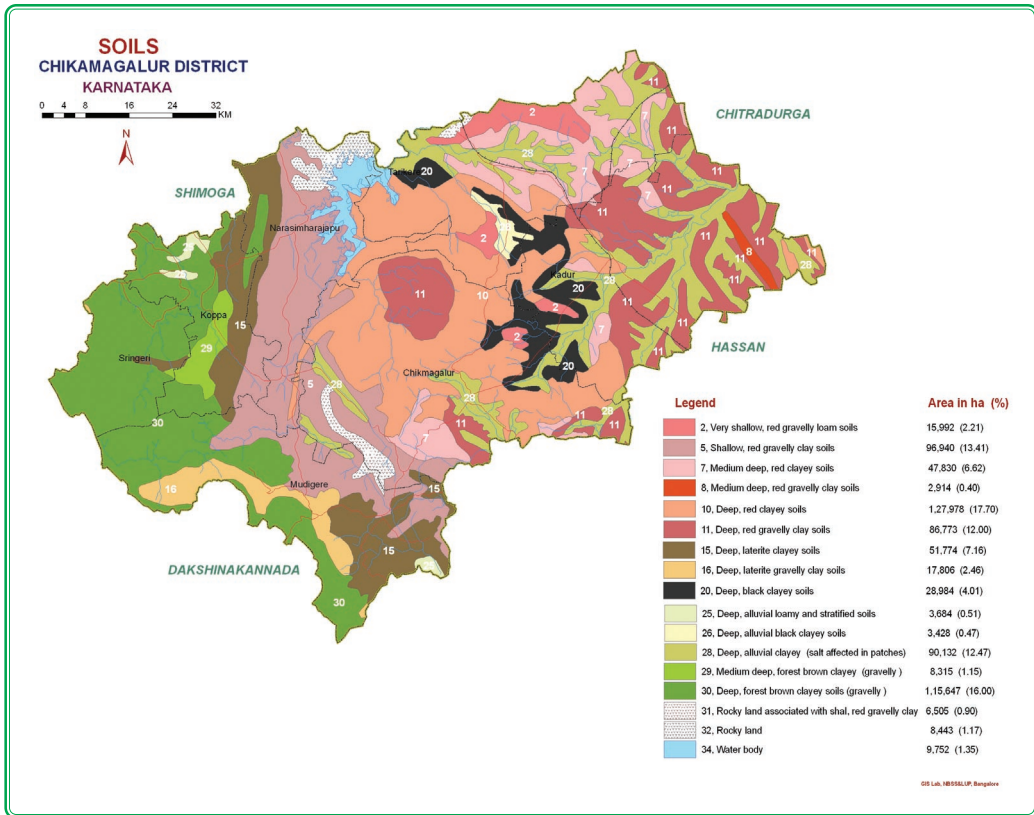
Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)	Delay by 8 weeks (1 st week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Deep Red soils in plains (Zone-7)	Potato – Finger millet/ Potato + Pigeonpea / Castor	Potato – Finger millet/ Potato+ Pigeonpea/ Castor Potato: Kufri Jyothi Finger millet: MR-1, 6, L-5 Pigeonpea: BRG-1,2,Maruti	Potato – Finger millet/ Potato+ Pigeonpea/ Castor Potato: Kufri Jyothi Finger millet: MR-1, 6, L-5 Pigeonpea: BRG-1,2,Maruti	Potato – Finger millet/ Potato+ Pigeonpea/ Castor Potato: Kufri Jyothi Finger millet: MR-1, 6, L-5 Pigeonpea: BRG-1,2,Maruti	Potato – Finger millet/ Potato+ Pigeonpea/ Castor Potato: Kufri Jyothi Finger millet: MR-1, 6, L-5 Pigeonpea: BRG-1,2,Maruti
	Maize –Finger millet / pulses Maize : NAC-6004; Finger millet : GPU-28, Local	Maize – Finger millet / pulses Maize : NAC-6004; Finger millet : GPU-28, Local	Maize – Finger millet / pulses Maize : NAC-6004; Finger millet : GPU-28, Local	Maize – Finger millet / pulses Maize : NAC-6004; Finger millet : GPU-28, Local	Maize – Finger millet / pulses Maize : NAC-6004; Finger millet : GPU-28, Local
Deep red soils in Plains (Zone-4)	Sesame/ Minor millets / Pulses – Finger millet / Sunflower/Maize	Sesame/ Minor millets / Pulses – Finger millet / Sunflower/Maize	Sesame/ Minor millets / Pulses – Finger millet	Sesame/ Minor millets / Pulses – Finger millet	Sunflower/ Minor millets / Pulses – Finger millet
Shallow to medium deep soils (Zone-6)	Horsegram / Cowpea / Blackgram – Finger millet / Maize/ Groundnut/ Greengram/ Rice / Sesame-potato	Horsegram / Cowpea / Blackgram – Finger millet / Maize/ Groundnut / Greengram/ Rice / Sesame- potato Horsegram: PHG-9, KBH-1	Horsegram / Cowpea / Blackgram – Finger millet / Maize/ Groundnut / Greengram/ Rice/	Horsegram / Cowpea / Blackgram – Finger millet / Maize/ Groundnut/ Greengram/ Rice/ Sesame-	Finger millet with Pulses as intercrop Finger millet- GPU-28, local

(1)	(2)	(3)	(4)	(5)	(6)
		Cowpea: C-152, KBC-2 Blackgram: K-7, T-9 Finger millet : L-5, Indaf-8, MR-1 Maize: Deccan-103, NAC-6002, NAH-2049 Groundnut: JL-24, S-206, DSG-3-30, DH- 86 Greengram: Pusabaisaki, PDM-84-178 Rice: Rasi, Tellahamsa, Jyoti, Amrutha Sesame : E-8, DS-1 Potato: Kufri Jyothi	Sesame- Potato Horsegram: PHG-9, KBH-1 Cowpea: C-152, KBC-2 Blackgram: K-7,T-9 Finger millet L-5, Indaf-8, MR-1 Maize: Deccan-103, NAC-6002, NAH-2049 Groundnut: JL-24, S-206, DSG-3-30, DH-86 Greengram : Pusabaisaki, PDM-84, 178	Potato Horsegram: PHG-9, KBH-1 Cowpea: C-152, KBC-2 Blackgram: K-7, T-9 Finger millet L-5, Indaf-8, MR-1 Maize: Deccan-103, NAC-6002, NAH-2049 Groundnut: JL-24, S-206, DSG-3-30 DH-86 Greengram: Pusabaisaki, PDM-84,178	

Chikkamagalur District

Chikkamagalur district falls under Hill agroclimatic zone (KA-9) in Karnataka. The district receives a mean annual rainfall of 1802 mm of which 1416 mm is received during south west monsoon and 260 mm during north east monsoon. The major soil types in the district are red sandy loam, laterite and red sandy soils (see map). The district has an area of 261000 ha under rainfed situation (88% of net sown area). The major crops cultivated in the district are rice, finger millet, sorghum, sunflower, horsegram and groundnut.



Normal sowing window for major field crops

Season/Situation	Rice	Finger millet	Sorghum	Sunflower	Horsegram
Kharif-Rainfed	1 st week of June to 1 st week of July	1 st week of June to 1 st week of August	1 st week of April to 4 th week of June	1 st week of June to 1 st week of August	4 th week of July to 4 th week of August
Rabi-Rainfed	--	--	2 nd week of August to 2 nd week of September	--	--

Contingency crop plan

Farming situation	Normal crop/	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)	Delay by 8 weeks (1 st week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Red sandy loam soils	Finger millet	Finger millet (MR-1, 6, Indaf-8, L-5, GPU-28, HR-911)	Finger millet (MR-1, 6, Indaf-8, L-5, GPU-28, HR-911)	Finger millet – Cowpea / Sunflower Finger millet : MR-2, GPU-28, MR-6, Indaf-5 Cowpea: TVX-944, KBC-1 Sunflower : KBSH-41, 44, Gangakaveri hybrid	Horsegram
	Sunflower	Sunflower (KBH-1, 44, KBSH-42)	Sunflower (KBSH-41, Morden)	Sunflower (KBSH-41, Morden)	Horsegram
	Groundnut	Groundnut / Groundnut + Pigeonpea(8:2)	Sunflower / Finger millet / Groundnut + Pigeonpea(8:2)	Sunflower / Finger millet / Groundnut + Pigeonpea (8:2)	Horsegram
Deep black soils	Onion	Onion	Sunflower / Finger millet / Groundnut + Pigeonpea(8:2)	Sunflower/ Finger millet / Groundnut- Fodder Sorghum Sunflower: KBSH-41,42,44, Gangakaveri hybrid,GPU-45, 48, Indaf-5 Groundnut : GPBD-4, JL-24 FodderSorghum: JS-3, GS-20, Salabane	-

2.3 MAHARASHTRA

In Maharashtra, contingency crop plans for 29 districts have been included except for 4 districts viz., Ratnagiri, Raigad, Sindhudurg and Thane districts considering rainfall and cropping pattern. However, the annual and seasonal rainfall information is furnished for all the districts in the table given below:

District level annual and seasonal rainfall information*

Districts	Agro climatic zone	Annual Rainfall (mm)	Rainy days	South West Monsoon (June-Sep)		North East Monsoon (Oct-Dec)	
				RF (mm)	Rainy days	RF (mm)	Rainy days
Kolhapur	MH-1	1626	81	1375	65	148	9
Ratnagiri	MH-1	3291	98	3093	88	159	7
Sindhudurg	MH-1	2887	96	2661	85	156	8
Raigad	MH-2	3320	94	3164	86	130	6
Thane	MH-2	2525	84	2411	78	96	5
Ahmednagar	MH-6	596	35	460	27	103	6
Akola	MH-6	825	45	712	37	73	4
Dhule	MH-6	647	36	570	31	59	3
Jalgaon	MH-6	782	44	690	38	69	4
Sangli	MH-6	737	49	517	35	136	8
Solapur	MH-6	659	39	499	29	115	7
Satara	MH-6&MH-4	1118	62	909	48	139	9
Nandurbar	MH-5&MH-6	914	48	851	44	51	3
Nashik	MH-6&MH-5	658	41	540	34	91	5
Pune	MH-6&MH-5	1123	59	963	50	116	7
Aurangabad	MH-6&MH-7	761	45	637	37	92	5
Beed	MH-6&MH-7	734	41	599	34	98	5
Amravati	MH-7	886	47	775	40	70	4
Buldhana	MH-7	793	44	685	37	77	4
Jalna	MH-7	752	41	632	35	89	4
Latur	MH-7	929	50	776	41	105	5
Parbhani	MH-7	916	46	790	39	91	4
Osmanabad	MH-7&MH-6	845	48	692	39	105	6
Hingoli	MH-7&MH-8	877	44	780	39	77	4
Nanded	MH-7&MH-8	979	51	836	43	93	5
Chandrapur	MH-8	1305	59	1161	50	79	4
Wardha	MH-8	1043	53	905	44	74	4
Washim	MH-8	965	49	849	41	75	4
Yavatmal	MH-8	1032	53	906	45	76	4
Bhandara	MH-9	1361	60	1212	51	81	4
Gadchiroli	MH-9	1429	61	1298	53	74	4
Gondia	MH-9	1378	60	1237	51	79	4
Nagpur	MH-9 & MH-8	1082	55	936	45	76	4

*based on long-term rainfall data

2.3.1 MAJOR CROPS IN MADHYA MAHARASTRA

- Madhya Maharashtra encompasses 10 districts and the major crops cultivated during *kharif* season under rainfed conditions are: cotton, sorghum, pearl millet, maize, soybean, pigeonpea, sugarcane, greengram, blackgram and sesame.
- Rice is cultivated predominantly in Kolhapur, Pune, Nashik, Satara, Nandurbar, Sangli, Ahmednagar, Dhule under rainfed conditions during *kharif* season.
- Major crops cultivated during *kharif* season under irrigated conditions are: Soybean in Kolhapur, Cotton in Dhule and Jalgaon; Sugarcane in Nashik and Solapur; Groundnut in Kolhapur and Dhule; Greengram and Blackgram in Pune and Sangli.
- Major crops cultivated during *rabi* under rainfed conditions are: chickpea in Nashik, Sorghum in Solapur, Pune, Sangli and Satara.
- Major crops cultivated during *rabi* season under irrigated conditions are: Wheat in Ahmednagar, Nashik, Pune, Solapur, Satara, Dhule, Sangli, Jalgaon, Kolhapur, Nandurbar; Rice in Pune; Sorghum in Nandurbar; Chickpea in Ahmednagar, Pune, Nandurbar, Dhule and Kolhapur; Sugarcane in Ahmednagar, Kolhapur, Pune, Satara and Sangli; Groundnut in Nandurbar.
- Major crop cultivated during summer season under irrigated conditions is: Groundnut in Nandurbar.

<i>Kharif</i> rainfed crops	Districts
Cotton	Jalgaon, Dhule, Nandurbar, Ahmednagar, Nashik, Sangli, Satara, Kolhapur, Solapur, Pune.
Sorghum	Solapur, Pune, Ahmednagar, Sangli, Satara, Jalgaon, Nandurbar, Dhule, Kolhapur, Nashik.
Pearl millet	Ahmednagar, Nashik, Dhule, Satara, Sangli, Pune, Jalgaon, Solapur, Nandurbar.
Maize	Nashik, Ahmednagar, Solapur, Dhule, Sangli, Nandurbar, Pune, Satara, Kolhapur.
Soybean	Ahmednagar, Sangli, Nashik, Satara, Nandurbar, Jalgaon, Dhule, Solapur, Pune.
Pigeonpea	Solapur, Nandurbar, Ahmednagar, Jalgaon, Sangli, Nashik, Dhule, Satara, Pune, Kolhapur.
Groundnut	Satara, Nashik, Sangli, Pune, Jalgaon.
Rice	Kolhapur, Pune, Nashik, Satara, Nandurbar, Sangli, Ahmednagar, Dhule, Sholapur.
Chickpea	Jalgaon, Sholapur, Nashik, Sangli, Satara.
Sunflower	Solapur
Sesame	Jalgaon

Kharif irrigated crops

Maize	Jalgaon
Sugarcane	Nashik, Solapur
Soybean	Kolhapur
Other Pulses- (Greengram& Blackgram)	Satara, Sangli, Nashik, Pune, Dhule, Ahmednagar, Nandurbar, Kolhapur, Jalgaon, Solapur.
Groundnut	Kolhapur, Dhule.

Rabi rainfed crops

Sorghum	Solapur, Pune, Sangli, Satara.
Chickpea	Nashik

Rabi irrigated crops

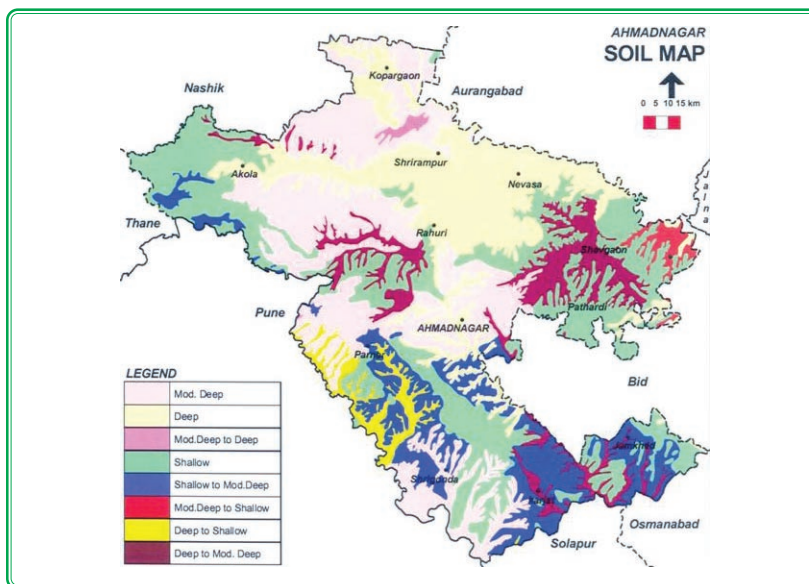
Sugarcane	Ahmednagar, Kolhapur, Pune, Sangli, Satara, Nashik.
Wheat	Ahmednagar, Nashik, Pune, Solapur, Satara, Dhule, Sangli, Jalgaon, Kolhapur, Nandurbar.
Rice	Pune
Sorghum	Nandurbar
Chickpea	Ahmednagar, Pune, Nandurbar, Dhule, Kolhapur.

Summer Irrigated crop

Groundnut	Nandurbar
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Ahmednagar District

Ahmednagar district falls under Western Maharashtra scarcity agro climatic zone (MH-6) in Maharashtra. The district receives a mean annual rainfall of 596 mm of which 460 mm is received during south west monsoon and 103 mm in north east monsoon. The dominant soil types in the district are deep black soils (see map). The district has an area of 816000 ha under rainfed situation (71% of net sown area). The major rainfed crops cultivated in the district are pearl millet, soybean, *rabi*- sorghum and irrigated crops are sugarcane, chickpea and wheat.



Normal sowing window for major field crops

Season/ Situation	Pearl millet	Soybean	Rabi- Sorghum	Sugarcane	Chickpea	Wheat
<i>Kharif</i> - Rainfed	2 nd week of June to 2 nd week of July	2 nd week of June to 2 nd week of July	--	--	--	--
<i>Kharif</i> - Irrigated	2 nd week of June to 2 nd week of July	2 nd week of July to 4 th week of July	--	2 nd week of July to 2 nd week of August (Adsali)	--	--
<i>Rabi</i> - Rainfed	--	--	2 nd week of September to 2 nd week of October	--	2 nd week of September to 3 rd week of September	--

Season/ Situation	Pearlmillet	Soybean	Rabi- Sorghum	Sugarcane	Chickpea	Wheat
Rabi- Irrigated	--	--	--	2 nd week of October to 2 nd week of November (Pre-seasonal) and 2 nd week of December to 2 nd week of February (suru)	3 rd week of October to 1 st week of November	1 st week of November to 2 nd week of November

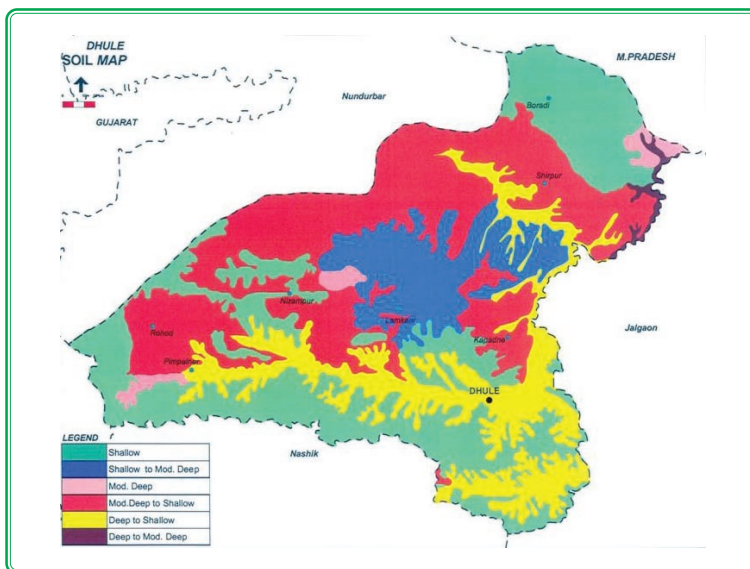
Contingency crop plan

Farming situation	Normal Crop	Suggested contingency crops /cropping system and cultivars		
	Normal onset of monsoon (2 nd week of June)	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)
(1)	(2)	(3)	(4)	(5)
Shallow grey soils	Pearl millet	Pearl millet + Pigeonpea (2:1) Pearl millet: Shanti, ICTP-203 Pigeonpea: Vipula	Pearl millet + Pigeonpea (2:1) Pearl millet: Shanti, ICTP-203 Pigeonpea:Vipula	Pearl millet for fodder (Gaint Bajra)
Medium deep black soils	Soybean	Soybean + Pigeonpea (6:2) Soybean:JS-9305, DS-228, JS-335 Pigeonpea:Vipula	Soybean + Pigeonpea (6:2) Soybean:JS-9305, DS-228, JS-335 Pigeonpea: Vipula	Sunflower (SS-56, Bhanu)
	Maize	Maize (African tall, Karveer, Rajarshee)	Maize (African tall, Karveer, Rajarshee)	Maize (African tall)
	Onion	Onion (Phule Samarth, Baswant-780)	Onion (Phule Samarth, Baswant-780)	Fodder Sorghum (Phule Amruta, MP Chari,CSV-21F)
Deep black soils	Soybean	Soybean + Pigeonpea (6:2) Soybean:JS-9305, DS-228, JS-335 Pigeonpea:Vipula	Soybean + Pigeonpea (6:2) Soybean: JS-9305, DS-228, JS-335 Pigeonpea:Vipula	Sunflower (SS-56, Bhanu)
	Onion	Onion (Phule Samarth, Baswant-780)	Onion (Phule Samarth, Baswant -780)	Fodder Sorghum (Phule Amruta, MP Chari,CSV-21F)

*Delay 8 weeks is not applicable

Dhule District

Dhule district falls under Western Maharashtra Scarcity agro climatic zone (MH-6) in Maharashtra. The district receives a mean annual rainfall of 647 mm of which 570 mm is received during south west monsoon and 59 mm in north east monsoon. The dominant soil types in the district are shallow black soils (see map). The district has an area of 377000 ha under rainfed situation (87% of net sown area). The major rainfed crops cultivated in the district are cotton, pearl millet, groundnut, pulses, sorghum and maize and irrigated crops are rice, wheat, chickpea and maize.



Normal sowing window for major field crops

Season/ Situation	Cotton	Pearl millet	Rice	Maize	Kharif Sorghum	Rabi- Sorghum
Kharif- Rainfed	3 rd week of June to 2 nd week of July	3 rd week of June to 2 nd week of July	3 rd week of June to 2 nd week of July	3 rd week of June to 2 nd week of July	3 rd week of June to 4 th week of June	--
Kharif- Irrigated	1 st week of May to 1 st week of June	--	--	--	--	--
Rabi- Rainfed	--	--	--	--	--	3 rd week of September to 2 nd week of October

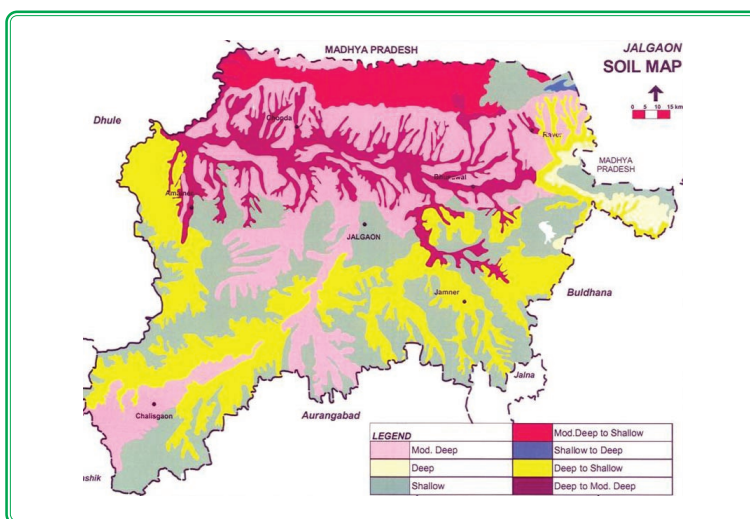
Contingency crop plan

Farming situation	Normal Crop	Suggested contingency crops /cropping system and cultivars		
	Normal onset of monsoon (2 nd week of June)	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)
(1)	(2)	(3)	(4)	(5)
Shallow black soils	Pearl millet	Pearl millet (Shraddha, Saburi, Shanti)	Pearl millet (Shraddha, Saburi, Shanti)	Pearl millet (Shraddha, Saburi, Shanti)
	Greengram / Blackgram	Greengram/ Blackgram Greengram:Phule Vaibhav. Blackgram:TPU-4	Pearl millet (Shraddha, Saburi, Shanti)	Pearl millet (Shraddha, Saburi, Shanti)
	Sorghum	Sorghum (CSH-14, 16, 17)	Pearl millet (Shraddha, Saburi, Shanti)	Pearl millet (Shraddha, Saburi, Shanti)
Medium deep black soils	Upland Rice	Rice (Phule Radha, Indrayani, Bhogavati)	Rice (Phule Radha, Pavana)	Sunflower (SS-56, Bhanu, Phule Raviraj)
	Pigeonpea	Pearl millet + Pigeonpea (2:1) Pearl millet: Shraddha, Saburi, Shanti Pigeonpea: Vipula, BSMR-736 Soybean + Pigeonpea (3:1) Soybean: JS-335 Pigeonpea:Vipula, BSMR-736.	Pigeonpea + Clusterbean (1:2) Pigeonpea:Vipula, BDN-708 -	Pigeonpea (Vipula / BDN-708) + Clusterbean (1:2) Pigeonpea:Vipula, BDN-708 -
	Soybean	Soybean (JS-335)	Sunflower (SS-56, Bhanu, Phule Raviraj)	Sunflower (SS-56, Bhanu, Phule Raviraj)
Deep black soils	Cotton	Cotton	Cotton	Cotton
	Maize	Maize (Karveer, Phule Rajarshee)	Maize (Karveer, Phule Rajarshee)	Maize (Karveer, Phule Rajarshee)

*Delay 8 weeks is not applicable

Jalgaon District

Jalgaon district falls under Western Maharashtra Scarcity agro climatic zone (MH-6) in Maharashtra. The district receives a mean annual rainfall of 782 mm of which 690 mm is received during south west monsoon and 69 mm in north east monsoon. The dominant soil types in the district are shallow deep black soils (see map). The district has an area of 717000 ha under rainfed situation (84% of net sown area). The major rainfed crops cultivated in the district are cotton, sorghum, maize, blackgram, sesame and irrigated crops are groundnut and maize.



Normal sowing window for major field crops

Season/ Situation	Cotton	Sorghum	Maize	Groundnut	Sesame	Blackgram
<i>Kharif</i> - Rainfed	2 nd week of June to 2 nd week of July	3 rd week of June to 2 nd week of July	--	2 nd week of June to 2 nd week of July	2 nd week of June to 2 nd week of July	3 rd week of June to 2 nd week of July
<i>Kharif</i> - Irrigated	3 rd week of May to 4 th week of May	--	2 nd week of June to 1 st week of July	2 nd week of June to 2 nd week of July	--	--
<i>Rabi</i> - Rainfed	--	3 rd week of September to 1 st week of October	--	--	--	--
<i>Rabi</i> - Irrigated	--	--	3 rd week of October to 2 nd week of November	--	--	--

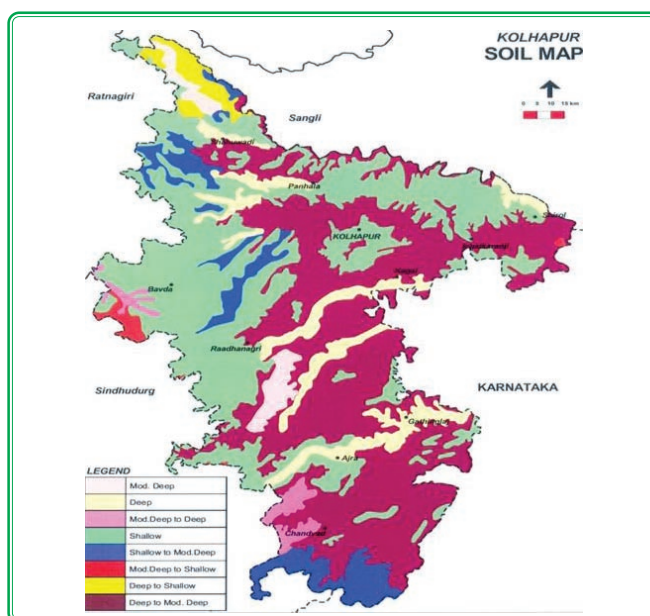
Contingency crop plan

Farming situation	Normal crop	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (June 2 nd week)	Delay by 2 weeks (June 4 th week)	Delay by 4 weeks (July 2 nd week)	Delay by 6 weeks (July 4 th week)	Delay by 8 weeks (August 2 nd week)
(1)	(2)	(3)	(4)	(5)	(6)
Medium to deep black soils	Cotton	Cotton	Cotton	Pigeonpea (Vipula)	Maize (Rajsree MMH-69)
	Sorghum	Sorghum (CSH-15, 16,17)	Sorghum+ Greengram / Black gram / Cowpea for fodder (2:1) Sorghum: CSH-15,16,17 Greengram; Vaibhav Blackgram: TPU-1,4	Maize (Rajarshee, Karveer)	Fodder maize /Sorghum Fodder maize: African tall Sorghum: Phule Amrita
	Blackgram	Blackgram (TPU-1, 4)	Pigeonpea + Blackgram (1:3) Pigeonpea: Vipula Blackgram: TPU-1, 4	Pearl millet (Shraddha, Saburi, Shanti)	Pearl millet (Shraddha, Saburi, Shanti)
	Sesame	Sesame (PT-1, JLT-7, JLT -408)	Sesame (PT-1, JLT-7, JLT -408)	Maize (Rajarshee, Karveer)	Onion (Phule Samartha, N-2-4-1)
	Pearl millet	Pearl millet (Shraddha, Saburi, Shanti)	Pearl millet+ Cowpea Pearl millet: Shraddha, Saburi, Shanti Cowpea:Phule Pandhari, C-152	Pearl millet/ Maize (Rajarshee, Karveer)	Pearl millet (Shraddha, Saburi, Shanti)

(1)	(2)	(3)	(4)	(5)	(6)
	Groundnut	Groundnut (JL-24, JL-501, JL-286)	Groundnut + Greengram/ Black gram(6:2) Groundnut: JL-24, JL-501, JL-286	Pearl millet (Shraddha, Saburi, Shanti)	Onion (Phule Samartha N-2-4-1)
	Greengram	Greengram (Vaibhav)	Pearl millet + Greengram (6:3) Greengram : Vaibhav Pearl millet : Shraddha, Saburi,Shanti	Maize (Rajarshee, Karveer)	Onion (Phule Samartha, N-2-4-1)

Kolhapur District

Kolhapur district falls under South Konkan Coastal agro climatic zone (MH-1) in Maharashtra. The district receives a mean annual rainfall of 1626 mm of which 1375 mm is received during south west monsoon and 148 mm in north east monsoon. The dominant soil types in the district are laterite soils and medium deep black soils (see map). The district has an area of 298000 ha under rainfed situation (71% of net sown area). The major rainfed crops cultivated in the district are finger millet, soybean, sorghum and groundnut and irrigated crops are sugarcane and rice.



Normal sowing window for major field crops

Season/ Situation	Finger millet	Soybean	Kharif Sorghum	Groundnut	Sugarcane	Rice
Kharif- Rainfed	1 st week of June to 2 nd week of July	1 st week of June to 1 st week of July	2 nd week of June to 1 st week of July	2 nd week of June to 2 nd week of July	--	3 rd week of May to 1 st week of June
Kharif- Irrigated	--	4 th week of May to 1 st week of July	2 nd week of June to 4 th week of June	--	--	3 rd week of May to 1 st week of June
	Chickpea					Wheat
Rabi- Irrigated	3 rd week of October to 2 nd week of November	--	--	--	Pre seasonal (2 nd week of October to 2 nd week of November) and suru (2 nd week of December to 2 nd week of February)	1 st week of October to 1 st week of November

Contingency crop plan

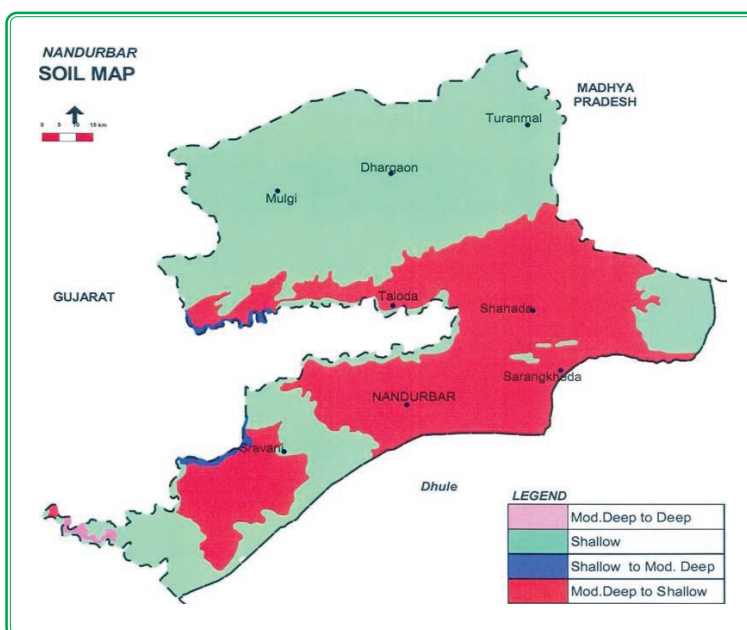
Farming situation	Normal Crop	Suggested contingency crops /cropping system and cultivars		
	Normal onset of monsoon (June 2 nd week)	Delay by 2 weeks (June 4 th week)	Delay by 4 weeks (July 2 nd week)	Delay by 6 weeks (July 4 th week)
(1)	(2)	(3)	(4)	(5)
Medium deep black soils	Rice- Rainfed	Rice (Jaya Karjat 184, Karjat 4 Indrayani, R-24, Bhogawati, Phule Radha, R-1)	Rice (Halva,RDN 185-2, EK 70, Halvisal, Pawana)	Rice (Halva, RDN 185-2, EK 70, Halvisal, Pawana)
	Groundnut	Groundnut (JL-24, JL-501, JL-286, TMV-10)	Groundnut (JL220)	Groundnut (JL220)
	Finger millet	Finger millet (GPU- 26, GPU 45)	Finger millet	Finger millet

(1)	(2)	(3)	(4)	(5)
	Sorghum	Sorghum (CSH-5, 9, 11)	Sorghum (GPU-26, GPU-45)	Sorghum (GPU-26, GPU-45)
	Soybean	Soybean (JS-335, DS-228)	Soybean (JS-335, DS-228)	
Deep brown soils	Rice- Rainfed	Rice (Indrayani, Bhogawati, R-1, 24, Samrudhi, Jaya)	Rice (Indrayani, Bhogawati, R1, 24, Samrudhi, Jaya)	Rice (Indrayani, Bhogawati, R-1, 24, Samrudhi, Jaya)
	Groundnut	Groundnut (JL-24, JL-501, JL-286, TMV-10)	Groundnut (JL-24, JL-501, JL-286, TMV-10)	Groundnut (JL-24, JL-501, JL-286, TMV-10)
	Finger millet	Finger millet (GPU-26, GPU-45),	Finger millet (GPU-26, GPU-45),	Finger millet (GPU-26, GPU-45),
	Sorghum	Sorghum (CSH-5, 9, 11)	Sorghum (CSH-5, 9, 11)	Sorghum (CSH-5, 9, 11)
	Soybean	Soybean (JS-335, DS-228)	Soybean (Puja)	

*Delay 8 weeks is not applicable

Nandurbar District

Nandurbar district falls under Western Maharashtra Plain agro climatic zone/ Transition agro climatic zone-2 (MH-5) and Western Maharashtra Scarcity zone (MH-6) in Maharashtra. The district receives a mean annual rainfall of 914 mm of which 851 mm is received during south west monsoon and 51 mm in north east monsoon. The dominant soil types in the district are shallow to medium deep black soils (see map). The district has an area of 231000 ha under rainfed situation (77% of net sown area). The major rainfed crops cultivated in the district are cotton, *khariif* sorghum, pearl millet, maize, soybean, *rabi*-sorghum, chickpea and irrigated crops are rice, wheat and groundnut.



Normal sowing window for major field crops

Season/ Situation	<i>Khariif</i> Sorghum	Rice	Pearl millet	Maize	Cotton	<i>Rabi</i> - Sorghum
<i>Khariif</i> - Rainfed	3 rd week of June to 2 nd week of July	3 rd week of June to 2 nd week of July	3 rd week of June to 2 nd week of July	3 rd week of June to 2 nd week of July	3 rd week of June to 2 nd week of July	--
<i>Khariif</i> - Irrigated	--	--	--	--	1 st week of May to 1 st week of June	--
<i>Rabi</i> - Rainfed	--	--	--	--	--	3 rd week of September to 2 nd week of October.

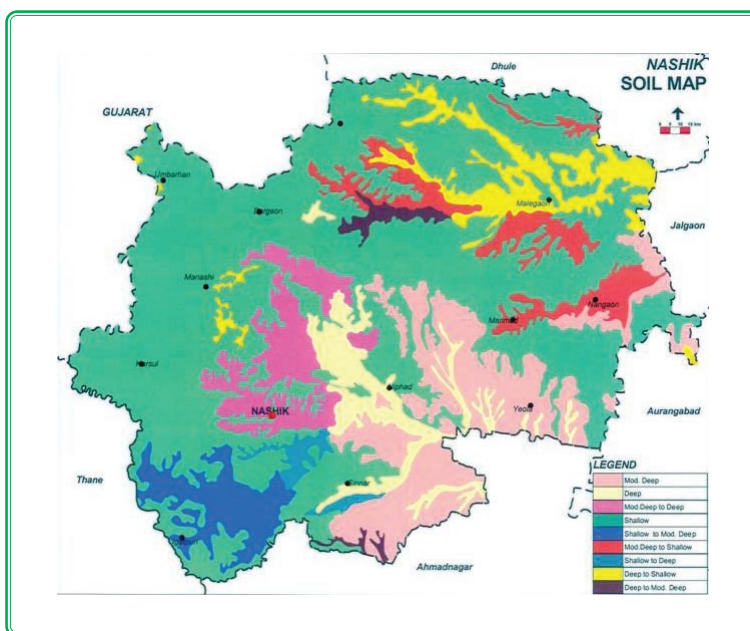
Contingency crop plan

Farming situation	Normal Crop	Suggested contingency crops /cropping system and cultivars		
	Normal onset of monsoon (June 2 nd week)	Delay by 2 weeks (June 4 th week)	Delay by 4 weeks (July 2 nd week)	Delay by 6 weeks (July 4 th week)
(1)	(2)	(3)	(4)	(5)
Shallow black soils	Pearl millet	Pearl millet (Shraddha, Saburi, Shanti)	Pearl millet (Shraddha, Saburi, Shanti)	Pearl millet (Shraddha, Saburi, Shanti)
	Greengram / Blackgram	Greengram /Black gram Greengram: Phule Vaibhav Blackgram: TPU-4	Greengram (Shraddha, Saburi, Shanti)	Greengram (Shraddha, Saburi, Shanti)
	Sorghum	Sorghum (CSH-14, 16,17)	Pearl millet (Shraddha Saburi, Shanti)	Pearl millet (Shraddha Saburi, Shanti)
Medium deep black soils	Upland Rice	Rice (Phule Radha, Indrayani, Bhogavati)	Rice (Phule Radha, Pavana)	Sunflower (SS-56, Bhanu, Phule Raviraj)
	Pigeonpea	Pearl millet + Pigeonpea (2:1)/ Soybean + Pigeonpea (3:1) Pearl millet : Shraddha, Saburi, Shanti Pigeonpea: Vipula SMR-736 Soybean: JS-335	Pigeonpea+ Clusterbean (1:2)/ Sunflower Pigeonpea: Vipula, BDN-708 Clusterbean: Pusa Navbahar Sunflower: SS-56, Bhanu, Phule Raviraj	Pigeonpea+ Clusterbean (1:2)/ Sunflower Pigeonpea: Vipula, BDN-708 Clusterbean: Pusa Navbahar Sunflower: SS-56, Bhanu, Phule Raviraj
Deep black soils	Cotton	Cotton	Cotton	Cotton
	Maize	Maize (Karveer, Phule Rajarshi)	Maize (Karveer, Phule Rajarshi)	Maize (Karveer, Phule Rajarshi)

*Delay 8 weeks is not applicable

Nasik District

Nasik district falls under Western Maharashtra Scarcity zone agro climatic (MH-6), Western Maharashtra Plain zone/ Transition agro climatic zone-2 (MH-5) in Maharashtra. The district receives a mean annual rainfall of 658 mm of which 540 mm is received during south west monsoon and 91 mm in north east monsoon. The dominant soil types in the district are shallow red soils and medium red and black soils (see map). The district has an area of 549000 ha under rainfed situation (73% of net sown area).The major rainfed crops cultivated in the district are finger millet, maize, pearl millet, cotton, soybean, chickpea and irrigated crops are rice, sugarcane, wheat and groundnut.



Normal sowing window for major field crops

Season/ Situation	Finger millet	Pearl millet	Maize	Low land Rice (Rainfed)	Onion	Wheat
<i>Kharif</i> - Rainfed	3 rd week of June to 4 th week of June	3 rd week of June to 4 th week of June	3 rd week of June to 2 nd week of July	2 nd week of June to 3 rd week of June	3 rd week of July to 2 nd week of August	--
<i>Rabi</i> - Irrigated	--	--	--	--	3 rd week of September to 2 nd week of October	1 st week of November

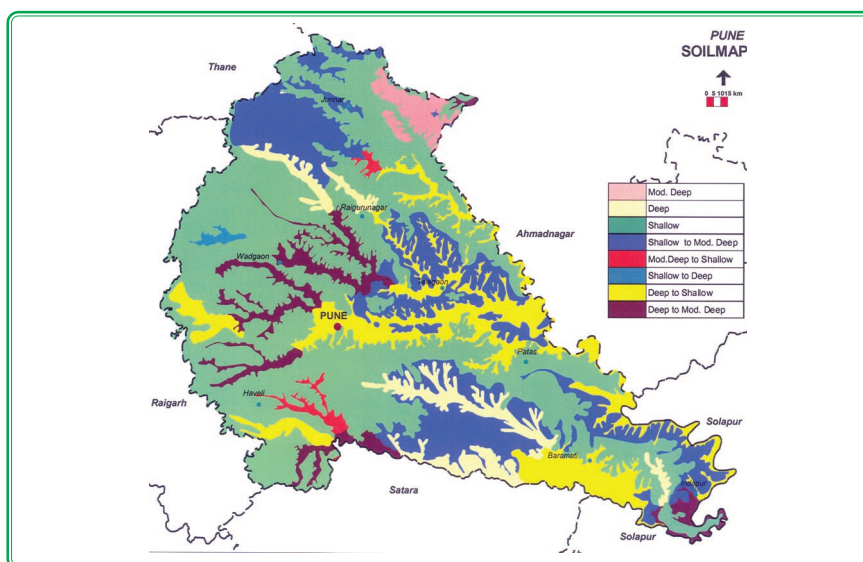
Contingency crop plan

Farming situation	Normal Crop	Suggested contingency crops /cropping system and cultivars		
	Normal onset of monsoon (3 rd week of June)	Delay by 2 weeks (1 st week of July)	Delay by 4 weeks (3 rd week of July)	Delay by 6 weeks (1 st week of August)
(1)	(2)	(3)	(4)	(5)
Shallow red soils	Pearl millet	Pearl millet (Shanti, Shraddha, Saburi)	Pearl millet (Shanti, Shraddha, Saburi)	Pearl millet (Shanti, Shraddha, Saburi)
	Groundnut	Groundnut (JL-24 , JL-286, JL-501)	Groundnut (JL-24 , JL-286, JL-501)	
Medium red / black soils	Low land Rice	Rice (Indrayani, LK-248, Phule Radha, Phule Samrudhi)	Rice (Indrayani, LK-248, Phule Radha, Phule Samrudhi)	-
	Maize	Maize (Karveer, Rajarshi (KMH22168)	Maize (Karveer, Rajarshi (KMH22168)	Maize (Karveer, Rajarshi (KMH22168)
	Niger	Niger (Sahyadri, Phule Karala)	Niger (Sahyadri, Phule Karala)	-
Deep black soils	Maize	Maize (Karveer, Rajarshi (KMH22168)	Maize (Karveer, Rajarshi (KMH22168)	Maize (Karveer, Rajarshi (KMH22168)
	Onion	Onion (Basavant-780)	Onion (Basavant -780, N-2-4-1, Phule Samarth)	Onion (Basavant - 780, N-2-4-1, Phule Samarth)

*Delay 8 weeks is not applicable

Pune District

Pune district falls under Western Maharashtra Scarcity agro climatic zone (MH-6), Western Maharashtra Plain zone/ Transition agro climatic zone-2 (MH-5) and North Konkan Coastal agro climatic zone (MH-2) in Maharashtra. The district receives a mean annual rainfall of 1123 mm of which 963 mm is received during south west monsoon and 116 mm in north east monsoon. The dominant soil types in the district are shallow red and medium deep to deep black soils (see map). The district has an area of 658000 ha under rainfed situation (69% of net sown area). The major rainfed crops cultivated in the district are sorghum, pearl millet, maize, soybean, pigeonpea and chickpea and irrigated crops are rice, sugarcane, wheat and groundnut.



Normal sowing window for major field crops

Season/ Situation	Sorghum	Pearl millet	Groundnut	Lowland Rice	Wheat
<i>Kharif</i> - Rainfed	2 nd week of June to 1 st week of July	2 nd week of June to 2 nd week of July	2 nd week of June to 4 th week of July	2 nd week of June	--
<i>Rabi</i> - Rainfed	2 nd week of September to 2 nd week of October	--	--	--	2 nd week of October to 2 nd week of November
<i>Rabi</i> - Irrigated	2 nd week of October to 4 th week of October	--	--	--	2 nd week of October to 4 th week of October

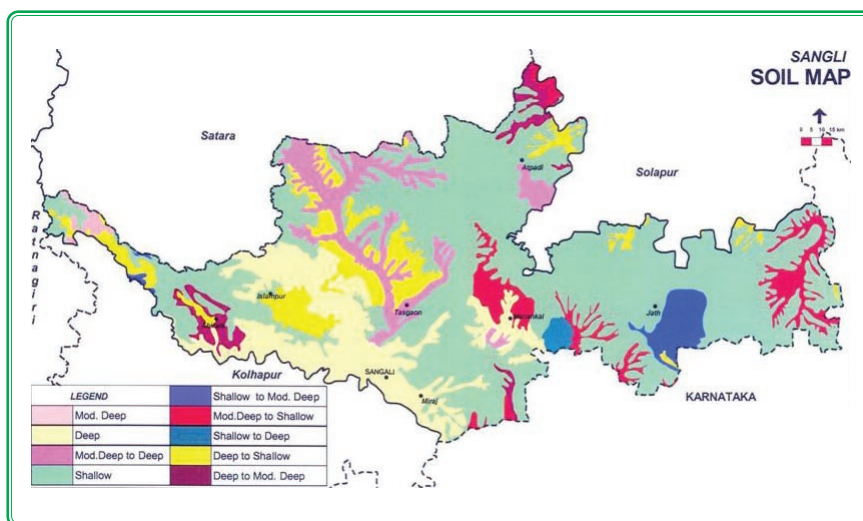
Contingency crop plan

Farming situation	Normal Crop	Suggested contingency crops /cropping system and cultivars			
	Normal onset of monsoon (June 2 nd week)	Delay by 2 weeks (June 4 th week)	Delay by 4 weeks (July 2 nd week)	Delay by 6 weeks (July 4 th week)	Delay by 8 weeks (August 2 nd week)
(1)	(2)	(3)	(4)	(5)	(6)
Shallow red / grey soils	Low land Rice	Rice (Indrayani, Pavana, Phule Samrudhi)	Rice (Indrayani, Pavana, Phule Samrudhi)	Rice (Indrayani, Pavana, Phule Samrudhi)	<i>Dolichus</i> sp.
	Groundnut	Groundnut (JL-24, JL-501, JL-286)	Groundnut + Pigeonpea (6:2) Groundnut: JL-24, JL-501, JL-286 Pigeonpea: Vipula, BDN-708	Pearl millet (Shraddha, Saburi, Shanti)	Sunflower (Bhanu)
	Pearl millet	Pearl millet (Shraddha, Saburi, Shanti)	Pearl millet (Shraddha, Saburi, Shanti)	Pearl millet (Shraddha, Saburi, Shanti)	Sunflower- (Bhanu)
Medium deep black Soils	Sorghum	Sorghum (CSH-14, CSH-16, CSH-17)	Sorghum (CSH-14, CSH-16, CSH-17)	Sorghum/ Sunflower Sorghum : CSH-14, CSH-16, CSH-17 Sunflower: Bhanu	Sunflower (Bhanu) Pigeonpea (Vipula)
	Low land Rice	Rice (Indrayani, Pavana, Phule Samrudhi)	Rice (Indrayani, Pavana, Phule Samrudhi)	Rice (Indrayani, Pavana, Phule Samrudhi)	<i>Dolichos</i> sp
	Groundnut	Groundnut (JL-24, JL-501, JL-286)	Groundnut (JL-24, JL-501, JL-286)	Sunflower (Bhanu)	Sunflower (Bhanu)
	Soybean	Soybean (JS-335, JS-9305)	Soybean (JS-335, JS-9305)	Sunflower (Bhanu)	Sunflower (Bhanu)

(1)	(2)	(3)	(4)	(5)	(6)
	Pearl millet	Pearl millet (Shraddha, Saburi, Shanti)	Pearl millet (Shraddha, Saburi, Shanti)	Sunflower / Pigeonpea Sunflower: Bhanu Pigeonpea: Vipula, BDN-708	Sunflower / Pigeonpea Sunflower: Bhanu Pigeonpea: Vipula, BDN-708
Deep black soils	Sorghum	Sorghum (CSH-14, CSH-16, CSH-17)	Sorghum (CSH-14, CSH-16, CSH-17)	Sorghum (CSH-14, CSH-16, CSH-17)	
	Groundnut	Groundnut (JL-24, JL-501, JL-286)	Groundnut (JL-24, JL-501, JL-286)	Sunflower (Bhanu)	Sunflower (Bhanu)
	Pigeonpea	Pigeonpea (Vipula, BDN-708, ICPL-87)	Pigeonpea (Vipula, BDN-708, ICPL-87)	Pigeonpea (Vipula, BDN-708, ICPL-87)	Pigeonpea (Vipula, BDN-708, ICPL-87)

Sangli District

Sangli district falls under Western Maharashtra Scarcity agro climatic zone (MH-6) in Maharashtra. The district receives a mean annual rainfall of 737 mm of which 517 mm is received during south west monsoon and 136 mm in north east monsoon. The dominant soil types in the district are shallow to medium deep black and red soils (see map). The district has an area of 421000 ha under rainfed situation (75% of net sown area). The major rainfed crops cultivated in the district are sorghum, pearl millet, soybean, groundnut and irrigated crop is sugarcane.



Normal sowing window for major field crops

Season/ Situation	Sorghum	Pearl millet	Soybean	Groundnut	Sugarcane
<i>Kharif- Rainfed</i>	2 nd week of June to 4 th week of June	2 nd week of June to 2 nd week of July	2 nd week of June to 4 th week of June	2 nd week of June to 4 th week of June	--
<i>Kharif- Irrigated</i>	2 nd week of June to 4 th week of June	--	2 nd week of May to 4 th week of May	1 st week of June to 2 nd week of July	2 nd week of January to 4 th week of January Pre-seasonal: 2 nd week of October to 2 nd week of November Adsali: 1 st week of August to 2 nd week of August
<i>Rabi- Rainfed</i>	2 nd week of September to 2 nd week of October	--	--	--	--
<i>Rabi- Irrigated</i>	4 th week of September to 2 nd week of October	--	--	--	--

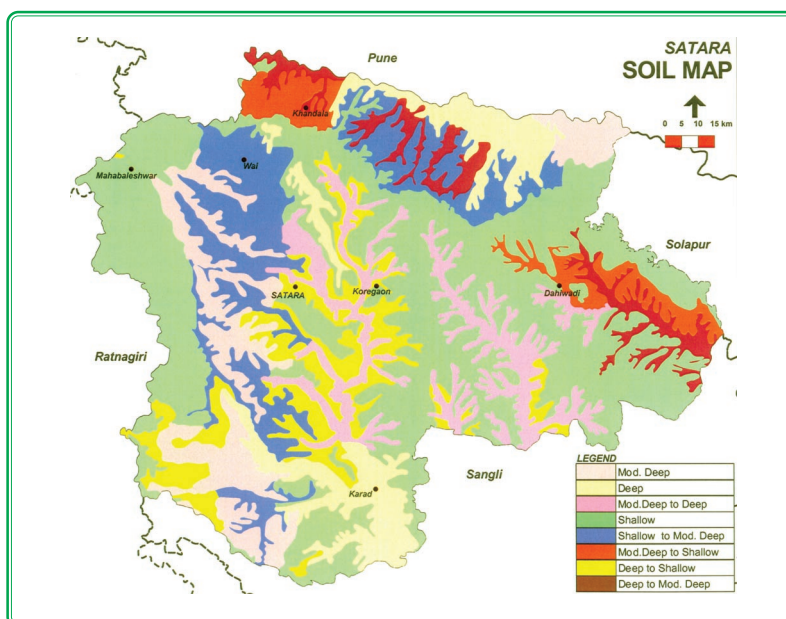
Contingency crop plan

Farming situation	Normal Crop	Suggested contingency crops /cropping system and cultivars			
	Normal onset of monsoon (June 2 nd week)	Delay by 2 weeks (June 4 th week)	Delay by 4 weeks (July 2 nd week)	Delay by 6 weeks (July 4 th week)	Delay by 8 weeks (August 2 nd week)
(1)	(2)	(3)	(4)	(5)	(6)
Shallow black red Soils	Groundnut	Groundnut (GG-14)	Groundnut + Pigeonpea (6:2) Pearl millet + Pigeonpea (2:1)	Groundnut + Pigeonpea (6:2) Pearl millet + Pigeonpea (2:1)	Pearl millet (Shanti, Shraddha , Saburi)

(1)	(2)	(3)	(4)	(5)	(6)
			Groundnut: JL-286, JL-24 Pigeonpea; Vipula Pearl millet: Shanti	Groundnut: JL-286, JL-24 Pigeonpea; Vipula Pearl millet: Shanti	
	Pearl millet	Pearl millet (Samrudhim, P-282)	Pearl millet + Pigeonpea (2:1) Pigeonpea: Vipula Pearl millet: Shanti	Pearl millet + Pigeonpea (2:1) Pigeonpea: Vipula Pearl millet: Shanti	Pearl millet (Shanti, Shraddha, Saburi)
Medium deep black soils	Pigeonpea	Pearl millet+ Pigeonpea (2:1)/ Soybean+ Pigeonpea (3:1) Pearl millet: Samrudhim, P-282 Pigeonpea: BDN-708	Pearl millet+ Pigeonpea (2:1) Pigeonpea: Vipula, BDN- 708 Pearl millet: Shanti	Pigeonpea / Pearl millet + Pigeonpea (2:1) Pearl millet: Shanti Pigeonpea: BDN-708.	Sunflower (SS- 56, Bhanu)
	Soybean	Soybean+ Pigeonpea (6:2) Soybean: Phule Kalyani Pigeonpea: BDN-708	Sunflower + Pigeonpea (2:1) Sunflower: SS-56, Bhanu Pigeonpea; TAT10, BDN-708	Sunflower + Pigeonpea (2:1) Sunflower: SS-56, Bhanu Pigeonpea; TAT10, BDN-708	Sunflower + Pigeonpea (2:1) Sunflower: SS-56, Bhanu Pigeonpea; TAT10, BDN-708
	Sorghum	Soybean+ Pigeonpea (6:2) Soybean:Phule Kalyani Pigeonpea: Vipula, BDN-708	Sunflower+ Pigeonpea (2:1) Sunflower: SS-56, Bhanu Pigeonpea: Vipula, BDN-708	Fodder Sorghum: Phule Amruta, MP Chari, CSV-21F.	Fodder Sorghum Fodder Sorghum: Phule Amruta, MP Chari, CSV-21F
Deep black Soils	<i>Kharif</i> fallow	Tillage for conservation of moisture for rabi cropping.			

Satara District

Satara district falls under Western Maharashtra scarcity agroclimatic zone (MH-6), Sub Mountain zone/ Transition agro climatic zone-1 (MH-4) and Western Maharashtra Plain zone/ Transition agro climatic zone-2 (MH-5) in Maharashtra. The district receives a mean annual rainfall of 1118 mm of which 909 mm is received during south west monsoon and 139 mm in north east monsoon. The dominant soil types in the district are shallow to medium deep to deep black soils (see map). The district has an area of 421000 ha under rainfed situation (72% of net sown area). The major rainfed crops cultivated in the district are pearl millet, groundnut, sorghum, soybean, chickpea and irrigated crops are rice, wheat, and sugarcane.



Normal sowing window for major field crops

Season/ Situation	Pearl millet	Groundnut	Rabi- Sorghum	Soybean	Rice	Kharif Sorghum
Kharif- Rainfed	4 th week of June to 2 nd week of July	2 nd week of June to 2 nd week of July	--	2 nd week of June to 1 st week of July	--	1 st week of June to 4 th week of June
Kharif- Irrigated	--	--	--	--	2 nd week of June to 1 st week of July	--
Rabi- Rainfed	--	--	2 nd week of September to 2 nd week of October	--	--	--

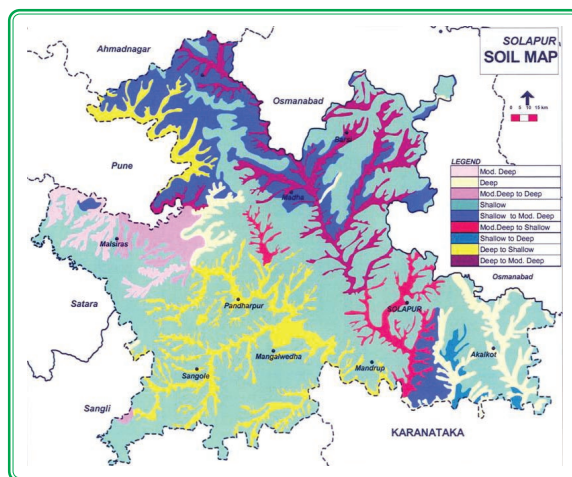
Contingency crop plan

Farming situation	Normal Crop	Suggested contingency crops /cropping system and cultivars		
	Normal onset of monsoon (2 nd week of June)	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)
(1)	(2)	(3)	(4)	(5)
Shallow grey/black soils	Pearl millet	Pearl millet (Shraddha, Saburi, Shanti)	Pearl millet (Shraddha, Saburi, Shanti)	Pearl millet (Shraddha, Saburi, Shanti)
Medium deep black soils	Groundnut	Groundnut (JL-24, JL-501, JL-286)	Groundnut (JL-24, JL-501, JL-286)	Sunflower (Bhanu, Raviraj)
	<i>Kharif</i> Sorghum	Sorghum (CSH 14, 16, 17)	Sunflower (Bhanu, Phule Raviraj)	Rice (Indrayani, Pavana)
	Upland Rice	Rice (Indrayani, Pavana)	Rice (Indrayani, Pavana)	Sunflower (Bhanu, Phule Raviraj)
	Soybean	Soybean (JS-335, DS-228, JS 9305)	Soybean (JS-335, DS-228, JS 9305)	Sunflower (Bhanu, Phule Raviraj)
Deep black soils	<i>Kharif</i> Sorghum	Sorghum (CSH 14, 16, 17)	Sorghum (CSH 14, 16, 17)	Sunflower (Bhanu, Phule Raviraj)
	Upland Rice	Rice (Indrayani, Pavana)	Rice (Indrayani, Pavana, Koyna)	Rice (Indrayani, Pavana, Koyna)
	Soybean	Soybean (JS-335, MACS-450)	Soybean (JS-335, DS-228, JS 9305)	Sunflower (Bhanu, Phule Raviraj)

*Delay 8 weeks not applicable

Solapur District

Solapur district falls under Western Maharashtra Scarcity agro climatic zone (MH-6) in Maharashtra. The district receives a mean annual rainfall of 659 mm of which 499 mm is received during south west monsoon and 115 mm in north east monsoon. The dominant soil types in the district are medium deep and deep black soils (see map). The district has an area of 759000 ha under rainfed situation (82% of net sown area). The major rainfed crops cultivated in the district are sorghum, pigeonpea and irrigated crops are sugarcane, wheat, sorghum, chickpea, sunflower and safflower.



Normal sowing window for major field crops

Season/ Situation	Sorghum	Pigeonpea	Chickpea	Sunflower	Safflower	Wheat
<i>Khariif</i> - Rainfed	--	2 nd week of June to 2 nd week of July	--	2 nd week of June to 2 nd week of August	--	--
<i>Khariif</i> - Irrigated	--	2 nd week of July to 2 nd week of August	--	2 nd week of June to 2 nd week of August	--	--
<i>Rabi</i> - Rainfed	2 nd week of September to 2 nd week of October	--	3 rd week of September to 2 nd week of October	2 nd week of September to 2 nd week of October	2 nd week of September to 2 nd week of October	--
<i>Rabi</i> - Irrigated	4 th week of September to 2 nd week of October	--	3 rd week of Oct to 3 rd week of November	1 st week of September to 4 th week of October	2 nd week of September to 4 th week of October	1 st week of Nov to 1 st week of Dec

Contingency crop plan

Farming situation	Normal Crop	Suggested contingency crops /cropping system and cultivars			
	Normal onset of monsoon (3 rd week of June)	Delay by 2 weeks (1 st week of July)	Delay by 4 weeks (3 rd week of July)	Delay by 6 weeks (1 st week of August)	Delay by 8 weeks (3 rd week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Medium deep to deep black soils	Sunflower	Sunflower + Pigeonpea (2:1) Pigeonpea: BSMR-736, 853 BDN-708 Sunflower: Mordern	Pigeonpea/ Castor Castor (VI-9, DCH-32) Pigeonpea: BSMR-736, 853, BDN-708	Pigeonpea + clusterbean (1:2) Sunflower + Pigeonpea (2:1) Foxtail millet (Arjun) Pigeonpea: BSMR-736, 853, BDN-708 Sunflower: Mordern	Sunflower/ Castor/ Castor Ridge gourd (mixed cropping) Foxtail millet Sunflower: Mordern Castor: VI9, DCH177, DCH32 Foxtail millet: Arjun
	Pigeonpea	Pearl millet + Pigeonpea (2:1) Soybean + Pigeonpea (3:1) Pearl millet: (Shraddha, Saburi, Shanti) Pigeonpea: BSMR-736, 853, BDN-708 Soybean. JS-335, DS-228, JS 9305	Pigeonpea + Clusterbean (1:2) Pigeonpea: BSMR-736, 853, BDN-708	Pigeonpea + coriander (1:2) Castor, Foxtail millet Pigeonpea: BSMR-736, 853, BDN-708	Sunflower / Castor /Castor Ridge gourd (mixed cropping) / Foxtail millet Sunflower: Mordern Castor: VI9, DCH177, DCH32
	Greengram	Pigeonpea + Greengram (1:3) Pigeonpea: BSMR-736, 853 BDN-708,711 Greengram: TAU-1, T-9	Pigeonpea + Coriander (1:2) Pigeonpea: BSMR-736, 853 BDN-708	Pigeonpea + Leafy vegetable (1:2) / Castor/ Foxtail millet Pigeonpea: BSMR-736, 853, BDN-708 Castor: GCH6, DCH32	Sunflower/ Castor / Castor + Ridge gourd (mixed cropping) Sunflower: Mordern

(1)	(2)	(3)	(4)	(5)	(6)
				Foxtail millet Arjun	Castor: VI9, Aruna, DCH 177, DCH32 Foxtail millet: Arjun
	Blackgram	Pigeonpea + Blackgram (1:3) Pigeonpea: BSMR-736, 853, BDN-708, 711 Blackgram: TPU-4	Pigeonpea + Leafy vegetable (1:2) Pigeonpea: BSMR-736, 853, BDN-708, 711	Pearl millet + Pigeonpea (2:1) Pearl millet: (Shraddha, Saburi, Shanti) Pigeonpea: BSMR-736, 853, BDN-708	Sunflower/ Castor + Ridge gourd (mixed cropping Foxtail millet (Arjun) Sunflower: Mordern Castor: VI9, GCH-4,5,6, Aruna, DCH177, DCH32 Foxtail millet: Arjun
<i>Fallow- rabi cropping areas</i>	<i>Khariif - Fallow -Rabi sorghum / Safflower Sunflower/ Chickpea</i>	<i>Khariif - Fallow -Rabi sorghum / Rabi crop Safflower/ Sunflower / Chickpea</i>	<i>Khariif fallow followed by Rabi crop</i>	<i>Khariif fallow followed by rabi crop</i>	<i>Khariif fallow followed by rabi crop</i>
	<i>Khariif - Fallow Strip cropping of Chickpea+ Safflower (6:3)/ Strip cropping of Rabi sorghum+ Chickpea (6:3)</i>	<i>Strip cropping of Chickpea + Safflower (6:3), Strip cropping of Rabi sorghum+ Chickpea (6:3)</i> <i>Rabi sorghum: M35-1, Phule Yasodha, Phule Mauli, Phule Vanitha Safflower: N62-8,</i>			

(1)	(2)	(3)	(4)	(5)	(6)
	Greengram / Blackgram/ Cowpea	Bhima Sunflower: LS11 Chickpea: Vikas Fallow	Cowpea Cowpea: C-152, Krishkanchan.	-	-
Shallow to Medium deep black soils	Pearl millet	Pearl millet + Horsegram(2:1) Pearl millet + Mothbean (2:1)	Sunflower + Pigeonpea (2:1)	-	-
Shallow black soils	Castor	Castor + Cluster bean (1:2) Castor and ridge gourd (mixed cropping) Castor: GCH-4, 5, 6, Aruna.	Grasses (Dongari, Madras Anjan)	Grasses (Dongari, Madras Anjan)	Grasses (Dongari, Madras Anjan)
	Horsegram	-	Grasses (Dongari, Madras Anjan)	Grasses (Dongari, Madras Anjan)	Grasses (Dongari, Madras Anjan)
	Mothbean	-	Grasses (Dongari, Madras Anjan)	Grasses (Dongari, Madras Anjan)	Grasses (Dongari, Madras Anjan)

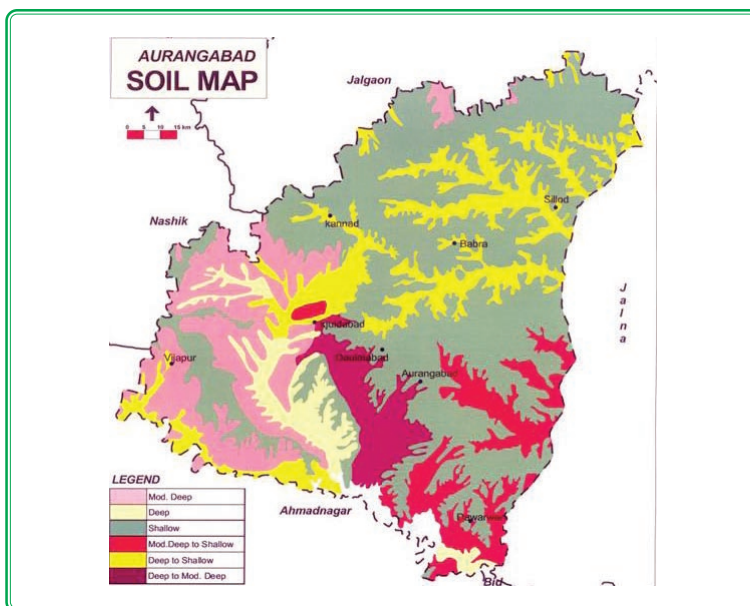
2.3.2 MAJOR CROPS IN MARATWADA

- Marathwada region in Maharashtra encompasses 8 districts (Aurangabad, Beed, Hingoli, Jalna, Latur, Nanded, Osmanabad and Parbhani). The major field crops cultivated during *kharif* season under rainfed conditions are cotton, pigeonpea, sorghum, soybean, maize, pearl millet, greengram and blackgram.
- Rice is cultivated predominantly in Osmanabad, Latur, Nanded, Parbhani, Hingoli and Beed.
- Major crops cultivated during *rabi* under rainfed conditions are: chickpea, safflower and sunflower in Osmanabad, Latur, Parbhani, Jalna etc.
- Major crops cultivated during *rabi* under irrigated conditions are: maize in Aurangabad, sorghum in Aurangabad, Hingoli and Jalna; sugarcane in Beed, Latur, Parbhani, Osmanabad, Aurangabad, Jalna and Nanded.
- Major crops cultivated during summer under irrigated conditions are groundnut and sunflower in Aurangabad.

<i>Kharif</i> rainfed crops	Districts
Sorghum	Osmanabad, Beed, Parbhani, Nanded, Latur, Jalna, Aurangabad, Hingoli
Cotton	Jalna, Nanded, Aurangabad, Parbhani, Beed, Hingoli, Latur, Osmanabad
Soybean	Latur, Nanded, Hingoli, Beed, Parbhani, Jalna, Osmanabad, Aurangabad.
Maize	Aurangabad, Jalna, Osmanabad, Beed, Latur, Parbhani, Hingoli, Nanded
Pearl millet	Beed, Aurangabad, Jalna, Osmanabad, Parbhani, Latur, Hingoli
Pigeonpea	Osmanabad, Latur, Nanded, Parbhani, Beed, Aurangabad, Jalna, Hingoli
Other pulses	Beed, Jalna, Latur, Aurangabad, Osmanabad, Parbhani, Nanded, Hingoli
<i>Kharif</i> irrigated crops	
Rice	Osmanabad, Latur, Nanded, Parbhani, Hingoli, Beed
Sorghum	Latur, Jalna
<i>Rabi</i> rainfed crops	
Chickpea	Latur, Osmanabad, Parbhani, Aurangabad, Beed, Nanded, Hingoli, Jalna
Safflower	Osmanabad, Parbhani, Hingoli, Jalna, Aurangabad, Beed, Latur, Nanded
Sunflower	Osmanabad, Jalna, Latur, Nanded
<i>Rabi</i> irrigated crops	
Wheat	Beed, Hingoli, Parbhani, Aurangabad, Nanded, Osmanabad, Latur, Jalna
Sugarcane	Beed, Latur, Parbhani, Osmanabad, Jalna, Aurangabad, Nanded, Hingoli

Aurangabad District

Aurangabad district falls under Western Maharashtra Scarcity agro climatic zone (MH-6) and Central Maharashtra plateau zone (MH-7) in Maharashtra. The district receives a mean annual rainfall of 761 mm of which 637 mm is received during south west monsoon and 92 mm in north east monsoon. The dominant soil types in the district are medium deep and deep black soils (see map). The district has an area of 490000 ha under rainfed situation (74% of net sown area). The major rainfed crops cultivated in the district are cotton, pearl millet, pigeonpea, sorghum, chickpea and irrigated crops are maize, wheat and safflower.



Normal sowing window for major field crops

Season/ Situation	Cotton	Pearl millet	Pigeonpea	Sorghum	Maize
<i>Khariif</i> - Rainfed	2 nd week of June to 2 nd week of July	2 nd week of June to 2 nd week of July-	2 nd week of June to 2 nd week of July	2 nd week of June to 2 nd week of July	2 nd week of June to 2 nd week of July
<i>Khariif</i> - Irrigated	2 nd week of May to 2 nd week of June	2 nd week of June to 2 nd week of July	--	--	2 nd week of June to 2 nd week of July
	Gram	Safflower	Maize	--	--
<i>Rabi</i> - Irrigated	2 nd week of September to 2 nd week of October	1 st week of October to 2 nd 2 nd week of October	1 st week of October to 2 nd 2 nd week of October	--	--

Contingency crop plan

Farming situation	Normal Crop	Suggested contingency crops /cropping system and cultivars			
	Normal onset of monsoon (2 nd week of June)	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)	Delay by 8 weeks (2 nd week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Medium deep to deep black soils with assured rainfall	Cotton	Cotton	Cotton / Cotton + Pigeonpea (6:1) Pigeonpea : BSMR 736, 853, BDN 708,711	Cotton / Cotton + Pigeonpea (6:1) Pigeonpea : BSMR 736, 853, BDN 708,711	Pearl millet / Sunflower/ Pearl millet + Pigeonpea (3:3 or 4:2)/ keep fallow and plan for rabi season Pearl millet: Shradha, Saburi, AIMP-92901. Sunflower : Morden, SS-56, LSFH-35, BSH-1)
	Pearl millet	Pearl millet	Pearl millet	Pearl millet	Pearl millet + Pigeonpea (3:3 or 4:2)
	Maize	Maize	Maize	Maize	Maize /Castor Castor : VI-9, Aruna , DCS-9 (Jyothi), GCH-4, 5, 6 and DCH-117/32 Maize: African Tall
	Pigeonpea	Pigeonpea	Pigeonpea (BSMR 736, 853 BDN 708, 711)	Pigeonpea (BDN 708, 711)	Pearl millet + Pigeonpea (3:3 or 4:2) Pigeonpea : BDN-708 / 711

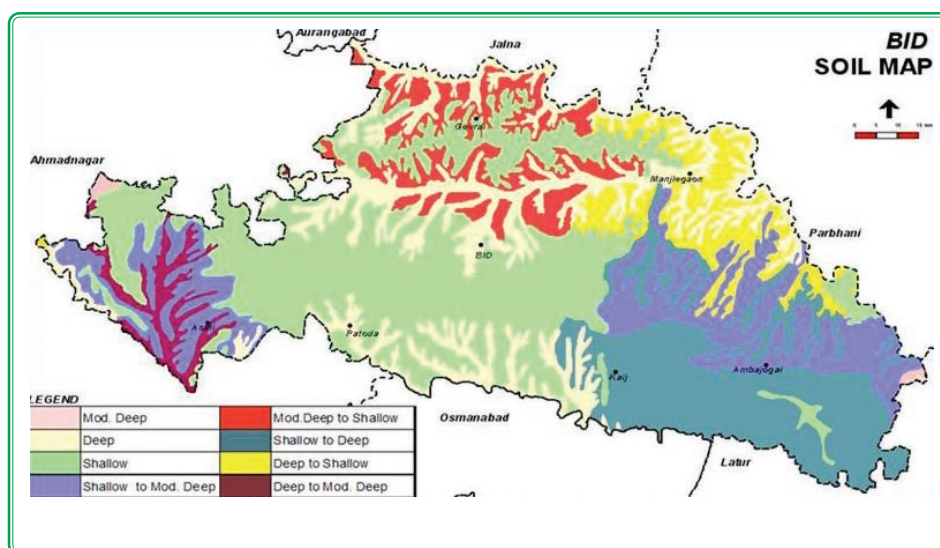
(1)	(2)	(3)	(4)	(5)	(6)
	Soybean	Soybean	Soybean + Pigeonpea (4:2 or 6:3)	Soybean + Pigeonpea (4:2 or 6:3)	Pearl millet + Pigeonpea (3:3 or 4:2) Pigeonpea: BDN-708 / 711
	Sorghum	Sorghum	Cotton / Maize/ Pigeonpea / Pearl millet / Sunflower Pigeonpea : BSMR 736, 853 BDN 708, BDN 711 Pearl millet: Shradha,Saburi, AIMP-92901 Sunflower: Morden, SS-56, LSFH-35, BSH-1	Cotton / Maize/ Pearl millet / Sunflower. Pigeonpea : BSMR 736, 853 BDN 708, BDN 711 Pearl millet: Shradha,Saburi, AIMP-92901 Sunflower: Morden, SS-56, LSFH-35, BSH-1	Pearl millet + Pigeonpea (3:3 or 4:2) Pigeonpea: BDN-708 / 711 Pearl millet: Shradha, Saburi, AIMP-92901
	Greengram/ Blackgram	Greengram/ Blackgram	Cotton/ Maize/ Pigeonpea / Pearl millet/ Sunflower Pigeonpea: BSMR- 736, 853, BDN-708, BDN- 711 Pearl millet: Shradha,Saburi, AIMP-92901 Sunflower: Morden, SS-56, LSFH-35, BSH-1	Cotton/ Maize/ Pigeonpea/ Pearl millet/ Sunflower Pigeonpea: BDN-708, BDN- 711 Pearl millet: Shradha,Saburi, AIMP-92901 Sunflower: Morden, SS-56, LSFH-35, BSH-1	Pearl millet/ Sunflower/ prepare land for rabi crops Pearl millet: Shradha,Saburi, AIMP-92901 Sunflower: Morden, SS-56, LSFH-35, BSH-1
Shallow black soils with assured rainfall	Cotton	Cotton	Cotton+ Pigeonpea Cotton: short duration varieties/ hybrids	Cotton + Pigeon pea (6:1) Cotton : short duration varieties/ hybrids	Pearl millet / Sunflower Pearl millet + Pigeonpea(2:1) Keep fallow & plan for <i>rabi</i>

(1)	(2)	(3)	(4)	(5)	(6)
			Pigeonpea: BSMR 736,853, BDN 708,711	Pigeonpea: BDN 708,711	season
	Pearl millet	Pearl millet	Pearl millet	Pearl millet	Pigeonpea
	Maize	Maize	Maize	Maize	Fodder maize (African tall)
	Pigeonpea	Pigeonpea (BSMR 736, 853 BDN 708, 711)	Pigeonpea (BSMR 736, 853 BDN 708, 711)	Pigeonpea (BDN 708, 711)	Castor (VI-9, Aruna, GCH-4, 5, 6 and DCH- 117, 32)
	Sorghum	Sorghum	Cotton / Maize/ Pigeonpea / Pearl millet / Sunflower	Pigeonpea / Pearl millet / Sunflower.	Castor (VI-9, Aruna, GCH-4, 5, 6 and DCH- 117 / 32)
	Greengram / Black gram- <i>rabi</i> crops	Greengram / Black gram	Cotton / Maize/ Pigeonpea/ Pearl millet / Sunflower	Cotton / Maize/ Pigeonpea/ Pearl millet / Sunflower	Keep fallow and prepare land for <i>rabi</i> crops.
Medium deep to deep black soils with low rainfall (Vaijapur and Gangapur tehsils)	Cotton	Cotton	Cotton/Cotton + Pigeonpea (6:1)	Cotton/Cotton + Pigeonpea (6:1)	Pearl millet / Sunflower / fallow /plan for <i>rabi</i>)/ Pearl millet + Pigeonpea (2:1)
	Pearl millet	Pearl millet: Shradha, Saburi, AIMP-92901	Pearl millet: Shradha, Saburi, AIMP-92901	Pearl millet: Shradha, Saburi, AIMP-92901	Pearl millet + Pigeonpea in (2:1 or 4:2)
	Maize	Maize	Maize	Maize	Maize/fodder maize (African Tall)
	Pigeonpea	Pigeonpea	Pigeonpea (BSMR-736, 853 BDN-708, 711)	Pigeonpea (BSMR 736, 853 BDN-708, 711)	Castor (VI-9, Aruna, GCH-4, 5, 6 and DCH- 17 / 32)

(1)	(2)	(3)	(4)	(5)	(6)
	Greengram / Black gram- <i>rabi</i> crops	Greengram / Black gram	Cotton / Maize/ Pigeonpea/ Pearl millet / Sunflower	Cotton / Maize/ Pigeonpea/ Pearl millet / Sunflower	Prepare land for rabi crop
Shallow black soils with low rainfall (Vaijapur & Gangapur tehsils)	Cotton	Cotton	Pigeonpea: (BSMR 736, 853, BDN 708,711	Pigeonpea: (BSMR 736, 853, BDN 708,711	Pearl millet / Sunflower / fallow /plan for rabi) / Pearl millet + Pigeonpea (2:1)
	Pearl millet / Pearl millet + Pigeonpea (2:1)	Pearl millet / Pearl millet + Pigeonpea (2:1)	Pearl millet / Pearl millet + Pigeonpea (2:1)	Pearl millet / Pearl millet + Pigeonpea (2:1)	Pearl millet / Prefer with Pigeonpea (2:1)
	Maize	Maize	Maize	Maize	Maize /fodder maize
	Pigeonpea	Pigeonpea	Pigeonpea	Pigeonpea (BDN-708, 711)	Castor

Beed District

Beed district falls under Western Maharashtra Scarcity agro climatic zone (MH-6) and Central Maharashtra plateau agro climatic zone (MH-7) in Maharashtra. The district receives a mean annual rainfall of 734 mm of which 599 mm is received during south west monsoon and 98 mm in north east monsoon. The dominant soil types in the district are medium deep to deep black soils (see map). The district has an area of 738000 ha under rainfed situation (84% of net sown area). The major rainfed crops cultivated in the district are cotton, pearl millet, pigeonpea, sorghum, soybean and irrigated crops are cotton, safflower, sorghum, chickpea and wheat.



Normal sowing window for major field crops

Season/ Situation	Cotton	Pearl millet	Pigeonpea	Sorghum	Soyabean
<i>Kharif</i> - Rainfed	2 nd week of June to 2 nd week of July	2 nd week of June to 2 nd week of July	2 nd week of June to 2 nd week of July	2 nd week of June to 2 nd week of July	2 nd week of June to 2 nd week of July
<i>Kharif</i> - Irrigated	2 nd week of May to 2 nd week of June	--	--	--	--
	Gram	Safflower	Sorghum	--	--
<i>Rabi</i> - Irrigated	1 st week of October to 2 nd week of October	3 rd week of September to 2 nd week of October	1 st week of October to 2 nd week of October	--	--

Contingency crop plan

Farming situation	Normal Crop	Suggested contingency crops /cropping system and cultivars			
	Normal onset of monsoon (2 nd week of June)	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)	Delay by 8 weeks (2 nd week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Medium deep to deep black soils with assured rainfall	Pearl millet	Pearl millet (ICTP-8203)	Pearl millet (ICTP-8203, GHB 558, AIMP-92901, Shardha, Saburi)	Pearl millet + Pigeonpea (4:2 or 3:3) Pearl millet: ICTP-8203, GHB- 558, AIMP-92901, Shardha, Saburi. Pigeonpea: BSMR-853,853, BDN-708,711.	Pearl millet + Pigeonpea (4:2 or 3:3) Pigeonpea; BDN-708, 711
	Cotton	Cotton	Cotton + Pigeonpea (6:1) Pigeonpea: BSMR-853,853, BDN-708, 711	Maize/ Fodder Maize: African Tall	Maize/ Fodder Maize: African Tall
	Sorghum	Sorghum (CSH-110)	Sorghum + Pigeonpea (4:2) Sorghum: CSH-9, 11, 16, PVK-401, 809 Pigeonpea: MAUS-47, 71, BSMR 736, 853	Pigeonpea: BSMR 853, BDN-708, 711	Pigeonpea (BDN-708,711)
	Pigeonpea	Pigeonpea (BSMR-736)	Soybean + Pigeonpea (4:2) Soybean: JS-335, MAUS-71 Pigeonpea: BSMR 736, 853 BDN-708, 711	Sunflower (Morden, SS-56, LSH-36, BSH-1)	Sunflower (Morden, SS-56, LSH-36)

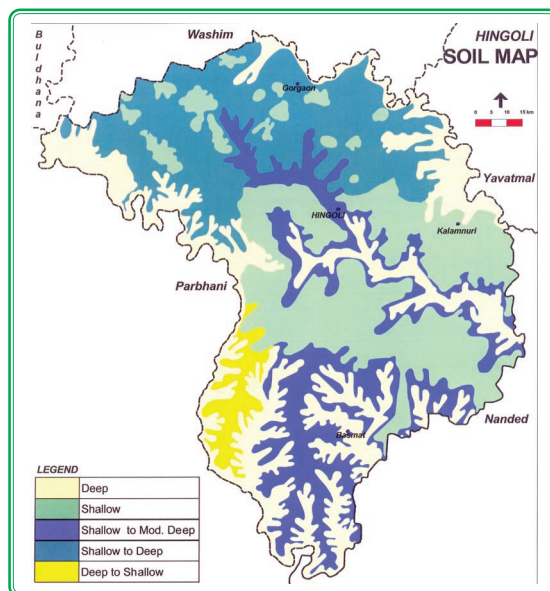
(1)	(2)	(3)	(4)	(5)	(6)
	Soybean	Soybean (MAUS-71)	Soybean + Pigeonpea (4:2 or 6:3) Soybean: JS-335, MAUS-71 Pigeonpea: BSMR 736, 853, BDN-708, 711	Pearl millet + Pigeonpea in (4:2 or 3:3) Pearl millet : ICTP-8203, GHB 558, AIMP-92901, Shradha, Saburi Pigeonpea; BSMR 853, 708, BDN-708, 711	Pearl millet + Pigeonpea in (4:2 or 3:3) Pearl millet : ICTP-8203, GHB 558, AIMP-92901, Shradha, Saburi Pigeonpea; BSMR 853, 708, BDN-708, 711
Shallow soils with assured rainfall	Pearl millet/ Pearl millet + Pigeonpea	Pearl millet/ Pearl millet + Pigeonpea (4:2/3:3) Pigeonpea: BSMR 736, 853 BDN-708, 711 Pearl millet: GHB-526	Pearl millet (ICTP-8203, GSB 558, AIMP-92901 Shardha, Saburi	Pearl millet + Pigeonpea (4:2 or 3: 3) Pearl millet: ICTP-8203, GSB 558, AIMP-92901 Shardha, Saburi Pigeonpea: BSMR 853,708, BDN-708, 711	Maize/ Fodder Maize: African Tall
	Sorghum	Sorghum (CSH-11)	Sorghum + Pigeonpea (4:2)	Pigeonpea (BSMR 853,708, BDN-708,711)	Pigeonpea (BDN-708,711)
	Pigeonpea	Pigeonpea (BSMR-853) (4:2 or 6:3)	Soybean + Pigeonpea SS-56,	Sunflower	Sunflower/ Castor
	Soybean	Soybean (MAUS-32)	Soybean + Pigeonpea (4:2 or 6:3) Soybean: JS-335, MAUS-71 Pigeonpea: BSMR 736, 853 BDN-708, 711	Pearl millet + Pigeonpea (4:2 or 3:3) Pearl millet : ICTP-8203, GHB- 558, AIMP-92901, Shradha, Saburi Pigeonpea; BSMR 853,708 BDN-708, 711	Pearl millet + Pigeonpea (4:2 or 3:3)/ Niger/ Sesame/ Fodder Sorghum/ Fodder maize/ Castor Niger: local Sesame: No - 85, JLT-7

(1)	(2)	(3)	(4)	(5)	(6)
					Fodder Sorghum : Nilwa, MP Chari Pusa Chari F. maize: African tall Castor: VI-9, Aruna, DCS-9 Jyoti), GCH-4, 5, 6 & DCH- 117, 32)
Medium deep to deep black soils with low rainfall (Asthi, Patoda & Sirur Kasar tehsils)	Pearl millet	Pearl millet (Sharadha, ICMV-221)	Pearl millet (ICTP-8203, GHB- 558, AIMP-92901, Shardha, Saburi)	Pearl millet + Pigeonpea (4:2 or 3:3)	Pearl millet + Pigeonpea (4:2 or 3:3)
	Cotton	Cotton (NHH-302)	Cotton + Pigeonpea (6:1)	Castor (VI-9, Aruna, DCS-9 (Jyoti), GCH-4, 5, 6 & DCH-117, 32)	Pigeonpea/ Sunflower Castor/ Sesame Sesame: Punjab-1
	Sorghum	Sorghum (CSH-11,16)	Sorghum + Pigeonpea (4:2) Sorghum: MAUS-47/71	Pearl millet + Pigeonpea (4:2 or 3:3)	Pigeonpea/ Sunflower Castor/ Sesame
	Pigeonpea	Pigeonpea (BSMR-853)	Soybean + Pigeonpea (4:2 or 6:3) Soybean: JS-335, MAUS-71 Pigeonpea: BSMR 736, 853 BDN-708, 711	Pigeonpea/ Sunflower Pigeonpea: BDN-708, 711 Sunflower: Morden, SS-56, LSH-36	Castor: VI-9, Aruna, GCH-4, 5, 6 and DCH-117 / 32

(1)	(2)	(3)	(4)	(5)	(6)
	Soybean	Soybean (MAUS-71)	Soybean + Pigeonpea (4:2 or 6:3) Soybean: JS-335, MAUS-71 Pigeonpea: BSMR736, 853 BDN-708, 711	Pearl millet/ Sesame/ Castor Pearl millet: PPC-6, AIMP-92901, Shradha, Saburi Sesame: Panjab-1 Castor: VI-9, Aruna, DCS-9 (Jyoti), GCH-4, 5, 6 and DCH-117, 32	Pearl millet / Sunflower
Shallow soils with low rainfall (Asthi, Patoda and Sirur Khasa tehsils)	Pearl millet / Pearl millet + Pigeonpea	Pearl millet / Pearl millet + Pigeonpea	Pigeonpea (BSMR 853, BDN-708, 711)	Pigeonpea (BSMR 853, BDN-708, 711)	Pigeonpea (BSMR 853, BDN-708, 711)
	Sorghum	Sorghum (CSH-11)	Sorghum (CSH-9, 11,16, PVK-401, 809)	Cotton / Maize/ Pigeonpea / Pearl millet/ Sunflower Pigeonpea: BSMR 736, 853 BDN-708, BDN-711 Pearl millet : Shradha, Saburi AIMP-92901 Sunflower: Morden, SS-56, LSFH-35, BSH-1	Sunflower (Morden, SS-56, LSH-36, Mahico-17, BSH-1)
	Pigeonpea	Pigeonpea (BSMR-853)	No change/ Pigeonpea: (BSMR 853, BDN- 708, 711)	Pigeonpea (BSMR 853, BDN- 708,711)	Castor (VI-9, Aruna, DCS-9 (Jyoti), GCH-4, 5, 6 and DCH-117, 32)
	Soybean	Soybean (Pooja)	Soybean+ Pigeonpea (4:2 or 6:3)	Soybean+ Pigeonpea (4:2 or 6:3)	Sunflower (Morden, SS-56, LSH-36, Mahyco -17, BSH-1)

Hingoli District

Hingoli district falls under Central Maharashtra plateau agro climatic zone (MH-7) and Central Vidarbha zone (MH-8) in Maharashtra. The district receives a mean annual rainfall of 877 mm of which 780 mm is received during south west monsoon and 77 mm in north east monsoon. The dominant soil types in the district are black soils (see map). The district has an area of 293000 ha under rainfed situation (76% of net sown area). The major rainfed crops cultivated in the district are soybean, cotton, sorghum, pigeonpea, greengram, blackgram, wheat, chickpea and safflower and irrigated crops are cotton, sorghum, safflower and rabi sorghum.



Normal sowing window for major field crops

Season/ Situation	Sorghum	Pigeonpea	Greengram	Cotton	Soybean
<i>Kharif</i> - Rainfed	2 nd week of June to 2 nd week of July	2 nd week of June to 4 th week of July	2 nd week of June to 1 st week of July	2 nd week of June to 2 nd week of July	2 nd week of June to 2 nd week of July
<i>Kharif</i> - Irrigated	--	--	--	2 nd week of May to 2 nd week of June	--
	Gram	Safflower	Sunflower	Rabi-sorghum	--
<i>Rabi</i> - Irrigated	1 st week of October to 2 nd week of October	2 nd week of September to 2 nd week of October	1 st week of October to 2 nd week of October	1 st week of October to 2 nd week of October	--

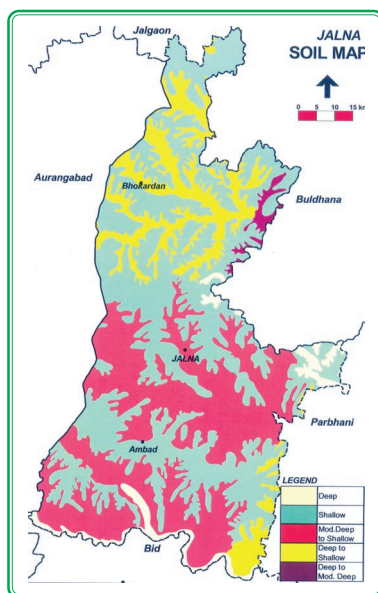
Contingency crop plan

Farming situation	Normal Crop	Suggested contingency crops /cropping system and cultivars			
	Normal onset of monsoon (2 nd week of June)	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)	Delay by 8 weeks (2 nd week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Medium deep to deep black soils with assured and high rainfall	Soybean	Soybean (MAUS-71)	Soybean+ Pigeonpea (4:2) Soybean: MAUS- 71,81 Pigeonpea: BSMR 736, 853 BDN 708, 711	Soybean+ Pigeonpea (4:2) Soybean: MAUS- 71,81 Pigeonpea: BSMR 736, 853 BDN 708, 711	Pigeonpea/Plan for rabi Season crops like sorghum, chickpea, safflower, and sunflower Pigeonpea: BDN-708, 711
	Cotton	Cotton	Cotton+ Pigeonpea (6:2) Pigeonpea: BSMR-736, 853 BDN -708, 711	Cotton + Pigeonpea (6:2) Pigeonpea: BSMR-736, 853 BDN 708, 711	Sunflower (Modern, EC-68414, LS-11, LSH-35, BSH-1)
	Sorghum	Sorghum (CSH-11)	Sorghum + Pigeonpea (4:2) Sorghum: CSH-9, 11, 14, 16 PVK-401, 809	Pearl millet + Pigeonpea (4:2), (3:3) Pearl millet: Sharadha, Saburi, Shanti, AIMP 92901	Fodder Maize (African Tall)
	Pigeonpea	Pigeonpea (BSMR-736)	Soybean+ Pigeonpea (4:2) Soybean: MAUS -71, 81	Soybean+ Pigeonpea (4:2) Soybean: MAUS- 71, 81	Pigeonpea/Plan for rabi season crops like sorghum, chickpea, safflower and sunflower
	Greengram/ Blackgram	Greengram/ Blackgram/ Sorghum/ Safflower/Gram Greengram; BPMR-145 Blackgram:	Soybean+ Pigeonpea (4:2)	Soybean+ pigeonpea (4:2)	Pigeonpea/Plan for rabi season crops like sorghum, chickpea, safflower and sunflower

(1)	(2)	(3)	(4)	(5)	(6)
		Kalindi, TAU-1			Pigeonpea: BDN-708, 711
Shallow black soils with assured and high rainfall	Cotton	Cotton (Parbhani-316)	Cotton+ Pigeonpea (6:2) Pigeonpea: BSMR 736, 853 BDN- 708, 711	Cotton+ Pigeonpea (6:2) Pigeonpea: BSMR 736, 853 BDN- 708, 711	Pigeonpea/Plan for rabi Season crops like sorghum, chickpea, safflower and sunflower Pigeonpea: BDN-708, 711
	Sorghum	Sorghum (CSH-11)	Sorghum+ Pigeonpea (4:2)	Pearl millet+ Pigeonpea (4:2 or 3:3)	Pigeonpea/ Sesame Sesame: JLT-7, 26
	Soybean	Soybean (MAUS-71)	Soybean+ Pigeonpea (4:2)	Soybean+ Pigeonpea (4:2)	Castor/ Niger Castor:VI-9, DCH-117, 32 GCH- 4, 5, 6 Niger:NS-6
	Pigeonpea	Pigeonpea (BSMR-736)	Soybean+ Pigeonpea (4:2)	Soybean+ Pigeonpea (4:2)	Pigeonpea (BDN-708,711)

Jalna District

Jalna district falls under Central Maharashtra plateau agro climatic zone (MH-7) in Maharashtra. The district receives a mean annual rainfall of 752 mm of which 632 mm is received during south west monsoon and 89 mm in north east monsoon. The dominant soil types in the district are medium deep to deep black soils and shallow soils (see map). The district has an area of 480000 ha under rainfed situation (80% of net sown area). The major rainfed crops cultivated in the district are cotton, pearl millet, maize, pigeonpea, *rabi*- sorghum, blackgram and irrigated crops are pigeonpea, chickpea, sunflower and safflower.



Normal sowing window for major field crops

Season/ Situation	Cotton	Pearl millet	Maize	Pigeonpea	Greengram
<i>Kharif</i> - Rainfed	2 nd week of June to 2 nd week of July	2 nd week of June to 4 th week of July	2 nd week of June to 4 th week of July	2 nd week of June to 4 th week of July	2 nd week of June to 1 st week of July
<i>Kharif</i> - Irrigated	2 nd week of May to 2 nd week of June	--	2 nd week of June to 4 th week of July	2 nd week of May to 4 th week of June	--
	Chickpea	Sorghum	Sunflower	Safflower	--
<i>Rabi</i> - Irrigated	1 st week of October to 2 nd week of October	1 st week of October to 2 nd week of October	1 st week of October to 2 nd week of October	1 st week of October to 2 nd week of October	--

Contingency crop plan

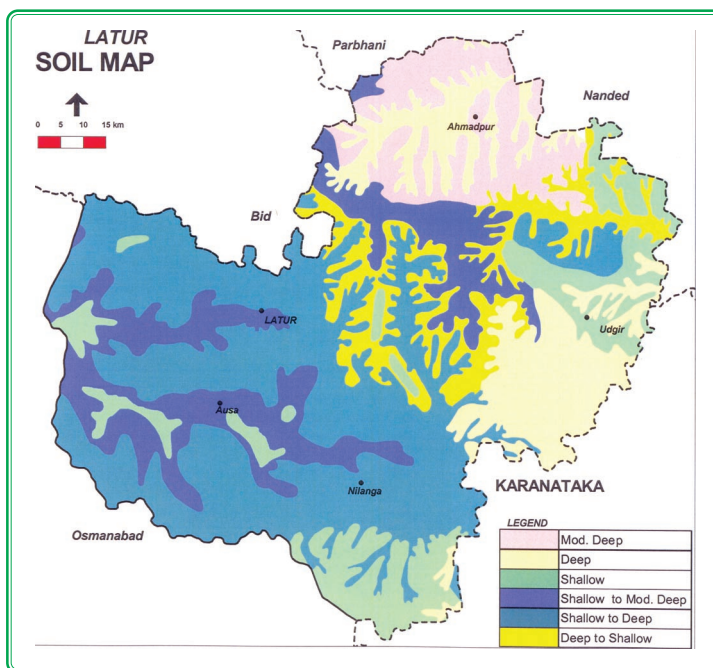
Farming situation	Normal crop/	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (June 2 nd week)	Delay by 2 weeks (4 th week June)	Delay by 4 weeks (2 nd week July)	Delay by 6 weeks (4 th week July)	Delay by 8 weeks (2 nd week August)
(1)	(2)	(3)	(4)	(5)	(6)
Medium deep to deep black soils	Cotton	Cotton (NHH - 44)	Cotton + Pigeonpea (6:2) Pigeonpea : BSMR 736, 853 BDN 708, 711	Cotton + Pigeonpea (6:2) Pigeonpea : BSMR 736, 853 BDN 708, 711	Pigeonpea : (BDN 708, 711)
	Pearl millet	Pearl millet (Samrudhi, MP-282)	Pearl millet (MH662)	Pearl millet (Avasari, PAC903i)	Pearl millet + Pigeonpea (3:3 or 4:2) Pearl millet : Avasari, PAC903i Pigeonpea: BSM R 736, 853, BDN 708, 711
	Maize	Maize (HM-8 , HM-10)	Maize (PEH-2, Panchaganga)	Maize (Karveer)	Maize/Castor Maize: Vivek27, PEEH-5, Makka-1 Castor: VI9, Aruna, GGH-4, 5, 6 DCH-117, 32
	Pigeonpea	Pigeonpea (Vaisali)	Pigeonpea / Soybean + Pigeonpea (4:2) Pigeonpea; BSMR-736, 853 BDN-708, 711 Soybean: JS-335, MAUS-71, 81	Pigeonpea / Soybean + Pigeonpea (4:2) Pigeonpea; BSMR-736, 853 BDN-708, 711 Soybean: JS-335, MAUS-71, 81 Pigeonpea: BSMR-736 853, BDN -708,711.	Pigeonpea (BDN-708, 711)

(1)	(2)	(3)	(4)	(5)	(6)
	Greengram	Greengram	Soybean + Pigeonpea (4:2)	Soybean + Pigeonpea (4:2)	Pigeonpea/ Keep fallow & plan for Rabi Crops like Sorghum, Chickpea, Sunflower and Safflower.
	Soybean	Soybean: JS-335, MAUS-71, 81	Soybean + Pigeonpea (4:2)	Soybean + Pigeonpea (4:2)	Sunflower (Morden, SS-56, LSFH-35, BSH-1)
Shallow soils	Cotton	Cotton	Cotton + Pigeonpea (6:2) Pigeonpea: BSMR-736, 853 BDN-708, 711	Cotton + Pigeonpea (6:2) Pigeonpea: BSMR-736, 853 BDN-708, 711	Pigeonpea (BDN-708,711)
	Pearl millet	Pearl millet	Pearl millet (Nandi-35, Nandi-64)	Pearl millet (Saburi)	Pearl millet (Saburi)
	Maize	Maize	Maize (PEH-2, Panchaganga)	Maize (Karveer)	Maize /Fodder maize Maize : Karveer Fodder maize : African Tall
	Pigeonpea	Pigeonpea	Soybean + Pigeonpea (4:2) Pigeonpea: BSMR-736, 853, BDN-708, 711 Soybean: JS-335, MAUS-71, 81 Pigeonpea: BSMR-736, 853 BDN -708, 711	Soybean + Pigeonpea (4:2) Pigeonpea: BSMR- 736, 853, BDN-708, 711 Soybean: JS-335, MAUS-71, 81 Pigeonpea: BSMR-736, 853 BDN -708, 711	Keep fallow & plan for early Rabi Crops like Sorghum, Chickpea, Sunflower and Safflower.

(1)	(2)	(3)	(4)	(5)	(6)
	Greengram	Greengram	Soybean + Pigeonpea (4:2)	Soybean + Pigeonpea (4:2)	Keep fallow & plan for early Rabi Crops like Sorghum, Chickpea, Sunflower and Safflower.
	Soybean	Soybean	Soybean + Pigeonpea (4:2)	Soybean + Pigeonpea (4:2)	Sunflower (Morden, SS-56, LSFH-35, BSH-1)

Latur District

Latur district falls under Central Maharashtra plateau agro climatic zone (MH-7) in Maharashtra. The district receives a mean annual rainfall of 929 mm of which 776 mm is received during south west monsoon and 105 mm in north east monsoon. The dominant soil types in the district are medium deep to deep black soils (see map). The district has an area of 294000 ha under rainfed situation (55% of net sown area). The major rainfed crops cultivated in the district are soybean, sorghum, pigeonpea, greengram, blackgram, and irrigated crops are sunflower, safflower and chickpea.



Normal sowing window for major field crops

Season/ Situation	Soybean	Sorghum	Pigeonpea	Greengram	Blackgram
<i>Kharif</i> - Rainfed	2 nd week of June to 2 nd week of July	2 nd week of June to 1 st week of July	2 nd week of June to 2 nd week of July	2 nd week of June to 1 st week of July	2 nd week of June to 1 st week of July
	Sunflower	Safflower	Chickpea	Sorghum	--
<i>Rabi</i> - Irrigated	1 st week of October to 2 nd week of October	1 st week of October to 2 nd week of October	1 st week of October to 2 nd week of October	1 st week of October to 2 nd week of October	--

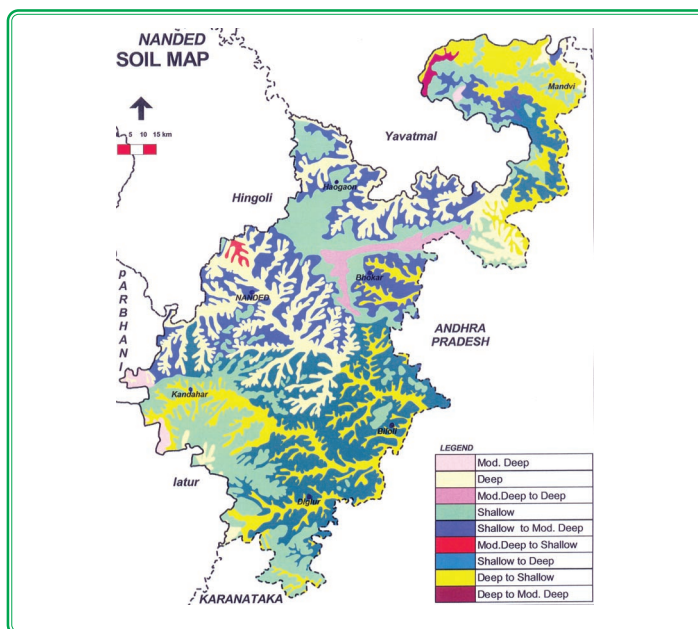
Contingency crop plan

Farming situation	Normal crop/ Normal onset of monsoon (June 2 nd week)	Suggested contingency crops/ cropping systems and cultivars			
		Delay by 2 weeks (June 4 th week)	Delay by 4 weeks (July 2 nd week)	Delay by 6 weeks (July 4 th week)	Delay by 8 weeks (August 2 nd week)
(1)	(2)	(3)	(4)	(5)	(6)
Medium deep to deep black soils	Soybean	Soybean/ Soybean+ Pigeonpea (4:2) Soybean: MAUS-71, 81 Pigeonpea: BSMR- 736, 853 BDN-708, 711	Soybean+ Pigeonpea (4:2) Soybean: MAUS-71, 81 Pigeonpea: BSMR- 736, 853 BDN-708, 711	Soybean+ Pigeonpea (4:2) Soybean: MAUS-71, 81 Pigeonpea: BSMR- 736, 853 BDN-708, 711	Soybean+ Pigeonpea (4:2) Soybean: MAUS-71, 81 Pigeonpea: BSMR- 736, 853 BDN-708, 711
	Sorghum	Pearl millet + Pigeonpea (4:2) Pearl millet: Shradha, Saburi, Shanti, AIMP-92901	Pearl millet + Pigeonpea (4:2) Pearl millet: Shradha, Saburi, Shanti, AIMP-92901	Pearl millet + Pigeonpea (4:2) Pearl millet: Shradha, Saburi, Shanti, AIMP-92901	Pearl millet + Pigeonpea (4:2) Pearl millet: Shradha, Saburi, Shanti, AIMP-92901
	Pigeonpea	Soybean+ Pigeonpea (4:2) Soybean: MAUS-71, 81	Soybean+ Pigeonpea (4:2) Soybean: MAUS-71, 81	Soybean+ Pigeonpea (4:2) Soybean: MAUS-71, 81	Soybean+ Pigeonpea (4:2) Soybean: MAUS-71, 81

(1)	(2)	(3)	(4)	(5)	(6)
	Blackgram	Soybean+ Pigeonpea (4:2)	Soybean+ Pigeonpea (4:2)	Soybean+ Pigeonpea (4:2) Sunflower Sunflower: Morden, EC-68414, SS-56, LSH-35.	Soybean+ Pigeonpea (4:2) Sunflower Sunflower: Morden, EC-68414, SS-56, LSH-35.
	Greengram	Soybean+ Pigeonpea (4:2)	Soybean+ Pigeonpea (4:2)	Soybean+ Pigeonpea (4:2) Sunflower	Soybean+ Pigeonpea (4:2) Sunflower/ Sesame Sesame: GLT-7, 26
Shallow black soils	Soybean	Soybean+ Pigeonpea (4:2)	Soybean+ Pigeonpea (4:2)	Soybean+ Pigeonpea (4:2)	Soybean+ Pigeonpea (4:2)
	Sorghum	Pearl millet + Pigeonpea (4:2) Pearl millet: Shradha, Saburi Shanti, AIMP-92901	Pearl millet + Pigeonpea (4:2) Pearl millet: Shradha, Saburi Shanti, AIMP-92901	Pearl millet + Pigeonpea (4:2) Pearl millet: Shradha, Saburi Shanti, AIMP-92901	Pearl millet + Pigeonpea (4:2) Pearl millet: Shradha, Saburi Shanti, AIMP-92901
	Pigeonpea	Soybean+ Pigeonpea (4:2)	Soybean+ Pigeonpea (4:2)	Soybean+ Pigeonpea (4:2)	Soybean+ Pigeonpea (4:2)
	Black gram	Soybean+ Pigeonpea (4:2)	Soybean+ Pigeonpea (4:2)	Soybean+ Pigeonpea (4:2)	Soybean+ Pigeonpea (4:2) /Sunflower Sunflower: Morden, EC-68414, SS-56, LSH-35. Niger: NS-6

Nanded

Nanded district falls under Central Maharashtra plateau agro climatic zone (MH-7) and Central Vidarbha zone (MH-8) in Maharashtra. The district receives a mean annual rainfall of 979 mm of which 836 mm is received during south west monsoon and 93 mm in north east monsoon. The dominant soil types in the district are black soils (see map). The district has an area of 599000 ha under rainfed situation (84% of net sown area). The major rainfed crops cultivated in the district are cotton, soybean, sorghum, blackgram, pigeonpea, *rabi-sorghum* and irrigated crops are cotton, wheat and chickpea.



Normal sowing window for major field crops

Season/ Situation	Cotton	Soybean	Sorghum	Black gram / Green gram	Pigeonpea
Khariif- Rainfed	2 nd week of June to 2 nd week of July	2 nd week of June to 2 nd week of July	2 nd week of June to 2 nd week of July	2 nd week of June to 1 st week of July	2 nd week of June to 4 th week of July
Khariif- Irrigated	2 nd week of May to 2 nd week of June	--	--	--	--
	Rabi-sorghum	Chickpea	Safflower	--	--
Rabi- Irrigated	1 st week of October to 2 nd week of October	1 st week of October to 2 nd week of October	2 nd week of September to 2 nd week of October	--	--

Contingency crop plan

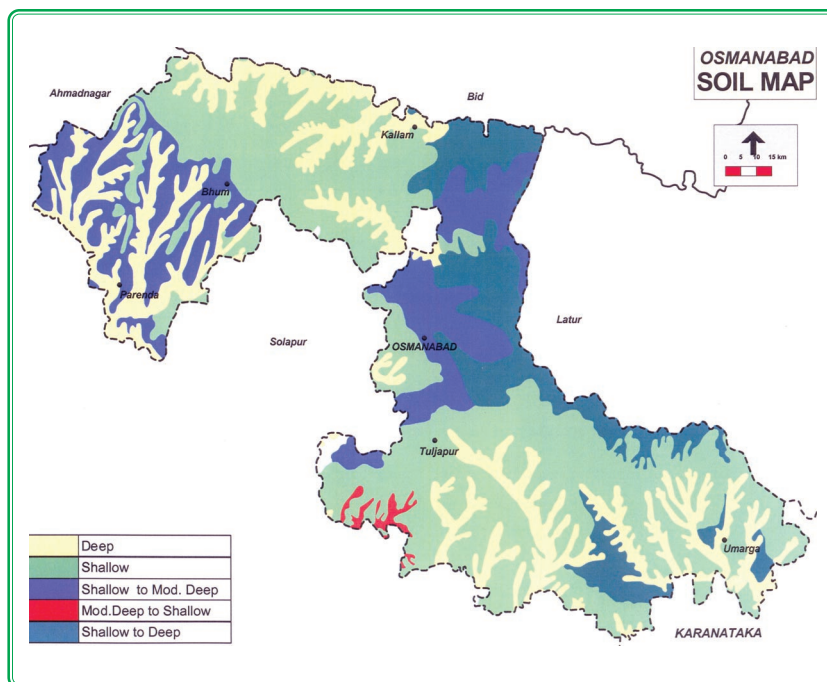
Farming situation	Normal crop/	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (June 2 nd week)	Delay by 2 weeks (June 4 th week)	Delay by 4 weeks (July 2 nd week)	Delay by 6 weeks (July 4 th week)	Delay by 8 weeks (August 2 nd week)
(1)	(2)	(3)	(4)	(5)	(6)
Medium deep to deep black soils	Cotton	Cotton (PKVHY-5)	Cotton + Pigeonpea (6:2) Pigeonpea: BSMR 736, 853	Cotton + Pigeonpea (6:2) Pigeonpea: BSMR 736, 853 BDN 708, 711	Pigeonpea (BDN 708, 711)
	Sorghum	Sorghum (CSH-16)	Sorghum+ Pigeonpea (4:2) Sorghum: CSH-9, 11, 14, 16, PVK-401, 809 Pigeonpea: BSMR-736, 853	Sorghum+ Pigeonpea (4:2) /Maize/ Sunflower. Sorghum:CSH-9,11, 14, 16, PVK-401, 809 Pigeonpea: BSMR-736, 853	Sorghum+ Pigeonpea (4:2) /Maize/ Sunflower. Sorghum:CSH-9,11, 14, 16, PVK- 401, 809 Pigeonpea: BSMR-736,853
	Soybean	Soybean (MAUS-81)	Soybean+ Pigeonpea (4:2)	Soybean+ Pigeonpea (4:2)	Pigeonpea/ Sunflower/ Sesame
	Blackgram	Blackgram (TAU1, AKU-15)	Soybean + Pigeonpea (4:2) Soybean: MAUS-71, 81 Pigeonpea; BSMR-736, 853	Soybean + Pigeonpea (4:2) Soybean: MAUS-71, 81 Pigeonpea; BSMR-736, 853 BDN-708, 711	Pigeonpea/ Maize/ Pearl millet / Sunflower or Plan for early rabi crops like sorghum, Chickpea and Safflower
	Pigeonpea	Pigeonpea (Vaisali)	Soybean + Pigeonpea (4:2) Soybean: MAUS-71, 81 Pigeonpea; BSMR-736, 853	Soybean + Pigeonpea (4:2) Soybean: MAUS-71, 81 Pigeonpea; BSMR-736, 853	Pigeonpea/ Maize/ Pearl millet / Sunflower or Plan for early rabi crops like sorghum, Chickpea and Safflower

(1)	(2)	(3)	(4)	(5)	(6)
	Greengram	Greengram (Taram-18, BPMR-145)	Soybean + Pigeonpea (4:2) Soybean: MAUS-71, 81 Pigeonpea; BSMR- 736, 853	Soybean + Pigeonpea (4:2) Soybean: MAUS-71, 81 Pigeonpea; BSMR- 736, 853	Pigeonpea/ Maize/ Pearl millet / Sunflower OR Plan for early rabi crops like Sorghum, Chickpea and Safflower
Shallow black soils	Cotton	Cotton (PKV hy 3, 5, Bt-2)	Cotton+ Pigeonpea (6:2) Pigeonpea: BDN 708, 711.	Cotton+ Pigeonpea (6:2) Pigeonpea: BDN 708, 711.	Pigeonpea (BDN 708, 711)
	Sorghum	Sorghum (CSH-14)	Sorghum+ Pigeonpea (4:2) Sorghum: CSH-9,11,14, 16, PVK-401, 809	Sorghum + Pigeonpea(4:2)/ Maize Sorghum: CSH-9, 11, 14, 16, PVK-401, 809	Pearl millet + Pigeonpea(4:2)/ Maize/ Sunflower Pearl millet: Shradha, Saburi, Shanti, AIMP-92901
	Soybean	Soybean (MAUS-71, 81)	Soybean+ Pigeonpea (4:2) Soybean: MAUS-71, 81 Pigeonpea: BSMR-736,853	Soybean+ Pigeonpea (4:2) Soybean: MAUS-71, 81 Pigeonpea: BSMR-736,853	Pigeonpea/ Sunflower/ Sesame/ Castor
	Blackgram	Blackgram (TAU-1, AKU-15)	Soybean+ Pigeonpea (4:2) Soybean: MAUS-71, 81 Pigeonpea: BSMR-736,853	Soybean+ Pigeonpea (4:2) Soybean: MAUS-71, 81 Pigeonpea: BSMR-736,853	Plan for early <i>rabi</i> crops like sorghum, Chickpea and Safflower
	Pigeonpea	Pigeonpea (Vaisali)	Soybean+ Pigeonpea (4:2) Sorghum, JS-335, MAUS-71, 81 Pigeonpea: BSMR-736,853 BDN-708, 711	Soybean+ Pigeonpea (4:2) Soybean: JS-335, MAUS-71, 81 Pigeonpea: BSMR-736,853 BDN-708, 711	Plan for early <i>rabi</i> crops like Soybean: Chickpea and Safflower

(1)	(2)	(3)	(4)	(5)	(6)
	Greengram	Greengram (Vaibhav, BPMR145)	Soybean+ Pigeonpea (4:2)	No change / Soybean+ Pigeonpea (4:2)	Plan for early rabi crops like Sorghum, Chickpea and Safflower

Osmanabad District

Osmanabad district falls under Central Maharashtra plateau agro climatic zone (MH-7) and Western Maharashtra Scarcity zone (MH-6) in Maharashtra. The district receives a mean annual rainfall of 845 mm of which 692 mm is received during south west monsoon and 105 mm in north east monsoon. The dominant soil types in the district are shallow, medium deep to deep black soils (see map). The district has an area of 412000 ha under rainfed situation (79% of net sown area). The major rainfed crops cultivated in the district are pigeonpea, sorghum, blackgram, soybean, sunflower, *rabi*- sorghum and irrigated crops are chickpea, wheat, safflower.



Normal sowing window for major field crops

Season/ Situation	Pigeonpea	Sorghum	Blackgram	Soybean	Sunflower
<i>Kharif</i> - Rainfed	2 nd week of June to 2 nd week of July	2 nd week of June to 4 th week of July	2 nd week of June to 4 th week of July	2 nd week of June to 4 th week of July	2 nd week of June to 2 nd week of July
	Sorghum	Gram	Safflower	--	--
<i>Rabi</i> - Irrigated	1 st week of October to 2 nd week of October	2 nd week of October to 4 th week of October	2 nd week of September to 2 nd week of October	--	--

Contingency crop plan

Farming situation	Normal crop/	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (June 2 nd week)	Delay by 2 weeks (June 4 th week)	Delay by 4 weeks (July 2 nd week)	Delay by 6 weeks (July 4 th week)	Delay by 8 weeks (August 2 nd week)
(1)	(2)	(3)	(4)	(5)	(6)
Medium deep to deep black soils with assured rainfall	Pigeonpea	Pigeonpea (BDN-2)	Pigeonpea (BSMR 736, 853 BDN -708, 711)	Pigeonpea (TAT-10)	Pearl millet + Pigeonpea (3:3 or 4:2) Pigeonpea; BDN-708, 711
	Sorghum	Sorghum (CSH-25, CSV-23)	Cotton /Maize/ Pigeonpea / Pearl millet / Sunflower Pigeonpea: BSMR- 736, 853 BDN-708, 711 Pearl millet: Shradha, Saburi, AIMP-92901 Sunflower: Morden, SS-56, LSFH-35,BSH-1	Pearl millet + Pigeonpea (4:2 or 3:3) Pearl millet: Shradha, Saburi AIMP-92901 Pigeonpea: BDN-708, 711	Pearl millet + Pigeonpea (4:2 or 3:3) Pearl millet: Shradha, Saburi AIMP-92901 Pigeonpea: BDN-708, 711

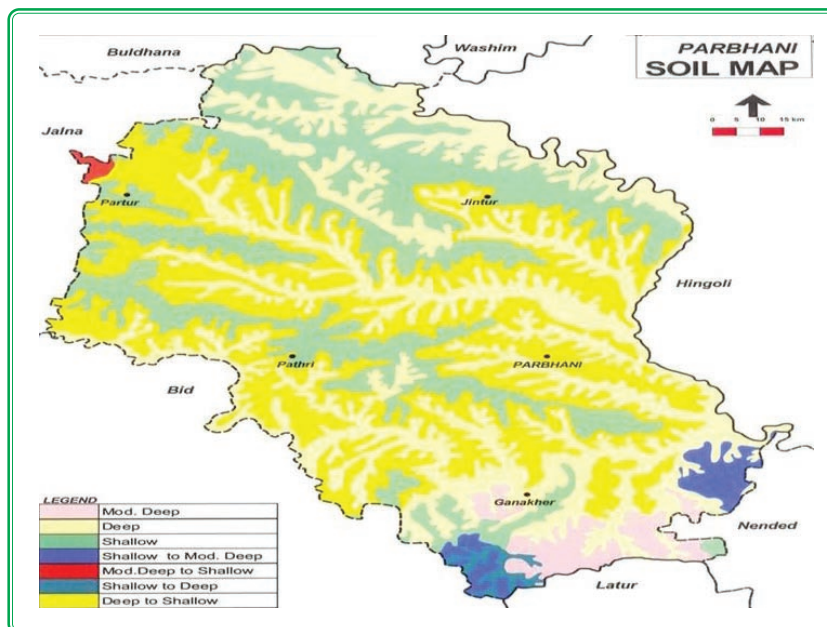
(1)	(2)	(3)	(4)	(5)	(6)
	Black gram	Blackgram (AKU-15, TAU-1)	Soybean + Pigeonpea (4:2 or 6:3) Soybean : JS-335, MAUS-71	Pearl millet + Pigeonpea (4:2 or 3:3) Pearl millet: Shradha, Saburi, AIMP-92901	Niger (Local)/ Fodder Sorghum / fallow for Rabi crops
	Soybean	Soybean (MAUS-47)	Soybean + Pigeonpea (4:2 or 6:3)	Soybean + Pigeonpea (4:2 or 6:3)	<i>Kharif</i> fallow followed by <i>rabi</i> crops
	Sunflower	Sunflower (MSFH-17)	Sunflower : Morden, SS-56, LSFH-35, BSH-1	Sunflower + Sesame Sunflower; Morden, SS-56, LSH-36, Sesame : JLT-7, 26.	Sunflower + Sesame Sunflower; Morden, SS-56, LSH-36, Sesame : JLT-7, 26.
Shallow soils with assured rainfall	Pigeonpea	Pigeonpea (Vaisali)	Pigeonpea (BSMR 736, 853, BDN 708, 711)	Pearl millet + Pigeonpea (4:2 or 3:3) Pearl millet: Shradha, Saburi AIMP-92901 Pigeonpea: BDN-708, 711	Pearl millet + Pigeonpea (3:3 or 4:2) Pigeonpea : BDN-708, 711
	Sorghum	Sorghum (SPV-1333)	Cotton/Maize/ Pigeonpea / Pearl millet/ Sunflower	Pearl millet + Pigeonpea (4:2 or 3:3)	Pearl millet + Pigeonpea (3:3 or 4:2)
	Blackgram	Blackgram (TAU-1)	Soybean + Pigeonpea (4:2 or 6:3) Soybean : JS-335, MAUS-71 Pigeonpea : BSMR 736, 853, BDN 708, BDN 711	Fodder maize/ Fodder Sorghum/ Keep fallow, plan for rabi crops like Sorghum Fodder Maize: African Tall Fodder Sorghum: Pusa Chari	Niger/ fodder sorghum/ fallow for Rabi crops Niger : Local

(1)	(2)	(3)	(4)	(5)	(6)
	Soybean	Soybean (JS335)	Soybean + Pigeonpea (4:2 or 6:3)	Soybean + Pigeonpea (4:2 or 6:3)	<i>Kharif</i> fallow followed by <i>rabi</i> crops
	Pearl millet	Pearl millet (GHB58)	Pearl millet (Shradha, Saburi, AIMP-92901)	Pearl millet (Shradha, Saburi, AIMP-92901)	Pearl millet (Shradha, Saburi, AIMP-92901)
Medium deep to deep black soils with low rainfall (Bhoom and Paranda tehsils)	Pigeonpea	Pigeonpea (Vaisali)	Pigeonpea (BSMR736, 853 BDN 708, 711)	No change / Pearl millet + Pigeonpea (4:2 or 3:3) / Sesame: No.-85, JLT-7 Fodder sorghum; Nilwa	Pearl millet + Pigeonpea (3:3 or 4:2)
	Sorghum	Sorghum (CSH-11)	Sorghum + Pigeonpea (4:2) Sorghum (CSH-9, 11, 16, PBK-401, 809) + Pigeonpea BSMR-736,853 BDN-708, 711	Castor (VI-9, Aruna, DCS-9 (Jyothi), GGH-4,5,6 and DCH-117 / 32)	Pearl millet + Pigeonpea (3:3 or 4:2) Pigeonpea: BSMR -736, 853, BDN -708, BDN-711.
	Black gram	Black gram (AKU15)	Soybean + Pigeonpea (4:2)/Cotton (Bt cotton)+ Pigeonpea (6:2)	Keep fallow, plan for <i>rabi</i> crops like Sorghum	Niger / fodder sorghum / fallow for <i>rabi</i> crops Niger : Local
	Soybean	Soybean (MAUS47)	Soybean + Pigeonpea (4:2)/Cotton (Bt cotton)+ Pigeonpea(6:2)	Soybean + Pigeonpea (4:2) Soybean: MAUS - 71, 81	<i>Kharif</i> fallow followed by <i>rabi</i> crops
Shallow soils with low	Pigeonpea	Pigeonpea (Vaisali, BSMR-736)	Soybean + Pigeonpea (4:2)/ Cotton	Pearl millet + Pigeonpea (4:2)	Pearl millet + Pigeonpea (4:2)

(1)	(2)	(3)	(4)	(5)	(6)
rainfall (Bhoom & Paranda Tehsils)			(Bt cotton)+ Pigeonpea (6:2)		
	Sorghum	Sorghum (SPN-297)	Pearl millet + Pigeonpea (4:2) Pearl millet: Shradha, Saburi, Shanti ABPC 4-3	-do-	Sunflower / Castor Sunflower: Morden, SS-56, LSFH-35, BSH-1 Castor : VI-9, Aruna, DCS-9 (Jyothi), GGH-4, 5, 6 and DCH-117 / 32
	Blackgram	Blackgram (AKU-15)	Soybean + Pigeonpea (4:2 or 6:3)	Fodder maize / Fodder Sorghum / Keep fallow, plan for <i>rabi</i> crops like Sorghum Fodder maize ; African Tall Fodder sorghum: Pusa Chari	Niger / fodder Sorghum / fallow for <i>rabi</i> crops Niger: Local
	Pearl millet	Pearl millet (GHB-58)	Pearl millet (Shradha, Saburi, AIMP-92901)	Pearl millet (Shradha, Saburi, AIMP-92901)	Pearl millet (Shradha, Saburi, AIMP-92901)

Parbhani District

Parbhani district falls under Central Maharashtra plateau agro climatic zone (MH-7) in Maharashtra. The district receives a mean annual rainfall of 916 mm of which 790 mm is received during south west monsoon and 91 mm in north east monsoon. The dominant soil types in the district are medium deep to deep black soils (see map). The district has an area of 387000 ha under rainfed situation (74% of net sown area). The major rainfed crops cultivated in the district are cotton, soybean, sorghum, pigeonpea, wheat and irrigated crops are safflower, chickpea, greengram and soybean.



Normal sowing window for major field crops

Season/ Situation	Cotton	Soybean	Sorghum	Pigeonpea	Greengram
<i>Khariif</i> - Rainfed	2 nd week of June to 2 nd week of July	2 nd week of June to 2 nd week of July	2 nd week of June to 2 nd week of July	2 nd week of June to 2 nd week of July	2 nd week of June to 2 nd week of July
<i>Khariif</i> - Irrigated	2 nd week of May to 2 nd week of June	--	--	--	--
	Safflower	Chickpea	Sorghum	--	--
<i>Rabi</i> - Irrigated	3 rd week of September to 2 nd week of October	1 st week of October to 2 nd week of October	3 rd week of September to 3 rd week of October	--	--

Contingency crop plan

Farming situation	Normal crop/	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)	Delay by 8 weeks (1 st week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Medium deep to deep black soils	Cotton	Cotton	Cotton + Pigeonpea (6:2) Pigeonpea: BSMR- 736, 853, BDN-708, 711	Cotton + Pigeonpea (6:2) Pigeonpea: BSMR- 736, 853, BDN-708, 711	Pigeonpea (BDN-708, 711)
	Sorghum	Sorghum (CSH - 9, 14)	Sorghum + Pigeonpea (4:2) Sorghum: CSH-9, 11, 14, 16, PVK-401, 809 Pigeonpea: BSMR-736, 853, BDN-708, 711	Sorghum + Pigeonpea (4 :2) Sorghum: CSH-9, 11, 14, 16, PVK-401, 809 Pigeonpea: BSMR-736, 853, BDN -708,711	Pearl millet + Pigeonpea (3 :3 or 4:2) Pearl millet: Shradha, Saburi, Shanti AIMP-92901 Pigeonpea: BDN-708, 711
	Soybean	Soybean (MAUS-71)	Soybean+ Pigeonpea (4:2)	Soybean+ Pigeonpea (4:2)	Sunflower (Morden, SS-56, LSFH-35, BSH-1)
	Greengram	Greengram (Vaibhav)	Soybean+ Pigeonpea (4:2) Soybean: MAUS 71, 81 Pigeonpea: BSMR-736 853, BDN-708, 711	Soybean+ Pigeonpea (4:2) Soybean: MAUS 71, 81 Pigeonpea: BSMR-736 853, BDN-708, 711	Pigeonpea/ Keep fallow and plan for <i>rabi</i> crops like Sorghum, Chickpea, Sunflower and Safflower. Pigeonpea: BDN-708, 711

(1)	(2)	(3)	(4)	(5)	(6)
	Pigeonpea	Pigeonpea (Vaisali)	Soybean+ Pigeonpea (4:2)	Soybean+ Pigeonpea (4:2)	Pigeonpea (BDN-708,711)
	Blackgram	Blackgram (AKU-15, TAU-1)	Soybean+ Pigeonpea (4:2)	Soybean+ pigeonpea (4:2)	Pigeonpea (BDN 708, 711) or Keep fallow and plan for <i>rabi</i> Crops like Sorghum, Chickpea, Sunflower and Safflower.
Shallow black soils	Cotton	Cotton (NHH-44, Bt)	Cotton + Pigeonpea (6:2) Pigeonpea: BSMR- 736, 853, BDN-708, 711	Cotton + Pigeonpea (6:2) Pigeonpea: BSMR- 736, 853, BDN-708, 711	Pigeonpea (BDN-708, 711)
	Sorghum	Sorghum (CSH-9, 14)	Sorghum + Pigeonpea (4 : 2) Sorghum: CSH-9,11,14, 16, PVK-401, 809	Pearl millet + Pigeonpea (3 :3 or 4:2) Pearl millet: Shradha, Saburi, Shanti AIMP-92901	Pearl millet + Pigeonpea (3 :3 or 4:2) Pearl millet: Shradha, Saburi, Shanti AIMP-92901
	Soybean	Soybean (MAUS-71)	Soybean+ Pigeonpea (4:2)	Soybean+ Pigeonpea (4:2)	Sunflower (Morden, SS-56, LSFH-35, BSH-1)
	Greengram	Greengram (Vaibhav)	Soybean+ Pigeonpea (4:2)	Soybean + Pigeonpea (4 :2)	Keep fallow and plan for early <i>rabi</i> Crops like Sorghum, Chickpea, Sunflower and Safflower.

(1)	(2)	(3)	(4)	(5)	(6)
	Pigeonpea	Pigeonpea (BSMR-853)	Soybean+ Pigeonpea (4:2) Soybean: MAUS 71, 81 Pigeonpea: BSMR-736, 853 BDN 708, 711	Soybean+ Pigeonpea (4:2) Soybean: MAUS 71, 81 Pigeonpea: BSMR-736, 853 BDN-708, 711	Keep fallow and plan for early <i>rabi</i> crops like Sorghum, Chickpea, Sunflower & Safflower.
	Blackgram	Black gram (AKU-15, TAU-1)	Blackgram/ Soybean+ Pigeonpea (4:2) Black gram: AKU-15, TAU-1	Blackgram/ Soybean+ Pigeonpea (4:2) Black gram: AKU-15, TAU-1	Keep fallow and plan for early <i>rabi</i> crops like Sorghum, Chickpea, Sunflower and Safflower.

2.3.3 MAJOR CROPS IN VIDARBHA

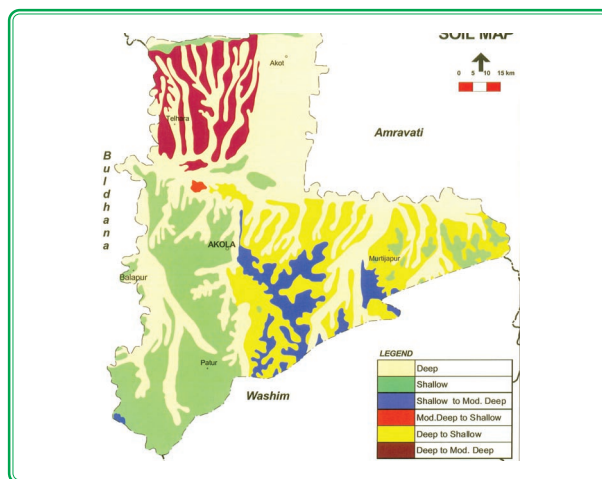
Vidarbha region in Maharashtra encompasses 11 districts (Akola, Amravati, Bhandara, Buldana, Chandrapur, Gadchiroli, Gondia, Nagpur, Wardha, Washim and Yavatmal). The major field crops cultivated during *kharif* season under rainfed conditions are cotton, soybean, pigeonpea, rice, maize, sorghum, pearl millet, other pulses (greengram and blackgram) and sesame.

- Rice is cultivated predominantly in Bhandara, Gondia, Gadchiroli, Chandrapur, Nagpur and Amravati.
- Major crops cultivated during *rabi* under rainfed conditions are: chickpea and safflower
- Major crops cultivated during *rabi* under irrigated conditions are: wheat, sugarcane and linseed.
- Major crop cultivated during Summer under irrigated conditions is groundnut

<i>Kharif</i> rainfed crops	Districts
Cotton	Yavatmal, Buldana, Akola, Amravati, Wardha, Washim, Chandrapur, Gadchiroli
Soybean	Amravati, Yavatmal, Nagpur, Wardha, Washim, Chandrapur, Akola, Gadchiroli
Pigeonpea	Yavatmal, Amravati, Buldana, Wardha, Washim, Nagpur, Akola, Chandrapur, Bhandara
Rice	Bhandara, Gondia, Gadchiroli, Chandrapur, Nagpur, Amravati.
Maize	Buldana, Gadchiroli, Amravati, Akola, Washim
Sorghum	Buldana, Akola, Amravati, Washim, Nagpur, Yavatmal, Gadchiroli
Other Pulses	Chandrapur, Bhandara, Gadchiroli, Gondia, Nagpur, Amravati, Akola
Pearl millet	Buldana, Yavatmal, Akola, Washim, Amravati
Sesame	Bhandara, Gadchiroli, Gondia
<i>Rabi</i> rainfed crops	
Chickpea	Amravati, Nagpur, Buldana, Washim, Akola, Yavatmal, Chandrapur, Wardha, Bhandara, Gadchiroli
Safflower	Akola, Amravati, Buldana, Washim
<i>Rabi</i> irrigated crops	
Wheat	Nagpur, Chandrapur, Buldana, Wardha, Amravati, Yavatmal, Washim, Akola, Bhandara, Gondia, Gadchiroli
Sugarcane	Yavatmal, Wardha, Amravati, Bhandara, Buldana, Akola, Washim
Linseed	Gondia, Gadchiroli
Summer Irrigated crop	
Groundnut	Bhandara

Akola District

Akola district falls under Western Maharashtra Scarcity agro climatic zone (MH-6) in Maharashtra. The district receives a mean annual rainfall of 825 mm of which 712 mm is received during south west monsoon and 73 mm in north east monsoon. The dominant soil types in the district are medium deep to deep black soils and shallow soils (see map). The district has an area of 441000 ha under rainfed situation (78% of net sown area). The major rainfed crops cultivated in the district are cotton, soybean, *khariif* sorghum, greengram, blackgram, pigeonpea and irrigated crops are cotton, wheat, chickpea, safflower.



Normal sowing window for major field crops

Season/ Situation	Cotton	Soybean	Sorghum	Green gram / Black gram	Pigeonpea
<i>Khariif</i> - Rainfed	2 nd week of June to 4 th week of June	2 nd week of June to 2 nd week of July	2 nd week of June to 10 th July	2 nd week of June to 4 th week of June	2 nd week of June to 2 nd week of July
<i>Khariif</i> - Irrigated	3 rd week of May to 4 th week of May (Premonsoon) 1 st week of June to 4 th week of June	--	--	--	--
	Wheat	Chickpea	Safflower	--	--
<i>Rabi</i> - Irrigated	1 st week of October to 2 nd week of October	1 st week of October to 2 nd week of October	3 rd week of September to 1 st week of October	--	--

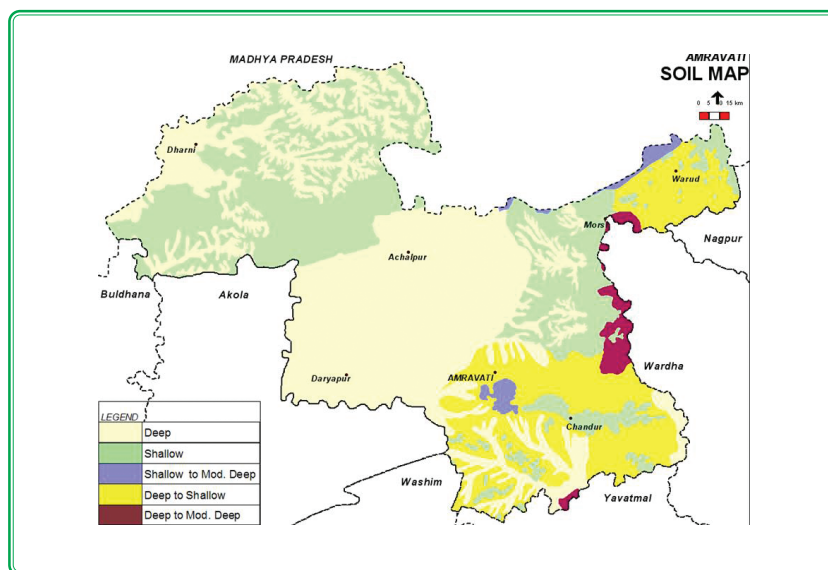
Contingency crop plan

Farming situation	Normal crop/	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (June 2 nd week)	Delay by 2 weeks (June 4 th week)	Delay by 4 weeks (July 2 nd week)	Delay by 6 weeks (July 4 th week)	Delay by 8 weeks (August 2 nd week)
(1)	(2)	(3)	(4)	(5)	(6)
Deep & Medium deep black soils	Cotton + Pigeonpea (6:2)	Cotton + Pigeonpea (6:2) Cotton : PKVRajat Pigeonpea: AKT8811	Soybean/ Pigeonpea Soybean : JS-355, JS-93-05 Pigeonpea : AKT8811 Vipula, PKV-Tara, BSMR-736	Pigeonpea/ Sunflower / Sesame/ Castor / Pearl millet/ Pearl millet + Pigeonpea (2:1 or 4:2) Pearl millet: PKV Raj Shradha, Saburi Pigeonpea : AKT-8811, Vipula, PKV Tara, BSMR - 736 Sunflower : PKVSH-27 Sesame : AKT64 Castor : AKC-1, GCH- 4, 5, 6 & DCH-117, 32	Pigeonpea/ Sunflower / Sesame/ Castor / Pearl millet/ Pearl millet + Pigeonpea (2:1 or 4:2) Pearl millet: PKV Raj Shradha, Saburi Pigeonpea : AKT-8811, Vipula, PKV Tara, BSMR - 736 Sunflower : PKVSH-27 Sesame : AKT64 Castor : AKC-1, GCH-4, 5, 6 & DCH-117, 32
	Soybean	Soybean (Samrudhi)	Short duration Cotton Desi varieties	Short duration Cotton Desi varieties	Pigeonpea / Sunflower / Sesame/Castor/ Pearl millet/ Pearl millet + Pigeonpea (2:1 or 4:2)

(1)	(2)	(3)	(4)	(5)	(6)
	Pigeonpea	Pigeonpea (BDN708)	Pigeonpea (AKT-8811, Vipula, PKV Tara, BSMR-736)	Pigeonpea/ Sunflower / Pearl millet/ Sesame/ Castor/ Pearl millet+ Pigeonpea (2:1 or 4:2)	Pigeonpea/ Sunflower / Pearl millet/ Sesame/ Castor/ Pearl millet+ Pigeonpea (2:1 or 4:2)
	Sorghum	Sorghum (<i>Kharif</i> Jowar CHS5 and 9)	Pigeonpea (AKT 8811, Vipula, PKV-Tara, BSMR-736)	Pigeonpea (AKT 8811, Vipula, PKV-Tara, BSMR-736)	Pigeonpea (AKT 8811, Vipula, PKV-Tara, BSMR-736)
Shallow black soils	Soybean	Soybean (JS-335, JS-93-05)	Soybean / Pigeonpea Soybean: JS-335, JS-93-05 Pigeonpea: AKT 8811, Vipula, PKV-Tara, BSMR-736	Pigeonpea/ Sunflower / Pearl millet/ Sesame/ Castor/ Pearl millet+ Pigeonpea (2:1 or 4:2)	Sunflower/ Sesame/ Pearl millet Sunflower; PKVSH-27 Sesame: AKT-64 Pearl millet: PKV Raj Shradha, Saburi
	Greengram	Greengram (Kopergoan)	Soybean (JS-335, JS-93-05)	Pigeonpea/ Sunflower / Sesame / Pearl millet/ Pearl millet + Pigeonpea (2:1 or 4:2)	Sunflower / Sesame/ Pearl millet
	Blackgram	Blackgram (KALINDI (B-76), TAU-1)	Blackgram (KALINDI (B-76), TAU-1)	Pigeonpea/ Sunflower / Sesame / Pearl millet/ Pearl millet + Pigeonpea (2:1 or 4:2)	Sunflower / Sesame/ Pearl millet

Amravati District

Amravati district falls under Central Maharashtra plateau agro climatic zone (MH-7) in Maharashtra. The district receives a mean annual rainfall of 886 mm of which 775mm is received during south west monsoon and 70 mm in north east monsoon. The dominant soil types in the district are medium deep to deep black soils and shallow soils (see map). The district has an area of 540000 ha under rainfed situation (90% of net sown area). The major rainfed crops cultivated in the district are cotton, soybean, *kharif* sorghum, greengram, blackgram, pigeonpea, chickpea and safflower.



Normal sowing window for major field crops

Season/ Situation	Cotton	Soybean	Sorghum	Greengram / Blackgram	Pigeonpea
<i>Kharif</i> - Rainfed	3 rd week of June to 2 nd week of July	3 rd week of June to 2 nd week of July	3 rd week of June to 2 nd week of July	2 nd week of June to 4 th week of June	1 st week of July
	Chickpea	Safflower	--	--	--
<i>Rabi</i> - Rainfed	2 nd week of October to 1 st week of October	3 rd week of September	--	--	--
<i>Rabi</i> - Irrigated	1 st week of November to 2 nd week of December	--	--	--	--

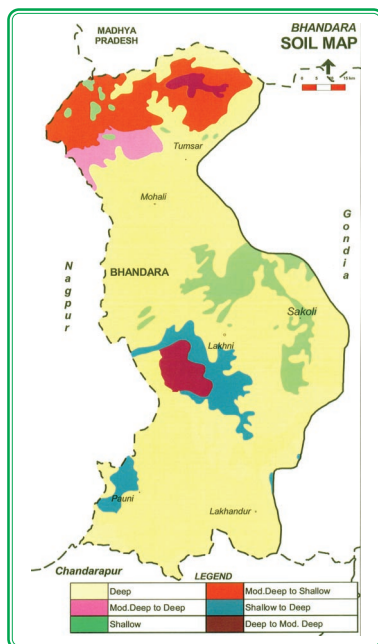
Contingency crop plan

Farming situation	Normal crop/	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (June 2 nd week)	Delay by 2 weeks (June 4 th week)	Delay by 4 weeks (July 2 nd week)	Delay by 6 weeks (July 4 th week)	Delay by 8 weeks (August 2 nd week)
(1)	(2)	(3)	(4)	(5)	(6)
Deep to medium deep black soils	Cotton	Cotton	Soybean / Pigeonpea. Soybean: JS-335, JS-93-05. Pigeonpea: AKT- 8811, Vipula , PKV-Tara, BSMR-736.	Soybean / Pigeonpea. Soybean: JS-335, JS-93-05. Pigeonpea: AKT- 8811, Vipula , PKV-Tara, BSMR-736.	Sole pigeonpea Sunflower / Sesame / Castor/ Pearl millet Pearl millet + Pigeonpea (2:1 or 4:2) Pigeonpea: AKT-8811, Vipula, PKV Tara, BSMR-736. Sunflower: PKVSH-27. Sesame:AKT64 Castor: AKC-1, GCH-4, 5, 6 & DCH-117, DCH-32. Pearl millet : PKV Raj, Shradha, Saburi
	Cotton + Pigeonpea (6:2)	Cotton + Pigeonpea (6:2)	Prefer early varieties/ hybrids of American cotton / desi cotton + Pigeonpea	Prefer early varieties/ hybrids of American cotton / desi cotton + Pigeonpea	Sole pigeonpea Sunflower/ Sesame/ Castor/ Pearl millet Pearl millet + Pigeonpea (2:1 or 4:2)
	Soybean	Soybean (Pooja)	Soybean (MAUS-32)	Soybean (MAUS-32)	Pigeonpea/ Sunflower/ Sesame/ Castor/

(1)	(2)	(3)	(4)	(5)	(6)
					Pearl millet Pearl millet + Pigeonpea (2:1 or 4:2)
	Pigeonpea	Pigeonpea (C-12, Asha)	Pigeonpea (AKT 8811, Vipula, PKV-Tara, BSMR-736)	Pigeonpea (AKT 8811, Vipula, PKV-Tara, BSMR-736)	Pigeonpea (AKT 8811, Vipula, PKV-Tara, BSMR-736)
	Sorghum	Sorghum (CSH-5, CSH-9)	Soybean / Pigeonpea Soybean : JS-335, JS-93-05 Pigeonpea: AKT 8811, Vipula, PKV-Tara, BSMR-736	Soybean / Pigeonpea Soybean : JS-335, JS-93-05 Pigeonpea: AKT 8811, Vipula, PKV-Tara, BSMR-736	Pigeonpea/ Sunflower/ Sesamese/ Pigeonpea/ Sunflower/ Sesame/ Castor/ Pearl millet. Pearl millet + Pigeonpea (2:1 or 4:2)
Shallow black soils	Soybean	Soybean (JS-9305)	Soybean (MAUS-32)	Soybean (MAUS-32)	Pigeonpea / Sunflower / Sesame/ Castor/ Pearl millet. Pearl millet + Pigeonpea (2:1 or 4:2)
	Greengram	Greengram (TAU-1, T-9)	Soybean (TAU-1)	Blackgram / Soybean Blackgram : TAU-1, T-9 Soybean: MAUS-32	Pigeonpea / Sunflower / Sesame/Castor/ Pearl millet. Pearl millet + Pigeonpea (2:1 or 4:2)
	Blackgram	Blackgram (Kalindi , TAU-1, AKU-15)	Blackgram (TAU-1, T-9)	Blackgram (TAU-1, T-9)	Sole pigeonpea /Sunflower/ Sesame/Castor/ Pearl millet. Pearl millet + Pigeonpea (2:1 or 4:2)

Bhandara

Bhandara district falls under Eastern Vidarbha agro climatic zone (MH-9) in Maharashtra. The district receives a mean annual rainfall of 1361 mm of which 1212 mm is received during south west monsoon and 81 mm in north east monsoon. The dominant soil types in the district are shallow to deep black soils (see map). The district has an area of 71000 ha under rainfed situation (39% of net sown area). The major rainfed crops cultivated in the district are soybean, pigeonpea and wheat; irrigated crops are rice and chickpea.



Normal sowing window for major field crops

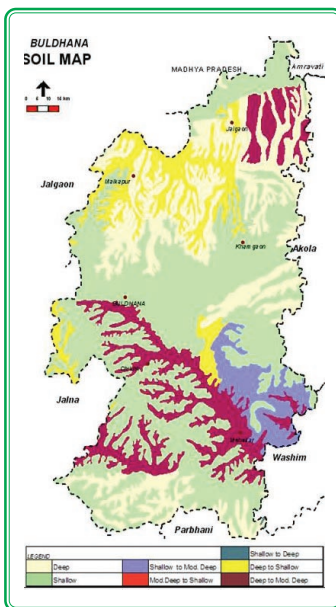
Season/ Situation	Soybean	Pigeonpea	Chickpea	Rice
<i>Kharif</i> - Rainfed	2 nd week of June to 2 nd week of July	2 nd week of June to 1 st week of July	--	2 nd week of June to 1 st week of July
<i>Kharif</i> - Irrigated	--	--	--	1 st week of June to 3 rd week of June
<i>Rabi</i> - Rainfed	--	--	1 st week of October to 2 nd week of October	--
<i>Rabi</i> - Irrigated	--	--	2 nd week of Oct to 3 rd week of October	--

Contingency crop plan

Farming situation	Normal crop/	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (June 3 rd week)	Delay by 2 weeks (July 1 st week)	Delay by 4 weeks (July 3 rd week)	Delay by 6 weeks (August 1 st week)	Delay by 8 weeks (August 3 rd week)
(1)	(2)	(3)	(4)	(5)	(6)
Deep to medium deep soils	Rice (Transplanted) Bandhi system	Rice (SKL-6, PKV Makrand, PKV Ganesh, PKV HMT, SYE-2001)	Rice (MTU 1010, SKL 6, Ganesh, PKV HMT, SYE-2001, Makrand)	Rice (SKL-6, IR 36, IR 64)	Rice (Sakoli-6, Sindewahi-1, Sindewahi-75, PKV Ganesh)
	Soybean	Soybean (JS-335)	Soybean (JS-335)	Drilled Rice	Rice (Sakoli-6, Sindewahi-1, Sindewahi-75, PKV Ganesh)
Shallow to medium deep soils	Rice (Transplanted) Bandhi system	Rice (SKL-6, PKV Makrand, PKV Ganesh, PKV HMT, SYE-2001)	Rice (SKL-6, PKV Makrand, PKV Ganesh, PKV HMT, SYE-2001)	Drilled Rice (Bunded condition) Earlyvarieties of rice like SYE- 1, SKL-6, IR-64, IR-36	Rice (Sakoli-6, Sindewahi-1, Sindewahi-75, PKV Ganesh)
	Soybean	Soybean (JS-335)	Soybean (JS-335)		
	Pigeonpea on rice bunds	Pigeonpea on rice bunds	Pigeonpea on rice bunds	Pigeonpea on rice bunds	Bunds are left fallow

Buldana District

Buldana district falls under Central Maharashtra plateau agro climatic zone (MH-7) in Maharashtra. The district receives a mean annual rainfall of 793 mm of which 685 mm is received during south west monsoon and 77 mm in north east monsoon. The dominant soil types in the district are medium deep and deep black soils (see map). The district has an area of 669000 ha under rainfed situation (93% of net sown area). The major rainfed crops cultivated in the district during *kharif* are cotton, soybean, greengram, blackgram and pigeonpea. During *rabi*, chickpea and safflower are the major rainfed crops while wheat is irrigated.



Normal sowing window for major field crops

Season/ Situation	Cotton	Soybean	Greengram / Blackgram	Pigeonpea	Sorghum
<i>Kharif</i> - Rainfed	3 rd week of June to 2 nd week of July	3 rd week of June to 2 nd week of July	2 nd week of June to 4 th week of June	2 nd week of June 1 st week of July	3 rd week of June to 2 nd week of July
			Wheat	Chickpea	Safflower
<i>Rabi</i> - Rainfed	--	--	--	2 nd week of October	3 rd week of September to 1 st week of October.
<i>Rabi</i> - Irrigated	--	--	1 st week of November to 2 nd week of December	--	--

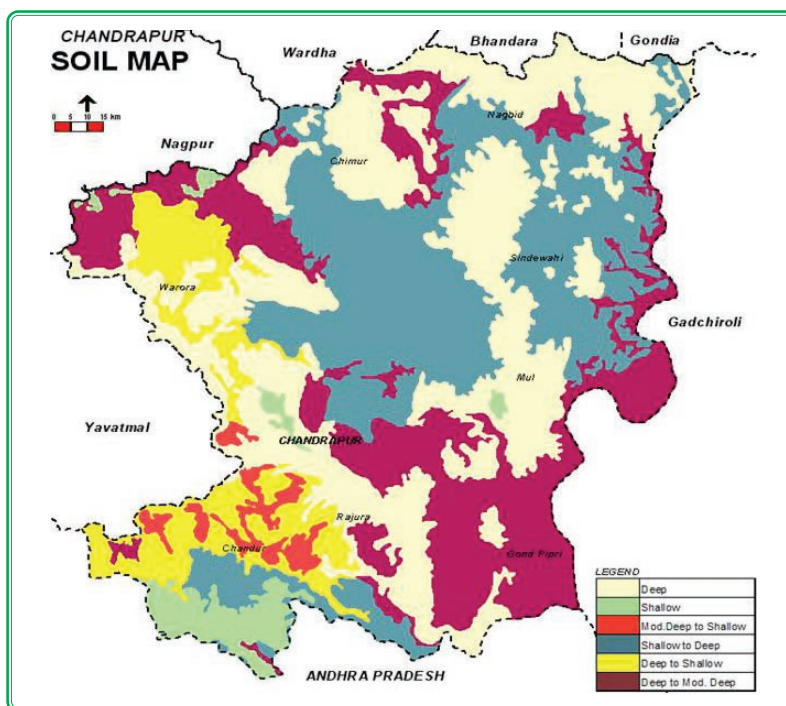
Contingency crop plan

Farming situation	Normal crop/	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)	Delay by 8 weeks (1 st week of August)
(1)	(2)	(3)	(4)	(5)	(6)
Deep and medium deep black soils	Cotton	Cotton	Soybean/ Pigeonpea Soybean: JS-335, Pooja Pigeonpea: AKT-8811, Vipula, PKV Tara, BSMR-736	Pigeonpea/ Sunflower / Sesame/ Castor / Pearl millet / Pearl millet + Pigeonpea (2:1 or 4:2). Pigeonpea: AKT-8811, Vipula, PKV Tara, BSMR - 736. Sunflower: PKVSH-27 Sesame: AKT64 Castor: AKC-1, GCH-4, 5, 6 & DCH-117, DCH-32 Pearl millet: PKV Raj Shradha, Saburi	Pigeonpea/ Sunflower / Sesame/Castor/ Pearl millet / Pearl millet + Pigeonpea (2:1 or 4:2). Pigeonpea: (AKT- 8811, Vipula) Sunflower: hybrids Sesame: AKT64 Castor: AKC-1, GCH-4, 5, 6 & DCH-117, 32 Pearl millet PKV Raj Shradha, Saburi
	Cotton + Pigeonpea	Cotton + Pigeonpea (BDN-2, Vaisali)	Use early varieties of American / Desi cotton varieties/ Pigeonpea	Pigeonpea / Sunflower / Sesame / Castor / Pearl millet / Pearl millet + Pigeonpea (2:1 or 4:2)	Pigeonpea / Sunflower / Sesame / Castor / Pearl millet / Pearl millet + Pigeonpea (2:1 or 4:2)

(1)	(2)	(3)	(4)	(5)	(6)
	Soybean	Soybean (Phule Kalyani)	Soybean (MAUS-32)	Pigeonpea/ Sunflower / Sesame / Castor / Pearl millet / Pearl millet + Pigeonpea (2:1 or 4:2)	Pigeonpea/ Sunflower / Sesame / Castor / Pearl millet / Pearl millet + Pigeonpea (2:1 or 4:2)
	Pigeonpea/ Sorghum	Pigeonpea / Sorghum (<i>Kharif</i> Sorghum) Pigeonpea: Vaishali, BDN-2 Sorghum: SPH-91, CSH-14	Pigeonpea / Soybean Pigeonpea : AKT 8811, Vipula, PKV- Tara, BSMR-736 Soybean : JS-335, JS-93 -05	Pigeonpea/ Sunflower / Sesame/ Castor / Pearl millet / Pearl millet + Pigeonpea (2:1 or 4:2).	Pigeonpea/ Sunflower / Sesame/ Castor / Pearl millet
Shallow black soils	Soybean	Soybean (JS-335, JS-93 -05)	Soybean (JS-335, JS-93 -05)	Pigeonpea/ Sunflower/ Sesame/ Pearl millet/ Pearl millet + Pigeonpea (2:1 or 4:2).	Sunflower/ Sesame/ Pearl millet Sunflower : PKVSH-27 Sesame: AKT64
	Greengram	Greengram (BPMR-145)	Soybean (JS-335, JS-93 -05)	Pigeonpea/ Sunflower/ Sesame/ Pearl millet/ Pearl millet + Pigeonpea (2:1 or 4:2).	Sunflower/ Sesame/ Pearl millet
	Blackgram	Blackgram (AKU-15)	Soybean (JS-335, JS-93 -05)	Pigeonpea/ Sunflower/ Sesame/ Pearl millet/ Pearl millet + Pigeonpea (2:1 or 4:2)	Sunflower/ Sesame/ Pearl millet

Chandrapur

Chandrapur district falls under Central Vidarbha agro climatic zone (MH-8) in Maharashtra. The district receives a mean annual rainfall of 1305 mm of which 1161 mm is received during south west monsoon and 79 mm in north east monsoon. The dominant soil types in the district are medium deep to deep black soils (see map). The district has an area of 344000 ha under rainfed situation (76% of net sown area). The major rainfed crops cultivated in the district are soybean, pigeonpea, cotton, sunflower, sorghum, blackgram, groundnut and irrigated crops are rice and wheat.



Normal sowing window for major field crops

Season/ Situation	Soybean	Pigeonpea	Cotton	Sunflower	Rice
<i>Kharif</i> - Rainfed	2 nd week of June to 1 st week of July	2 nd week of June to 1 st week of July	3 rd week of June to 1 st week of July	3 rd week of June to 1 st week of July	3 rd week of June to 4 th week of July
<i>Kharif</i> - Irrigated	Sorghum	Wheat	Chickpea	--	--
<i>Rabi</i> - Rainfed	3 rd week of September to 4 th week of September	1 st week of November to 1 st week of December	1 st week of October to 1 st week of November	--	--

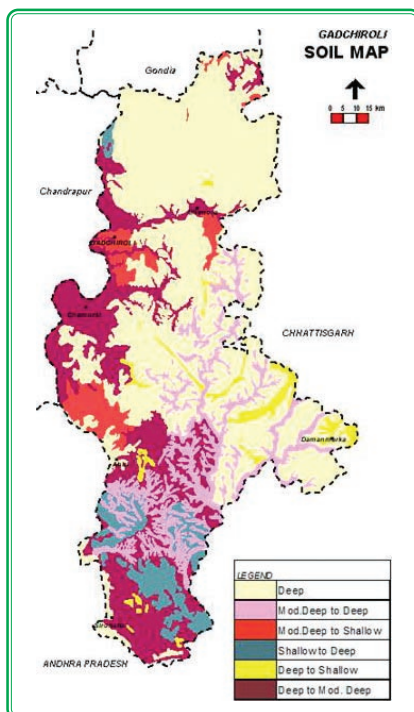
Contingency crop plan

Farming situation	Normal crop/	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (June 2 nd week)	Delay by 2 weeks (June 4 th week)	Delay by 4 weeks (July 2 nd week)	Delay by 6 weeks (July 4 th week)	Delay by 8 weeks (August 2 nd week)
(1)	(2)	(3)	(4)	(5)	(6)
Medium deep to deep black soils	Rice	Rice (Ambica, Parg 401)	Rice (Ambica, Parg 401)	Drilled rice with early varieties (Prabhavathi)	Drilled rice with early varieties (Prabhavathi)
	Soybean	Soybean (JS335, JS93-05)	Soybean (MAUS32)	Drilled rice with early varieties (Prabhavathi)	Drilled rice with early varieties (Prabhavathi)
	Cotton + Sorghum	Cotton + Pigeonpea Sorghum + Pigeonpea Soybean/ Sorghum Soybean: JS335, JS93-05	Bhendi (Phuleutkatshia, Arka Anamica) Cowpea/Radish Fodder sorghum/ Maize/ Cowpea: Phusa phuguni, S-288 Fodder sorghum: Pusa chari Maize: African tall	Drilled rice with early varieties (Prabhavathi)	Drilled rice with early varieties (Prabhavathi)
Medium deep to shallow black soils	Rice	Prefer early duration varieties of rice, sorghum and Pigeonpea Pigeonpea : (ICPL - 8863, ICPL - 87119,	Sow late <i>kharif</i> Pigeonpea (C-11) Castor/ Maize Castor: Jwala,	Prefer late <i>kharif</i> Pigeonpea (C-11) Castor/ Sesame/ Sunflower	Plan for Lathyrus, <i>rabi</i> Maize

(1)	(2)	(3)	(4)	(5)	(6)
		AKT-8811, T-Vishakha-1),	GCH-5	Castor:Jwala, GCH-5 Sesame: AKT-64 Sunflower : Morden	Sorghum (CSH-19R, 15-R, Maldandi 35-1)
		Castor (Jwala, GCH-5), Sunflower (PKVSF-9, Modern)	Sesame (AKT-64), Sunflower (Morden),	<i>Rabi</i> Sorghum Maize	Sesame (N-8) Plan for linseed

Gadchiroli

Gadchiroli district falls under Eastern Vidarbha agro climatic zone (MH-9) in Maharashtra. The district receives a mean annual rainfall of 1429 mm of which 1298 mm is received during south west monsoon and 74 mm in north east monsoon. The dominant soil types in the district are medium deep to deep red and black soils (see map). The district has an area of 92000 ha under rainfed situation (62% of net sown area). The major rainfed crops cultivated in the district are pigeonpea, soybean and cotton. Irrigated crops are rice, maize, linseed, *rabi* sorghum, wheat and chickpea are the major *rabi* crops.



Normal sowing window for major field crops

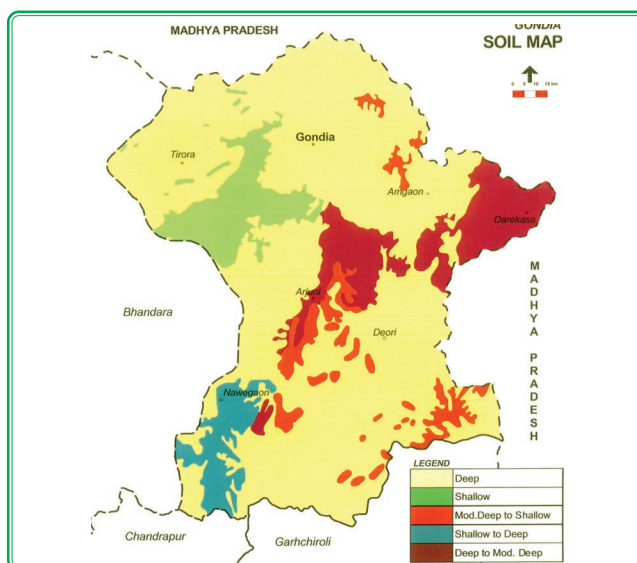
Season/ Situation	Pigeonpea	Soybean	Cotton	Rice	Sunflower
<i>Kharif</i> - Rainfed	2 nd week of June to 1 st week of July	2 nd week of June to 1 st week of July	2 nd week of June to 1 st week of July	2 nd week of June to 4 th week of July	2 nd week of June to 4 th week of June
	Sorghum	Wheat	--	--	--
<i>Rabi</i> - Rainfed	3 rd week of September to 4 th week of September	--	--	--	--
<i>Rabi</i> - Irrigated	1 st week of November to 2 nd week of December	1 st week of October to 4 th week of November	-	-	-

Contingency crop plan

Farming situation	Normal crop/ Normal onset of monsoon (June 2 nd week)	Suggested contingency crops/ cropping systems and cultivars			
		Delay by 2 weeks (June 4 th week)	Delay by 4 weeks (July 2 nd week)	Delay by 6 weeks (July 4 th week)	Delay by 8 weeks (August 2 nd week)
(1)	(2)	(3)	(4)	(5)	(6)
Medium deep to deep red and black soils	Rice	Rice (Phule Samrudhi)	Rice (Prabhavathi)	Early varieties of rice (SKL-6, IR-36, IR-64)	Rice (SKL-6, IR- 36, IR-64)
Moder ately deep to shallow soils	Soybean	Soybean (Pooja)	Soybean (MAUS-32)	Drilled rice	Cowpea and Vegetable
	Pigeonpea	Pigeonpea (Vaishali)	Soybean (MAUS-32)	Drilled rice	Cowpea and Vegetable

Gondia

Gondia district falls under Eastern Vidarbha agro climatic zone (MH-9) in Maharashtra. The district receives a mean annual rainfall of 1378 mm of which 1237 mm is received during south west monsoon and 79 mm in north east monsoon. The dominant soil types in the district are deep to very deep black soils (see map). The district has an area of 84000 ha under rainfed situation (46% of net sown area). The major rainfed crops cultivated in the district are pigeonpea and linseed and irrigated crops are rice, wheat and chickpea.



Normal sowing window for major field crops

Season/ Situation	Pigeonpea	Wheat	Chickpea	Rice	Summer Rice
Khariif- Rainfed	3 rd week of June to 2 nd week of July	--	--	1 st week of July to 4 th week of July	--
Khariif- Irrigated	--	--	--	4 th week of June to 2 nd week of July	--
Rabi- Rainfed	--	--	2 nd week of November to 2 nd week of December	--	--
Rabi- Irrigated	--	2 nd week of November to 15 th week of December	2 nd week of November to 2 nd week of December	--	2 nd week of January to 2 nd week of February

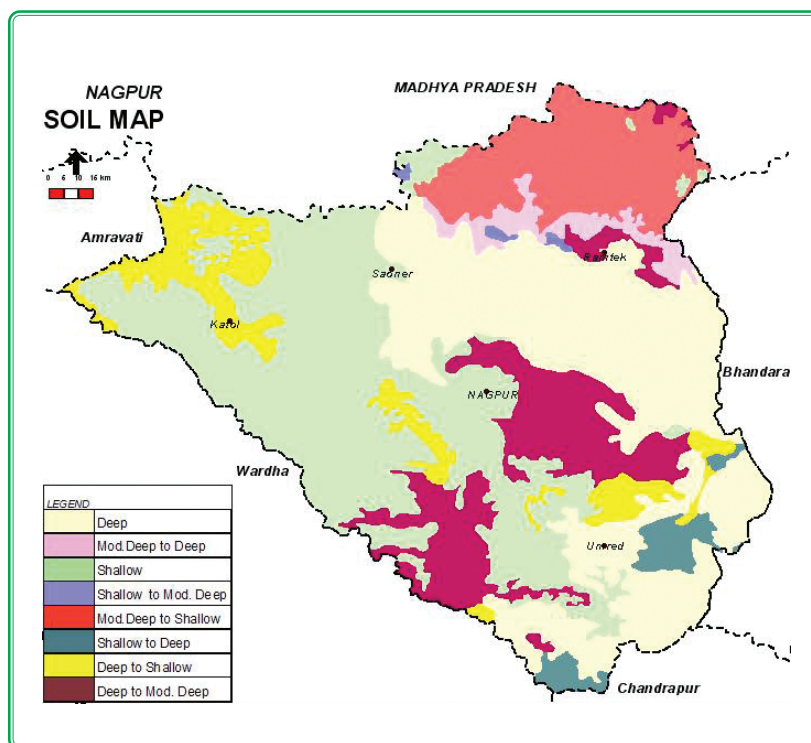
Contingency crop plan

Farming situation	Normal crop/	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (June 3 rd week)	Delay by 2 weeks (July 1 st week)	Delay by 4 weeks (July 3 rd week)	Delay by 6 weeks (August 1 st week)	Delay by 8 weeks (August 3 rd week)
(1)	(2)	(3)	(4)	(5)	(6)
Deep to very deep soils	Rice	Rice (Phule Samrudhi)	Rice/ Pigeonpea Rice:SKL-06, SYE-01, MTU-1010 Pigeonpea: TAT-10, ICPL-87, AKT-8811	Pigeonpea (TAT-10, ICPL-87, AKT-8811)	Rice-fallow Sesame-fallow
	Rice	Rice	-	Pigeonpea (TAT-10, AKT-8811)	Sunflower - rice Sunflower: LS-11
	Rice	Rice- Chickpea Chickpea: Vikas	-	-	Sunflower- Chickpea Sunflower: AKSF-9 Chickpea: BDN9-3
	Rice	Rice-Wheat	-	-	Sunflower (PKVSH-27)
	Pigeonpea	Pigeonpea- Fallow Pigeonpea: ICPH-8863 & AKPH -4101	-	-	Fallow - Mustard / Maize/Gram/ Wheat /linseed
Moderately deep with gently sloping lands	Rice	Rice: PKV-HMT, SYE-2001, SKL-6, SYE-01, MTU-1010 Pigeonpea:	Rice:SKL- 06, SYE-01, MTU-1010 Pigeonpea: TAT-10, ICPL-87, AKT-8811	Pigeonpea: TAT-10 and AKT-8811	Rice-fallow Sesame-fallow Sunflower- Rice Sunflower: PKVSH-27 Sunflower -

(1)	(2)	(3)	(4)	(5)	(6)
		ICPH-8863, AKPH -4101			Chickpea Sunflower- Wheat Fallow - Mustard / Maize /Gram/ Wheat /linseed
Moderately deep soils with undulated lands	Rice	Rice/ Pigeonpea Rice: PKV -HMT, SYE-2001, SKL-6, SYE-01, MTU-1010 Pigeonpea: ICPH-8863 & AKPH -4101	Rice/ Pigeonpea Rice:SKL-06, SYE-01, MTU-1010 Pigeonpea: ICPL-87, AKT-8811	Pigeonpea (TAT-10 and AKT-8811)	Rice-fallow Sesame-fallow
	Rice / Pigeonpea	Rice- (Phule Samrudhi)	Rice/ Pigeonpea Rice:SKL-06, SYE-01, MTU-1010 Pigeonpea: ICPL-87, AKT-8811	Pigeonpea (TAT-10 and AKT-8811)	Sunflower - Rice Sunflower - Chickpea Sunflower - Wheat Fallow - Mustard / Maize/ Chickpea / Wheat/linseed

Nagpur

Nagpur district falls under Eastern Vidarbha agro climatic zone (MH-9) and part of Central Vidarbha zone (MH-8) in Maharashtra. The district receives a mean annual rainfall of 1082 mm of which 936 mm is received during south west monsoon and 76 mm in north east monsoon. The dominant soil types in the district are shallow to deep black soils (see map). The district has an area of 365000 ha under rainfed situation (73% of net sown area). The rainfed crops cultivated in the district are soybean, cotton, rice, pigeonpea, sorghum, and irrigated crops are wheat, chickpea and groundnut.



Normal sowing window for major field crops

Season/ Situation	Soybean	Cotton	Rice	Pigeonpea	Sorghum
<i>Kharif</i> - Rainfed	3 rd week of June to 2 nd week of July	3 rd week of June to 1 st week of July	3 rd week of June to 1 st week of July	2 nd week of June to 2 nd week of July	3 rd week of June to 1 st week of July
	Chickpea	--	--	--	--
<i>Rabi</i> - Irrigated	1 st week of October to 2 nd week of October	--	--	--	--

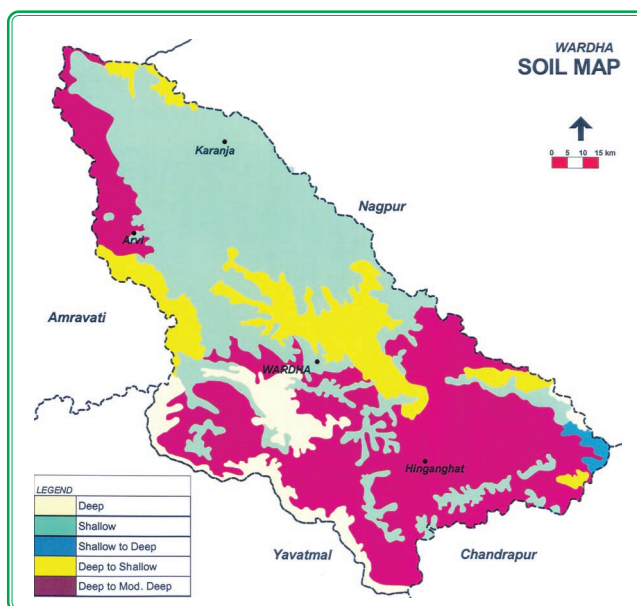
Contingency crop plan

Farming situation	Normal crop/	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (June 3 rd week)	Delay by 2 weeks (July 1 st week)	Delay by 4 weeks (July 3 rd week)	Delay by 6 weeks (August 1 st week)	Delay by 8 weeks (August 3 rd week)
(1)	(2)	(3)	(4)	(5)	(6)
Deep to Medium deep black soils	Cotton	Cotton	Soybean/ Pigeonpea Soybean: JS-335, JS-93 -05 Pigeonpea: AKT- 8811, Vipula , PKV- Tara, BSMR-736	Sunflower / Sesame / Pearl millet Pearl millet + Pigeonpea (2:1 or 4:2) Sunflower: Sesame: AKT64 Pearl millet: PKV Raj, Shradha, Saburi	Sunflower / Sesame/ Castor/ Pearl millet. Pearl millet: PKV Raj Shradha, Saburi Sesame: AKT64
	Cotton+ Pigeonpea	Cotton+ Pigeonpea (6:2)	American Cotton/ Desi Cotton/ Pigeonpea American Cotton: AKH-8828, PKV Raj, AKH-081, Desi Cotton: AKA-5, AKA-7, AKA-8 Pigeonpea: No change	Sole Pigeonpea / Sunflower/ Pearl millet / Sesame / Castor, Pearl millet + Pigeonpea (2:1 or 4:2) Pigeonpea: AKT-8811, Vipula, PKV Tara, BSMR-736.	Sunflower / Sesame/ Castor/ Pearl millet.
	Soybean	Soybean (JS-93-05)	Soybean (MAUS-71)	Soybean (MAUS-71)	Sunflower / Sesame / Castor / Pearl millet. Pearl millet + Pigeonpea (2:1 or 4:2)

(1)	(2)	(3)	(4)	(5)	(6)
	Soybean	Soybean+ Pigeonpea	Soybean+ Pigeonpea	Rice (SKL-6, IR 64, SYE- 1, SYE – 2001)	Sunflower/ Sesame/ Castor/ Pearl millet
	Sorghum	Sorghum (<i>Kharif</i> Sorghum) (CSH-18, CSH-16)	Soybean (JS-335, JS-93 -05)	Sunflower / Sesame / Castor/ Pearl millet Pearl millet + Pigeonpea (2:1 or 4:2).	Sunflower / Sesame / Castor/ Pearl millet
Shallow black soils	Rice (Transplanted) Bandhi system	Rice/(SKL-6, PKV Makrand, PKV Ganesh, PKV HMT, SYE 2001)	Prefer mid late and early varieties of rice (MTU 1010, SKL 6, Ganesh, PKV HMT, SYE2001, Makrand)	Sunflower / Sesame / Pearl millet.	Sunflower/ Sesame/ Castor/ Pearl millet
	Soybean	Soybean (MAUS71)	Soybean (JS93-05, MAUS61)	Drilled rice	Sunflower/ Sesame/ Castor/ Pearl millet
	Greengram	Greengram (Vaibhav)	Greengram (Vaibhav)		
	Blackgram	Blackgram (TAU-1, AKU-15)	Blackgram (TAU-1, AKU-15)		

Wardha District

Wardha district falls under Central Vidarbha agro climatic zone (MH-8) in Maharashtra. The district receives a mean annual rainfall of 1043 mm of which 905 mm is received during south west monsoon and 74 mm in north east monsoon. The dominant soil types in the district are medium deep, deep and shallow black soils (see map). The district has an area of 253000 ha under rainfed situation (89% of net sown area). The major rainfed crops cultivated in the district are soybean, cotton, pigeonpea, chickpea and irrigated crop is wheat.



Normal sowing window for major field crops

Season/ Situation	Soybean	Cotton	Pigeonpea	Chickpea	Wheat
<i>Kharif</i> - Rainfed	2 nd week of June to 2 nd week of July	3 rd week of June to 2 nd week of July	2 nd week of June to 2 nd week of July	--	--
<i>Rabi</i> - Rainfed	--	--	--	2 nd week of October to 2 nd week of November	--
<i>Rabi</i> - Irrigated	--	--	--	--	2 nd week of November to 2 nd week of December

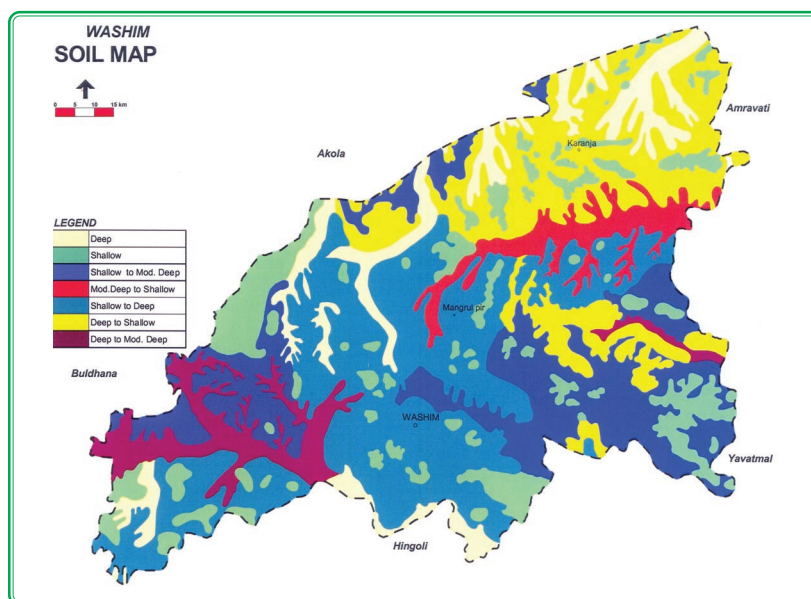
Contingency crop plan

Farming situation	Normal crop/	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (June 1 st week)	Delay by 2 weeks (June 3 rd week)	Delay by 4 weeks (July 1 st week)	Delay by 6 weeks (July 3 rd week)	Delay by 8 weeks (August 1 st week)
(1)	(2)	(3)	(4)	(5)	(6)
Deep black to medium black soils	Cotton+ Pigeonpea	Cotton+ Pigeonpea (6:2)	Cotton : Use early varieties of American / Desi cotton varieties No change in varieties for Pigeonpea	Pigeonpea / Sunflower / Pearl millet / Sesame / Castor Pearl millet + Pigeonpea (2:1 or 4:2). Pigeonpea: AKT-8811, Vipula, PKV Tara, BSMR-736. Pearl millet: PKV Raj, Shradha, Saburi Sesame: AKT64 Castor: GCH-4, 5, 6 & DCH-117.	Pigeonpea / Sunflower / Sesame / Castor/ Pearl millet. Pigeonpea: AKT-8811, Vipula, PKV Tara, BSMR-736. Pearl millet: PKV Raj, Shradha, Saburi Sesame: AKT64 Castor: GCH-4, 5, 6 & DCH-117.
	Soybean	Soybean (NRC-37)	Soybean (NRC-37, JS-335, JS-9305)	Pigeonpea / Sunflower / Pearl millet / Sesame / Castor Pearl millet + Pigeonpea (2:1 or 4:2)	Pigeonpea / Sunflower / Sesame / Castor / Pearl millet + Pigeonpea (2:1 or 4:2)
Medium black soils	Pigeonpea	Pigeonpea (BDN-708)	Pigeonpea (AKT 8811, Vipula, PKV-Tara, BSMR-736)	Pigeonpea (AKT 8811, Vipula, PKV-Tara, BSMR-736)	Pigeonpea (PKV Tara, BSMR-736)

(1)	(2)	(3)	(4)	(5)	(6)
	Sorghum	Sorghum (Kharif Jowar) (CSH18, CSH14 & 16)	Replace sorghum by soybean / Pigeonpea Soybean: JS-335, JS-93 -05	Pigeonpea / Sunflower / Sesame / Castor/ Pearl millet. Pearl millet + Pigeonpea (2:1 or 4:2).	Pigeonpea / Sunflower / Sesame / Castor/ Pearl millet. Pigeonpea: AKT 8811, Vipula
Shallow black soils	Soybean	Soybean (MAUS-87)	Soybean (MAUS-47, JS-335, JS-9305).	Pigeonpea / Sunflower / Sesame / Pearl millet Pearl millet + Pigeonpea (2:1 or 4:2).	Sunflower / Sesame / Pearl millet
	Greengram	Greengram (TARM-18)	Blackgram/ Soybean Soybean: JS-335, JS-93 -05	Pigeonpea/ Pearl millet + Pigeonpea (2:1 or 4:2)/ Sesame / Pearl millet	Pigeonpea / Sunflower / Sesame / Pearl millet + Pigeonpea (2:1 or 4:2).
	Blackgram	Blackgram (TAU-1)	Blackgram/ Soybean Soybean: JS-335, JS-93 -05	Pigeonpea/ Pearl millet + Pigeonpea (2:1 or 4:2)/ Sesame / Pearl millet	Sole Pigeonpea / Sunflower / Sesame / Pearl millet + Pigeon pea (2:1 or 4:2).

Washim District

Washim district falls under Central Vidarbha agro climatic zone (MH-8) in Maharashtra. The district receives a mean annual rainfall of 965 mm of which 849 mm is received during south west monsoon and 75 mm in north east monsoon. The dominant soil types in the district are shallow to deep black soils (see map). The district has an area of 233000 ha under rainfed situation (97% of net sown area). The major rainfed crops cultivated in the district are soybean, cotton, pigeonpea during *khريف* and safflower and chickpea during *rabi*.



Normal sowing window for major field crops

Season/ Situation	Soybean	Cotton	Pigeonpea	Sorghum	Greengram/ Blackgram
<i>Kharif</i> - Rainfed	3 rd week of June to 2 nd week of July	2 nd week of June to 2 nd week of July	1 st week of July	3 rd week of June to 1 st week of July	4 th week of June
	Safflower	Wheat	Chickpea		
<i>Rabi</i> - Rainfed	3 rd week of September to 1 st week of October	--	2 nd week of October	--	--
<i>Rabi</i> - Irrigated	--	1 st week of November to 2 nd week of December	--	--	--

Contingency crop plan

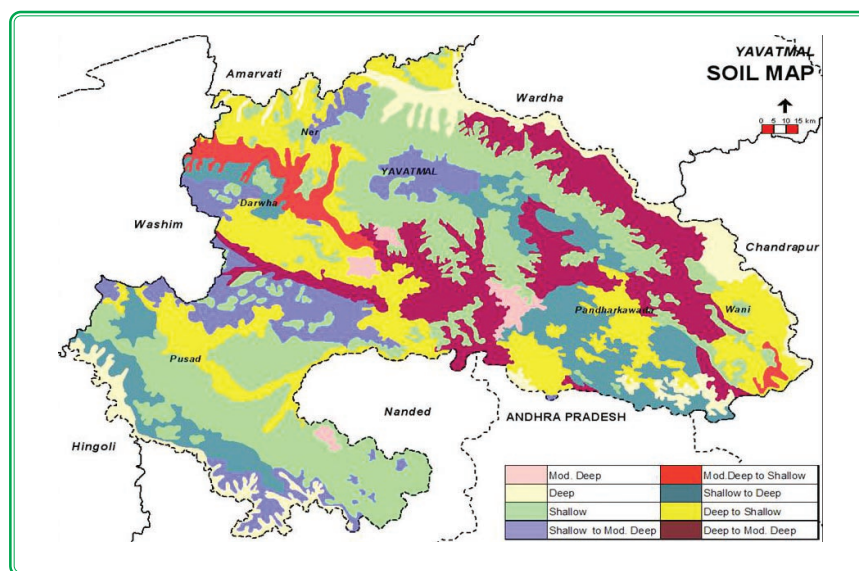
Farming situation	Normal crop/	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (June 2 nd week)	Delay by 2 weeks (June 4 th week)	Delay by 4 weeks (July 2 nd week)	Delay by 6 weeks (July 4 th week)	Delay by 8 weeks (August 2 nd week)
(1)	(2)	(3)	(4)	(5)	(6)
Deep & Medium deep black soils	Cotton	Soybean (JS-335, JS-93-05) Pigeonpea (AKT-8811, Vipula, PKV Tara, BSMR-736)	Soybean (JS-335, JS-93-05) Pigeonpea (AKT-8811, Vipula, PKV Tara, BSMR-736)	Pigeonpea Sunflower/ Sesame/ Castor/ Pearl millet/ Pearl millet + Pigeonpea (2:1 or 4:2) Pigeonpea: AKT-8811, Vipula, PKV Tara, BSMR-736 Sunflower : PKVSH-27 Sesame:AKT64 Castor: AKC-1, GCH-4, 5, 6 & DCH-117, 32 Pearl millet: PKV Raj, Shradha, Saburi	Pigeonpea (AKT-8811, Vipula, PKV Tara, BSMR-736) Pigeonpea / Sesame/ Castor/ Pearl millet/ Pearl millet + Pigeonpea (2:1 or 4:2) Pigeonpea: AKT-8811, Vipula, Sesame: AKT-64 Castor: AKC-1, GCH-4, 5, 6 & DCH-117, 32 Pearl millet: PKV Raj, Shradha, Saburi
	Cotton+ Pigeonpea	Cotton+ Pigeonpea (6:2)	Prefer early varieties of American / Desi cotton varieties/ No change for Pigeonpea	Pigeonpea/ Sunflower / Sesame / Castor/ Pearl millet / Pearl millet + Pigeonpea (2:1 or 4:2)	Pigeonpea/ Sunflower / Sesame / Castor/ Pearl millet / Pearl millet + Pigeonpea (2:1 or 4:2)

(1)	(2)	(3)	(4)	(5)	(6)
	Soybean	Soybean (Pooja)	Soybean (MAUS-32)	Pigeonpea/ Sunflower / Sesame / Castor/ Pearl millet / Pearl millet + Pigeonpea (2:1 or 4:2)	Pigeonpea/ Sunflower / Sesame / Castor/ Pearl millet / Pearl millet + Pigeonpea (2:1 or 4:2)
	Pigeonpea	Pigeonpea (AKT-8811)	Pigeonpea (AKT-8811 Vipula PKV Tara BSMR-736)	Pigeonpea (AKT-8811, Vipula PKV Tara BSMR-736)	Pigeonpea (PKV Tara BSMR-736)
	Sorghum	Sorghum (<i>Kharif sorghum</i>) (SPV297, CSH-14, 18)	Soybean/ Pigeonpea Soybean: JS-335, JS-93-05	Castor / Sunflower/ Sesame/ Pigeonpea / Pearl millet/ Pearl millet + Pigeonpea (2:1 or 4:2).	Pigeonpea / Sunflower/ Sesame/ Castor
Shallow black soils	Soybean	Soybean (Pooja)	Soybean (S93-05, NRC37, MAUS-450)	Pigeonpea / Sunflower Sesame/ Castor/ Pearl millet/ Pearl millet + Pigeonpea (2:1 or 4:2)	Sunflower/ Sesame / Pearl millet Sunflower: PKVSH-27 Sesame: AKT-64 Pearl millet: PKV Raj, Shradha, Saburi
	Greengram	Greengram (BPMR-145, Kopergoan)	Soybean (JS-335, JS-93 -05)	Pigeonpea / Sunflower Sesame/ Castor/ Pearl millet/ Pearl millet + Pigeonpea (2:1 or 4:2)	Sunflower / Sesame / Sunflower/ Pearl millet

(1)	(2)	(3)	(4)	(5)	(6)
	Blackgram	Blackgram (Kalindi, TAU-1, AKU-15)	Blackgram (Kalindi, TAU-1, AKU-15)	Pigeonpea / Sunflower Sesame/ Castor/ Pearl millet/ Pearl millet + Pigeonpea (2:1 or 4:2)	Sunflower / Sesame / Pearl millet

Yavatmal District

Yavatmal district falls under Central Vidarbha agro climatic zone (MH-8) in Maharashtra. The district receives a mean annual rainfall of 1032 mm of which 906 mm is received during south west monsoon and 76 mm in north east monsoon. The dominant soil types in the district are shallow to deep black soils (see map). The district has an area of 839000 ha under rainfed situation (95% of net sown area). The major rainfed crops cultivated in the district are cotton, soybean, pigeonpea, sorghum, greengram, chickpea and irrigated crop is wheat.



Normal sowing window for major field crops

Season/ Situation	Cotton	Soybean	Pigeonpea	Sorghum	Greengram
Khariif- Rainfed	2 nd week of June to 2 nd week of July	2 nd week of June to 2 nd week of July	2 nd week of June to 1 st week of July	3 rd week of June to 1 st week of July	4 th week of June

Contingency crop plan

Farming situation	Normal crop/	Suggested contingency crops/ cropping systems and cultivars			
	Normal onset of monsoon (June 2 nd week)	Delay by 2 weeks (June 4 th week)	Delay by 4 weeks (July 2 nd week)	Delay by 6 weeks (July 4 th week)	Delay by 8 weeks (August 1 st week)
(1)	(2)	(3)	(4)	(5)	(6)
Deep to Medium deep black soils	Cotton	Cotton	Soybean/ Pigeonpea Soybean: JS-335, JS-93 -05 Pigeonpea; AKT- 8811, Vipula , PKV- Tara, BSMR-736	Pigeonpea / Sunflower / Sesame / Castor/ Pearl millet. Pearl millet + Pigeonpea (2:1 or 4:2) Pigeonpea: AKT-8811, Vipula, PKV Tara, BSMR-736. Sesame:AKT64 Castor: AKC-1, GCH-4, 5, 6 & DCH-117, 32 Pearl millet: PKV Raj , Shradha, Saburi	Pigeonpea / Sunflower / Sesame / Castor/ Pearl millet. Pigeonpea: AKT-8811, Vipula, Sesame AKT64 Castor: AKC-1 GCH-4, 5, 6 & DCH-117, 32 Pearl millet: PKV Raj, Shradha, Saburi
	Cotton+ Pigeonpea (6:2)	Cotton+ Pigeonpea (6:2) Use early varieties of American / Desi cotton/ Pigeonpea	Cotton+ Pigeonpea (6:2) Use early varieties of American / Desi cotton/ Pigeonpea	Pigeonpea / Sunflower / Sesame / Castor/ Pearl millet/ Pearl millet + Pigeonpea (2:1 or 4:2)	Pigeonpea / Sunflower / Sesame / Castor/ Pearl millet
	Soybean	Soybean (MACS-450, JS-93-05)	No Change	Pigeonpea/ Sunflower/ Sesame/Castor/ Pearl millet/ Pearl millet + Pigeonpea (2:1 or 4:2)	Pigeonpea/ Sunflower/ Sesame/ Castor/ Pearl millet

(1)	(2)	(3)	(4)	(5)	(6)
	Pigeonpea	Pigeonpea (Vaisali)	Pigeonpea (AKT 8811, Vipula, PKV- Tara, BSMR-736)	Pigeonpea (AKT 8811, Vipula, PKV- Tara, BSMR-736)	Pigeonpea (PKV- Tara, BSMR-736)
	Sorghum	Sorghum (<i>Kharif</i> Sorghum) (CSH16, 18)	Soybean / Pigeonpea Soybean: JS-335, JS-93 -05	Pigeonpea / Sunflower / Sesame / Castor/ Pearl millet Pearl millet + Pigeonpea (2:1 or 4:2)	Pigeonpea / Sunflower / Sesame / Castor/ Pearl millet
Shallow black soils	Soybean	Soybean (MAUS-61, JS93-05)	No change	Pigeonpea / Sunflower / Sesame / Castor/ Pearl millet Pearl millet + Pigeonpea (2:1 or 4:2)	Sunflower / Sesame / Pigeonpea /
	Greengram	Greengram (TARM-18)	Blackgram / Soybean Soybean : JS-335, JS-93 -05	Pigeonpea / Sunflower / Sesame / Castor/ Pearl millet Pearl millet + Pigeonpea: (2:1 or 4:2)	Sunflower / Sesame / Pigeonpea
	Blackgram	Blackgram (TAU-1, AKU-15)	-	Sole Pigeonpea/ Sunflower / Sesame / Castor/ Pearl millet Pearl millet + Pigeonpea (2:1 or 4:2)	Sunflower / Sesame / Pigeonpea /

2.4 TAMILNADU

In Tamilnadu, contingency crop plans for 24 districts have been included except for 7 districts viz., Cuddalore, Kanchipuram, Kanyakumari, Nagapattinam, Nilgiris, Theni and Tiruvarur districts considering rainfall and cropping pattern. However, the annual and seasonal rainfall information is furnished for all the districts in the table given below:

District level annual and seasonal rainfall information*

Districts	Zone	Annual Rainfall (mm)	Rainy days	South West Monsoon (Jun-Sep)		North East Monsoon (Oct-Dec)	
				RF (mm)	Rainy days	RF (mm)	Rainy days
Cuddalore	TN-1	1236	53	374	21	717	26
Kanchipuram	TN-1	1252	56	463	28	697	24
Tiruvannamalai	TN-1	1047	-55	466	25	440	21
Tiruvallur	TN-1	1153	55	450	28	604	22
Vellore	TN-1	917	49	442	24	353	17
Villupuram	TN-1	1029	49	433	23	485	22
Dharmapuri	TN-2	853	48	361	21	317	17
Krishnagiri	TN-2	864	50	404	23	291	17
Namakkal	TN-2	776	60	317	18	291	17
Salem	TN-2	898	52	380	23	347	18
Erode	TN-3 & TN-2	711	42	213	14	324	18
Tiruppur	TN-3	650	38	-	-	-	-
Coimbatore	TN-3 & TN-7	694	45	193	16	327	18
Nilgiris	TN-3 & TN-7	1696	98	1060	57	368	22
Karur	TN-4	665	38	223	13	311	18
Thiruvarur	TN-4	1130	52	302	16	665	27
Ariyalur	TN-4	945	NA	-	-	-	-
Nagapattinam	TN-4	1342	54	274	16	886	30
Perambalur	TN-4 & TN-2	950	47	-	-	-	-
Thanjavur	TN-4	1053	51	342	17	546	25
Tiruchirapalli	TN-4&TN-7	815	42	295	15	386	19
Pudukkottai	TN-6&TN-4	922	50	351	20	418	21
Dindigul	TN-6	836	46	251	15	399	21
Madurai	TN-6	840	46	305	16	373	20
Ramanthapuram	TN-6	840	46	136	9	507	23
Sivagangai	TN-6	821	42	290	15	416	20
Tirunelveli	TN-6	737	44	93	8	430	23
Toothukudi	TN-6	626	-	33	-	445	-
Virudhunagar	TN-6	830	42	182	10	431	21
Theni	TN-6 & TN-7	834	51	178	14	384	21
Kanyakumari	TN-7	1006	59	328	24	427	21

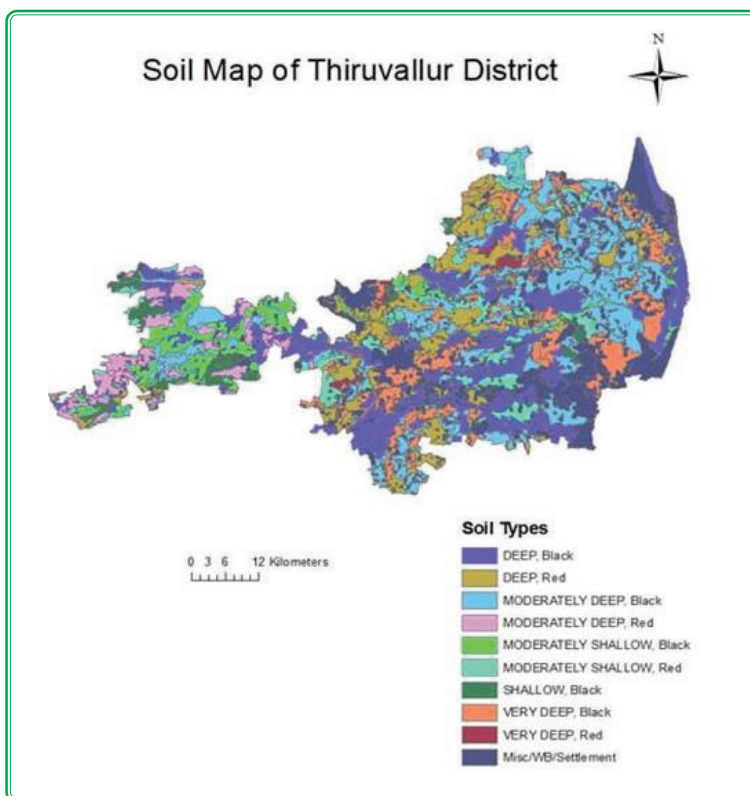
2.4.1 MAJOR CROPS IN NORTH EASTERN ZONE

- North eastern zone encompasses 7 districts and the major crops cultivated during *kharif* season under rainfed conditions are: Rice, Finger millet, Sorghum, Maize, Kodo millet, Samai, Pigeonpea, Greengram, Blackgram, Horsegram, Cowpea, Groundnut, Sunflower, Castor, Sesame and Cotton.
- Major crops cultivated during *kharif* season under irrigated conditions are: Rice in Tiruvallur, Villupuram, Kanchipuram, Tiruvannamalai, Cuddalore and Vellore.
- Major crops cultivated during *rabi* under rainfed conditions are: Rice in Villupuram, Kanchipuram, Tiruvallur; Blackgram in Cuddalore, Villupuram; Horsegram in Vellore and Tiruvannamalai.
- Major crops cultivated during *rabi* season under irrigated conditions are: Rice in Villupuram, Cuddalore, Kanchipuram, Tiruvannamalai, Tiruvallur, Vellore; Finger millet in Vellore, Tiruvannamalai; Greengram in Tiruvallur.

<i>Kharif</i> rainfed crops	Districts
Rice	Tiruvallur, Villupuram
Sorghum	Vellore, Villupuram
Finger millet	Vellore, Tiruvannamalai, Villupuram
Maize	Cuddalore, Villupuram, Tiruvannamalai
Kodo millet	Cuddalore, Villupuram
Samai	Tiruvannamalai, Vellore
Pigeonpea	Vellore
Greengram	Vellore, Tiruvannamalai
Blackgram	Villupuram, Tiruvannamalai, Cuddalore
Horsegram	Vellore
Cowpea	Villupuram, Tiruvannamalai
Groundnut	Tiruvannamalai, Villupuram, Vellore, Kanchipuram, Cuddalore, Tiruvallur
Castor	Tiruvannamalai, Vellore
Sesame	Villupuram, Cuddalore, Tiruvallur, Kanchipuram
Sunflower	Cuddalore, Villupuram
Cotton	Villupuram, Vellore, Tiruvannamalai, Cuddalore

Tiruvallur District

Tiruvallur district falls under North Eastern agroclimatic zone (TN-1) in Tamilnadu. The district receives a mean annual rainfall of 1153 mm of which 450 mm is received during south west monsoon and 604 mm in north east monsoon. The soil types in the district are laterite and red soils (see map). The district has an area of 21300 ha (17.8% of net sown area) under rainfed situation. The major rainfed crops cultivated in the district are groundnut, Pulses, sesame and irrigated crops are rice and sugarcane.



Normal sowing window for major field crops

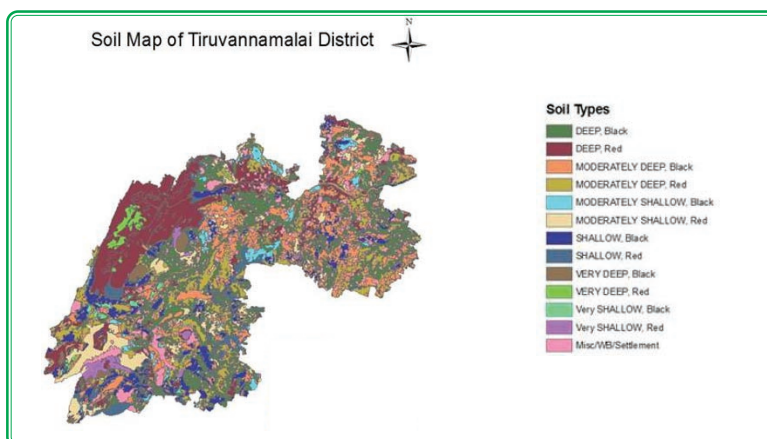
Season/ Situation	Rice	Groundnut	Pulses
<i>Khharif</i> - Rainfed	1 st week of April to 3 rd week of June	1 st week of June to 1 st week of July	1 st week of June to 4 th week of July
<i>Khharif</i> -Irrigated	1 st week of April to 1 st week of May	--	--
<i>Rabi</i> -Irrigated	1 st week of December to 4 th week of December	1 st week of December to 4 th week of January	1 st week of January to 4 th week of February

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars		
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)
(1)	(2)	(3)	(4)	(5)
Laterite and red soils	Dry rice (Jun-Aug) – Maize/ Groundnut (Jun-Sep)/ Pulses (Sep-Jan)	Dry rice/ Groundnut/ Sesame Groundnut: COGn-4, COGn-5, VRI(Gn)-5 Sesame: TMV-3, CO-1	Maize/ Sunflower/ Groundnut/ Pulses Maize: HM-8,10 Sunflower: CO-4, TCSH-1, KBH-44, Mordern Groundnut: COGn-4,VRI-3, VRI(Gn)-5,TMV-7 Sesame:TMV-3,4,6 VRI-2	Pearl millet/ Pulses / Finger millet / Horsegram/ Sunflower/ Minor millets Pearl millet: ICMV-221 Greengram: COGG -91

Tiruvannamalai District

Tiruvannamalai district falls under North Eastern agroclimatic zone (TN-1) in Tamilnadu. The district receives a mean annual rainfall of 1047 mm of which 466 mm is received during south west monsoon and 440 mm in north east monsoon. The soil types in the district are red, black and laterite soils (see map). The district has an area of 72000 ha (24.1% of net sown area) under rainfed situation. The major rainfed crops cultivated in the district are samai, groundnut, blackgram, finger millet, pearl millet and irrigated crops are rice, sugarcane.



Normal sowing window for major field crops

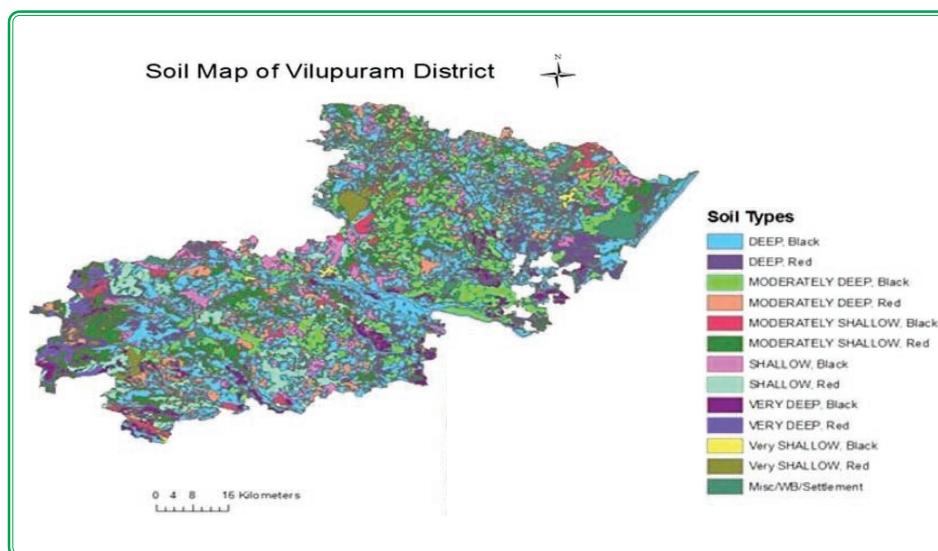
Season/ Situation	Rice	Groundnut	Blackgram	Finger millet	Sugarcane
<i>Kharif</i> - Rainfed	--	1 st week of June to 1 st week of July	--	--	--
<i>Kharif</i> - Irrigated	1 st week of May to 4 th week of June	--	1 st week of July to 4 th week of August	--	--
<i>Rabi</i> - Rainfed	--	--	--	1 st week of September to 2 nd week of October	--
<i>Rabi</i> - Irrigated	1 st week of September to 4 th week October	1 st week of November to 4 th week of December	--	1 st week of December to 4 th week of January	1 st week of January to 4 th week of February

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars		
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)
(1)	(2)	(3)	(4)	(5)
Red, laterite and heavy clay soils	Groundnut/ Maize (Jun-Sep) – Sesame (Oct-Feb)	Groundnut/ Maize (Jun-Sep) – Sesame (Oct-Feb) Maize: COH-4, COBC-1, HM-8, 10	Maize/ Sunflower+ Finger millet/ Pulses (Oct- Jan) Maize: PEH-2, Prakash, Pratap	Pearl millet/ Horsegram/ minor millets / Pulses Pearl millet: GHB-526, ICMH-356, COH(Cu)-8,CO-7 Horsegram: CRIDA-1, 18R
Heavy clay and sandy soils	Rice/ Maize (Aug-Jan)-Pulses/ Sesame (Jan-Apr)	Rice/ Maize (Aug-Jan)-Pulses/ Sesame (Jan-Apr)	Groundnut/ Maize (Aug-Dec)-Pulses (Jan- Apr)	Pearl millet/ Vegetables/ Sorghum/ Fodder (Oct-Jan)

Villupuram District

Villupuram district falls under North Eastern argoclimatic zone (TN-1) in Tamilnadu. The district receives a mean annual rainfall of 1029 mm of which 433 mm is received during south west monsoon and 485 mm in north east monsoon. The soil types in the district are red and black soils (see map). The district has an area of 92900 ha (28.8% of net sown area) under rainfed situation. The major crops cultivated in the district are groundnut, blackgram, pearl millet, sesame, maize and irrigated crops are rice, sugarcane.



Normal sowing window for major field crops

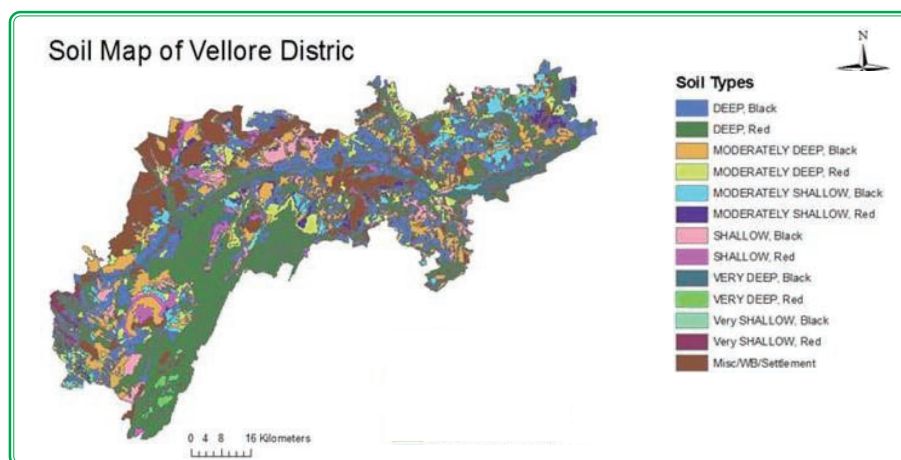
Season/ Situation	Rice	Groundnut	Blackgram	Pearlmillet	Sesame
<i>Kharif</i> - Rainfed	--	3 rd week of May to 1 st week of July	--	1 st week of June to 4 th week of July	1 st week of June to 3 rd week of July
<i>Kharif</i> - Irrigated	1 st week of April to 4 th week of May	--	--	--	--
<i>Rabi</i> - Rainfed	1 st week of August to 4 th week of September	--	1 st week of October to 4 th week of January	--	--
<i>Rabi</i> - Irrigated	1 st week of December to 4 th week of January	3 rd week of December to 3 rd week of January	1 st week of December to 4 th week of January	--	--

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars		
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)
(1)	(2)	(3)	(4)	(5)
Red and red loamy soils	Groundnut– Blackgram and Pearl millet-Sesame	Groundnut– Blackgram and Pearl millet-Sesame Groundnut: CO-3, COGn-4, VRI-3, 5 Blackgram: ADT-5, TMV-1 Pearl millet: Co-7, CO(cu)-9	Groundnut/ Blackgram / Sesame Groundnut : TMV (Gn)-13, VRI-2, TMV-7 Blackgram: VBN-4, 5 Sesame: TMV-3, 6	Blackgram / Sesame/ Fodder sorghum/ Grasses Blackgram : VBN-4, 5 Sesame: TMV-3,6 Fodder sorghum: COFS-29
Heavy clay and sandy soils	Rice (Aug- Jan) – Pulses/ Sesame/ Maize (Jan-Apr)	Rice (Aug-Jan) – Pulses/ Sesame/ Maize (Jan-Apr)	Maize/ Pearl millet (Aug-Dec)- Pulses (Jan-Mar)	Pearl millet/ Sorghum/ Fodder (Oct-Jan)

Vellore District

Vellore district falls under North Eastern agroclimatic zone (TN-1) in Tamilnadu. The district receives a mean annual rainfall of 917 mm of which 442 mm is received during south west monsoon and 353 mm in north east monsoon. The soil types in the district are red and laterite soils (see map). The district has an area of 98000 ha (45.6% of net sown area) under rainfed situation. The major rainfed crops cultivated in the district are groundnut, pigeonpea, sorghum, pearl millet and irrigated crops are rice, sugarcane.



Normal sowing window for major field crops

Season/ Situation	Rice	Groundnut	Pigeonpea	Sorghum	Pearl millet
<i>Kharif</i> - Rainfed	--	1 st week of June to 4 th week of July	1 st week of June to 4 th week of July	1 st week of June to 4 th week of July	1 st week of June to 3 rd week of July
<i>Kharif</i> - Irrigated	1 st week of May to 4 th week of June	--	--	--	--
<i>Rabi</i> - Rainfed	--	--	--	1 st week of September to 2 nd week of October	--
<i>Rabi</i> - Irrigated	1 st week of August to 4 th week of September	--	--	--	--

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars		
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)
(1)	(2)	(3)	(4)	(5)
Red and laterite soils	Pearl millet/ Sorghum (Jun-Sep)- Groundnut (Oct-Feb)	Pearl millet/ Sorghum(Jun-Sep)- Groundnut(Oct-Feb) Pearl millet: CO-7, 9, ICMV-221 Sorghum : CO-25, 26, COH- 4 Groundnut:VRI-3	Maize/ Sunflower/ Sesame (Oct-Jan) Maize: HM-8, 10 Sunflower: CO-4, TCSH-1, KBH-44, Morden Sesame: CO-1, TMV-3, 4	Pearl millet/ Horsegram/ Sunflower/ Minor millets/ Pulses (Oct-Jan) Kodo millet: JK-48 Little millet: TNAU-63 Proso millet: K-1 Finger millet : CO-13, 14
Heavy clay and red soils	Rice (Aug-Jan)- Sesame/ Pulses (Feb-May)	Rice (Aug-Jan)- Sesame/ Pulses (Feb-May)	Pearl millet/ Sorghum (Aug-Jan) - Pulses/ Finger millet/ Maize (Feb-May)	Wheat/ Fodder (Nov-Feb)

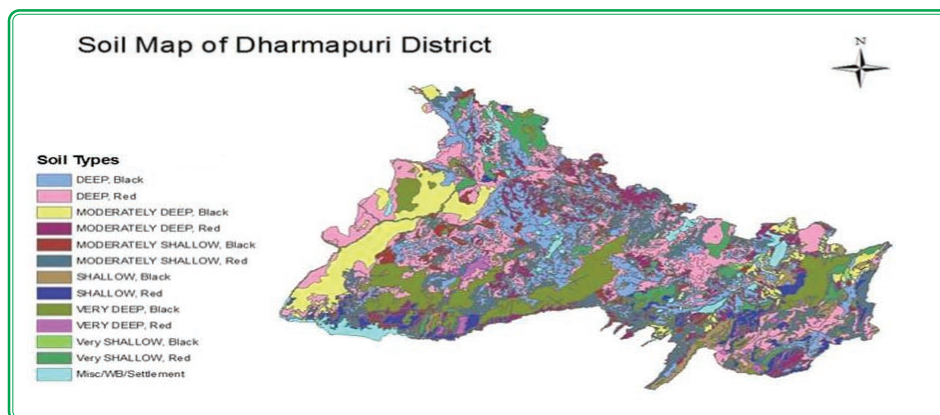
2.4.2 MAJOR CROPS IN NORTH WESTERN ZONE

- North western zone encompasses 4 districts and the major crops cultivated during *kharif* season under rainfed conditions are: Finger millet, Sorghum, Maize, Samai, Pigeonpea, Horsegram, Fieldbean, Groundnut, Castor and Cotton.
- Major crops cultivated during *kharif* season under irrigated conditions are: Rice in Salem, Krishnagiri, Dharmapuri, Namakkal; Sorghum in Namakkal, Salem; Finger millet in Krishnagiri; Maize in Salem and Namakkal.
- Major crops cultivated during *rabi* under rainfed conditions are: Sorghum in Namakkal, Salem; Horsegram in Dharmapuri and Krishnagiri.
- Major crops cultivated during *rabi* season under irrigated conditions are: Rice in Salem, Dharmapuri, Krishnagiri, Namakkal; Finger millet in Dharmapuri.

<i>Kharif</i> rainfed crops	Districts
Finger millet	Krishnagiri, Dharmapuri, Salem
Sorghum	Dharmapuri, Salem, Namakkal, Krishnagiri
Maize	Salem
Samai	Dharmapuri, Krishnagiri
Pigeonpea	Krishnagiri, Dharmapuri
Horsegram	Krishnagiri
Fieldbean	Krishnagiri, Dharmapuri
Groundnut	Namakkal, Salem, Krishnagiri, Dharmapuri
Castor	Namakkal, Dharmapuri
Cotton	Salem, Dharmapuri

Dharmapuri District

Dharmapuri district falls under North Western agroclimatic zone (TN-2) in Tamilnadu. The district receives a mean annual rainfall of 853 mm of which 361 mm is received during south west monsoon and 317 mm in north east monsoon. The soil types in the district are red and black soils (see map). The district has an area of 187000 ha (58.4% of



net sown area) under rainfed situation. The major rainfed crops cultivated in the district are sorghum, finger millet, little millet and irrigated crops are rice, sugarcane.

Normal sowing window for major field crops

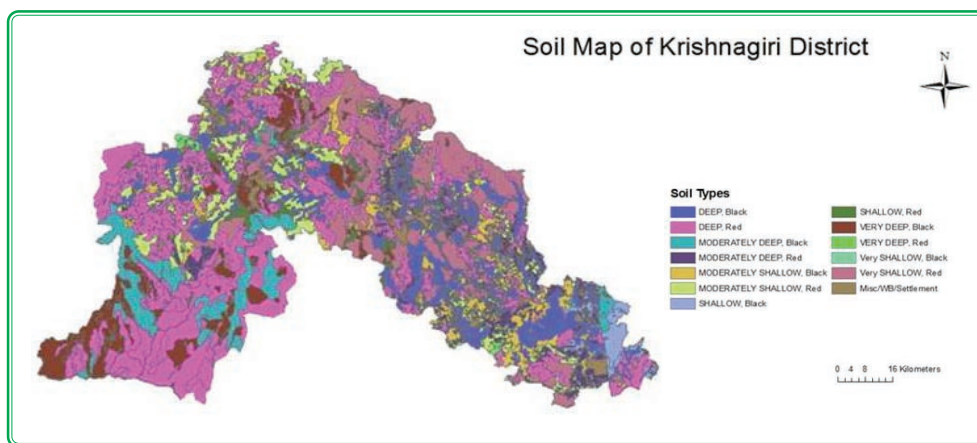
Season/ Situation	Rice	Finger millet	Sorghum	Little millet
<i>Kharif</i> - Rainfed	--	1 st week of June to 4 th week of July	1 st week of June to 4 th week of July	1 st week of June to 1 st week of July
<i>Kharif</i> - Irrigated	Early samba: 1 st week of June to 4 th week of June Samba: 2 nd week of August to 2 nd week of September	--	--	--
<i>Rabi</i> - Rainfed	--	1 st week of September to 2 nd week of October	1 st week of September to 2 nd week of October	1 st week of September to 2 nd week of October
<i>Rabi</i> - Irrigated	--	1 st week of December to 2 nd week of January	--	--

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars		
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)
(1)	(2)	(3)	(4)	(5)
Red and black soils	Sorghum Finger millet Little millet Tapioca	Sorghum (CO-28, Paiyur-1, 2, BSR-1) Finger millet (C-9, CO-13) Little millet (CO-3) Tapioca (CO-3, 4, Sriharsha)	Sorghum + Blackgram/ Greengram/Cowpea Blackgram: VBN-3,4 Greengram:CO-4,6 Cowpea:Paiyur-1,2 Finger millet (C-9, CO-13) Little millet (CO-3) Tapioca / Little millet Tapioca: CO-3, 4 Little millet: CO-3, 4, CO(Te)-7	Fodder sorghum (COFS-2) Finger millet (C-9, CO-13) Fodder crop Tapioca (Sriharsha)
Red and heavy clay soils	Rice (Jun-Sep)- Rice (Dec-Mar)	Rice (Jun-Sep)- Rice (Dec-Mar)	Rice (Jun-Sep)- Rice (Dec-Mar)	Cowpea/ Minor millets/ Fodder (Oct-Jan)

Krishnagiri District

Krishnagiri district falls under North Western agroclimatic zone (TN-2) in Tamilnadu. The district receives a mean annual rainfall of 864 mm of which 404 mm is received during south west monsoon and 291mm during north east monsoon. The soil types in the district are red soils (see map). The district has an area of 138000 ha under rainfed situation (72.8% of net sown area). The major rainfed crops cultivated in the district are finger millet, horsegram, little millet, sorghum and irrigated crops are rice and groundnut.



Normal sowing window for major field crops

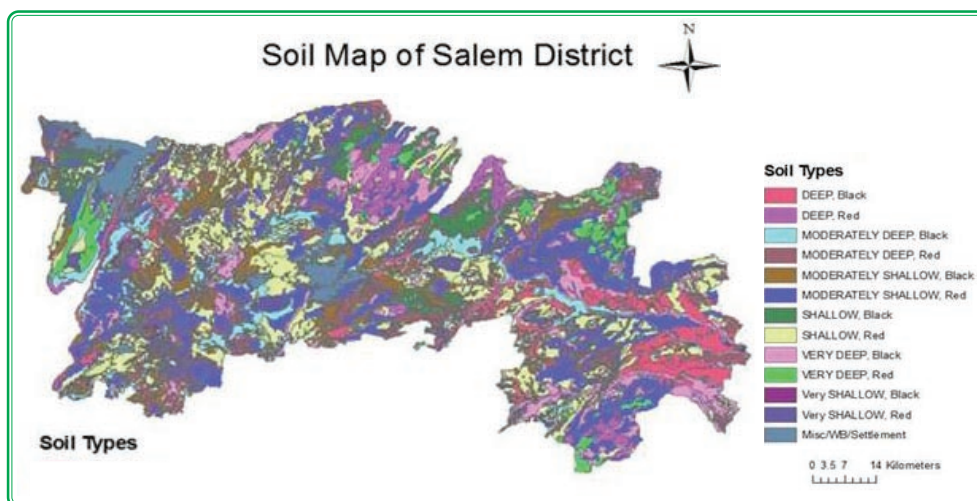
Season/ Situation	Finger millet	Horsegram	Groundnut	Rice	Little millet
<i>Kharif</i> - Rainfed	1 st week of July to 4 th week of August	--	1 st week of July to 4 th week of August	--	1 st week of July to 4 th week of August
<i>Kharif</i> - Irrigated	--	--	--	Early samba: 1 st week of June to 4 th week of July Samba: 1 st week of August to 4 th week of September	--
<i>Rabi</i> - Rainfed	--	1 st week of September to 4 th week of October	--	--	--
<i>Rabi</i> - Irrigated	1 st week of November to 1 st week of December	--	--	1 st week of November to 1 st week of December	--

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars		
	Normal onset of monsoon (2 nd week of July)	Delay by 2 weeks (4 th week of July)	Delay by 4 weeks (2 nd week of August)	Delay by 6 weeks (4 th week of August)
(1)	(2)	(3)	(4)	(5)
Red non calcareous soils with rolling topography	Finger millet- Lablab+ Sorghum+ Pigeonpea	Finger millet (Paiyur-1) Medium duration	Finger millet (Indaf- 9, CO-7) Short duration	Cowpea/ Fodder Sorghum/ Finger millet Cowpea: COCP- 6, 7, Cowpea-152 Sorghum : CO-4, Paiyur- 2
Shallow marginal and sub marginal red non calcareous soils	Samai – Horsegram Samai: CO-3	Sorghum (Paiyur-2, CO-2, CO-3)	Sorghum (Paiyur- 2, CO-2, CO-3)	-

Salem District

Salem district falls under North Western agroclimatic zone (TN-2) in Tamilnadu. The district receives a mean annual rainfall of 898 mm of which 380 mm is received during south west monsoon and 347 mm in north east monsoon. The soil types in the district are shallow red soils and black soils (see map). The district has an area of 106300 ha under rainfed situation (51.7% of net sown area). The major rainfed crops cultivated in the district are groundnut, sorghum, maize, cotton, sunflower and irrigated crops are rice and sugarcane.



Normal sowing window for major field crops

Season/ Situation	Groundnut	Rice	Sorghum	Maize
<i>Kharif</i> - Rainfed	3 rd week of May to 1 st week of July	--	1 st week of June to 3 rd week of July	--
<i>Kharif</i> - Irrigated	--	1 st week of June to 1 st week of July and 3 rd week of August to 1 st week of September	3 rd week of April to 4 th week of June	1 st week of July to 2 nd week of September
<i>Rabi</i> - Rainfed	--	--	2 nd week of October to 2 nd week of November	--
<i>Rabi</i> - Irrigated	3 rd week of December to 3 rd week of January	1 st week of October to 1 st week of November	--	--

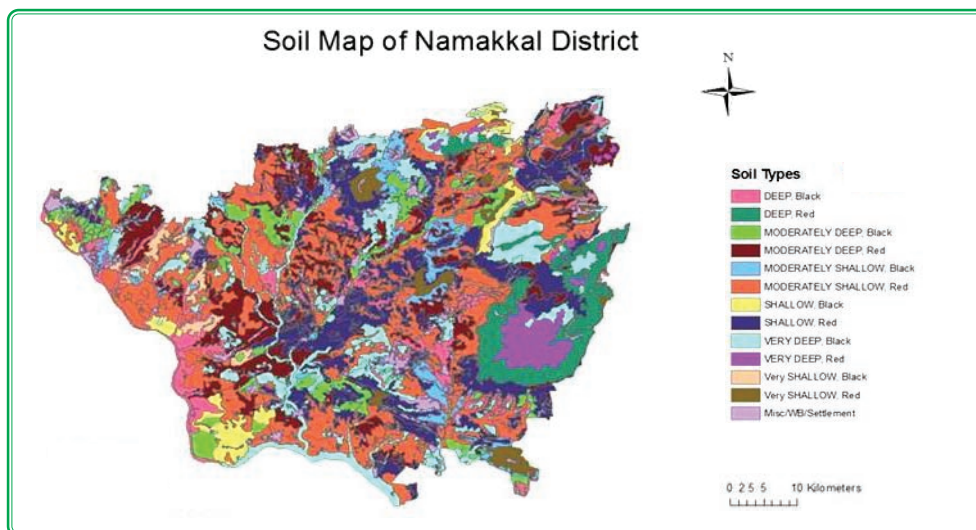
Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars		
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)
(1)	(2)	(3)	(4)	(5)
Shallow red Soils (<i>Kharif</i>)	Groundnut+ Castor/ Pigeonpea/ Sorghum/ Maize/ Pearl millet/ Groundnut+ Castor/ Rainfed tomato	Groundnut+ Castor/ Pigeonpea/ Sorghum/ Maize/ Pearl millet/ Groundnut + Castor/ Rainfed tomato Groundnut: VRI-2, TMV-7 Pigeonpea: SA-1, VBN-2 Castor : TMV-5,6 Rainfed tomato: Bhagyashri, Dhanshri, Rajshri	Spreading Groundnut/ Sunflower/ Castor/ Pigeonpea/ Cowpea/ Spiked millet/ Sorghum Groundnut: TMV-2, 7, VRI-2 Sunflower : CO-4, Morden Castor: TMV-5, 6 Pigeonpea: SA-1, VBN-2 Cowpea: Paiyur-1, CO (CP)-7 Sorghum: CO-26 Spikedmillet: CO-7, CO (Cu)-9, F ICMV- 221	Fodder sorghum/ Minor millets Fodder sorghum: CO-27, COFS-29
<i>Rabi</i>	Normal Rabi (2 nd week of Oct)	Delay by 2 weeks (4 nd week of Oct)	Delay by 4 weeks (2 nd week of Nov)	Delay by 6 weeks (4 th week of Nov)
	Tapioca/ Sorghum/ Pigeonpea/ Horsegram	Tapioca/ Sorghum/ Pigeonpea/ Horsegram Tapioca: CO-3, CO(TP)-4, H-226 Sorghum: CO-26, 28, COH-2, Paiyur-2 Pigeonpea: COPH-2, APK-1	Horsegram/ Blackgram/ Sorghum Horsegram: CO-1, Paiyur-1, 2 Blackgram: T-9, VBN-1, 2, 3 Sorghum: CO-26,CO(S)-28, BSR-1,Paiyur-1,2	-

(1)	(2)	(3)	(4)	(5)
Black soil (<i>Kharif</i>)	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)
	Maize- Pigeonpea Cotton	Maize- Pigeonpea Cotton Maize: CO-1, HM-10, COH(M)-4, Pigeonpea: CO-6, COPH-2, Vamban-1 Cotton: LRA-5166, Sruthi, TCHB-213	Fodder sorghum/ Maize/ Greengram/ Pearl millet/ Sorghum Fodder sorghum: CO-27, COFS-29 Maize: CO-1, COH(M)-4 Greengram: CO-6, Paiyur- 1 Pearl millet : CO-7, ICMV-221 Sorghum: CO-26, CO(S)-28, BSR-1, Paiyur-1,2	Fodder sorghum/ Minor millets Fodder sorghum : CO-27, COFS-29
<i>Rabi</i>	Normal Rabi (2 nd week of Oct)	Delay by 2 weeks (4 nd week of Oct)	Delay by 4 weeks (2 nd week of Nov)	Delay by 6 weeks (4 th week of Nov)
	Maize	Maize (CO-1, COH (M)-4, COBC-1)	Fodder sorghum/ Horsegram Fodder sorghum: CO-27, COFS-29 Horsegram: CO-1, Paiyur-1, 2	Pulses

Namakkal District

Namakkal district falls under North Western agroclimatic zone (TN-2) in Tamilnadu. The district receives a mean annual rainfall of 776 mm of which 317 mm is received during south west monsoon and 291 mm during north east monsoon. The soil types in the district are red and black soils (see map). The district has an area of 101000 ha under rainfed situation (60.2 % of net sown area). The major rainfed crops cultivated in the district are groundnut, sorghum, maize, greengram, blackgram and irrigated crops are rice and sugarcane.



Normal sowing window for major field crops

Season/ Situation	Groundnut	Rice	Sorghum	Maize	Sugarcane
<i>Kharif</i> - Rainfed	1 st week of June to 1 st week of July	--	2 nd week of June to 4 th week of June	--	--
<i>Kharif</i> - Irrigated	2 nd week of May to 1 st week of June	2 nd week of May to 3 rd week of June	2 nd week of August to 2 nd week of September	2 nd week of August to 2 nd week of September	--
<i>Rabi</i> - Rainfed	--	2 nd week of October to 2 nd week of November	2 nd week of October to 2 nd week of November	— --	--
<i>Rabi</i> - Irrigated	--	2 nd week of October to 2 nd week of November	--	2 nd week of October to 2 nd week of November	2 nd week of December to 2 nd week of January

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars		
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)
(1)	(2)	(3)	(4)	(5)
Red soils	Groundnut	Groundnut (TMV-7, VRI-2)	Groundnut (TMV-7, VRI-2)	Minor millets + Pulses/ Castor/ Fodder Finger millet: CO-14, Paiyur-1 Blackgram : VBN-3, 4 Castor:TMVCH-1, YRCH-1 (Jul- Dec)
	Greengram	Greengram (Paiyur-1, K-1, KM-2, CO-6)	Fodder maize (African tall)	-
	Tapioca	Tapioca (H-226, Sree Prakash, Sreeharsha)	Tapioca (CO-2)	Tapioca (CO-2)
Red and heavy clay soils	Rice (Jun-Sep)- Rice (Oct-Feb)	Rice (Jun-Sep)- Rice (Oct-Feb)	Pulses (Jun-Aug) - Groundnut (Nov-Feb)	Sorghum/ Cowpea/ Minor millets/ Fodder (Oct-Jan)

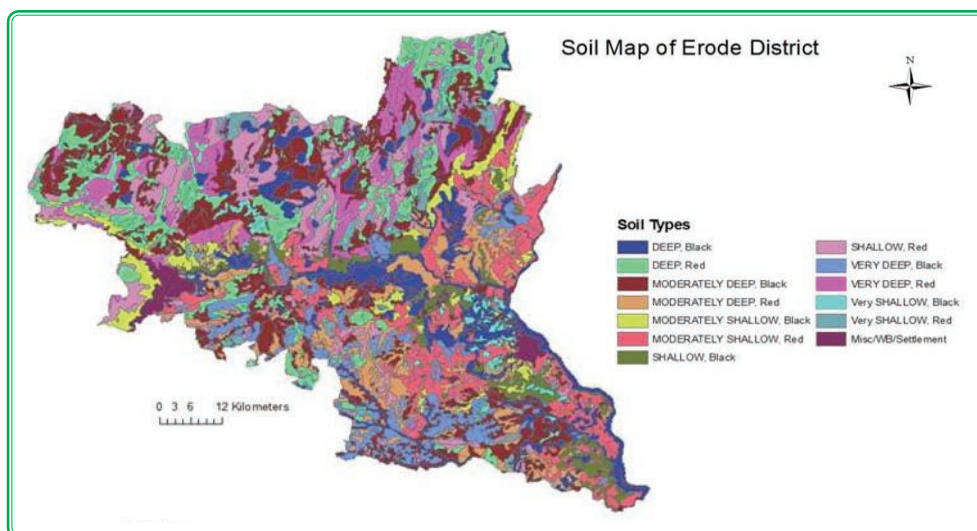
2.4.3 MAJOR CROPS IN WESTERN ZONE

- Western zone encompasses 3 districts and the major crops cultivated during *kharif* season under rainfed conditions are: Sorghum, Finger millet, Maize, Chickpea, Greengram, Horsegram, Cowpea, Groundnut, Castor, Sesame and Cotton.
- Major crops cultivated during *kharif* season under irrigated conditions are: Rice in Erode; Sorghum in Coimbatore; Maize in Coimbatore and Erode.
- Major crops cultivated during *rabi* under rainfed conditions are: Maize in Coimbatore; Blackgram in Erode; Greengram in Erode, Coimbatore; Horsegram in Erode, Coimbatore; Cowpea in Coimbatore and Erode.
- Major crops cultivated during *rabi* season under irrigated conditions are: Rice in Erode, Coimbatore; Sorghum in Coimbatore; Maize in Coimbatore and Erode.

<i>Kharif</i> rainfed crops	Districts
Sorghum	Coimbatore
Finger millet	Erode
Maize	Erode
Chickpea	Coimbatore
Greengram	Coimbatore
Horsegram	Coimbatore
Cowpea	Coimbatore, Erode
Groundnut	Erode, Coimbatore
Castor	Erode
Cotton	Coimbatore, Erode
Sesame	Erode
Tobacco	Erode

Erode District

Erode district falls under Western agroclimatic zone (TN-3), North Western agroclimatic zone (TN-2) in Tamilnadu. The district receives a mean annual rainfall of 711 mm of which 213 mm is received during south west monsoon and 324 mm during north east monsoon. The soil types in the district are red and black soils (see map). The district has an area of 128600 ha under rainfed situation (43% of net sown area). The rainfed crops cultivated in the district are groundnut, maize, sesame and irrigated crops are sugarcane and rice.



Normal sowing window for major field crops

Season/ Situation	Rice	Groundnut	Maize	Sesame	Sugarcane
<i>Kharif</i> - Rainfed	1 st week of June to 1 st week of July	1 st week of June to 1 st week of July	1 st week of July to 2 nd week of August	--	--
<i>Kharif</i> - Irrigated	3 rd week of August to 1 st week of September	--	3 rd week September to 2 nd week of October	--	1 st week of June to 4 th week of September
<i>Rabi</i> - Irrigated	1 st week of October to 1 st week of November	--	--	--	1 st week of October to 4 th week of December
Summer Irrigated	1 st week of January to 4 th week of January	1 st week of December to 1 st week of January	2 nd week of January to 2 nd week of February	2 nd week of February to 2 nd week of March	1 st week of January to 4 th week of May

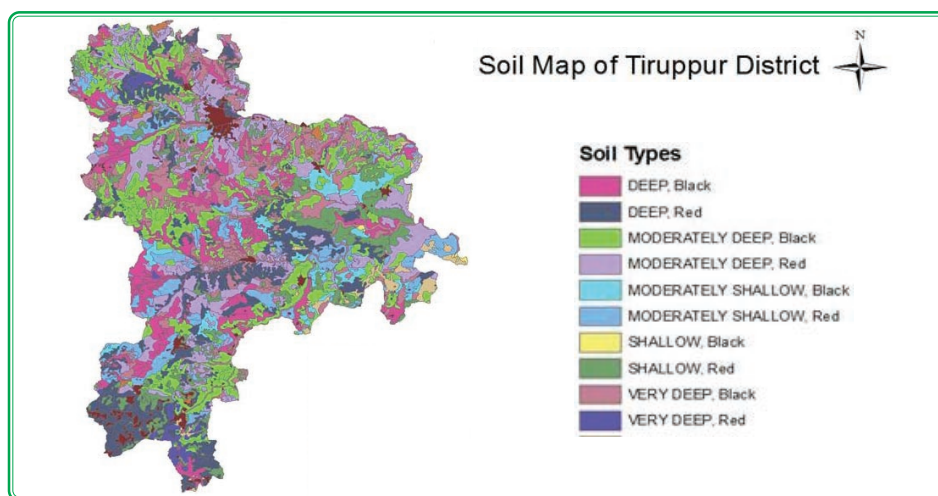
Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars		
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)
(1)	(2)	(3)	(4)	(5)
Red soils	Groundnut+ Blackgram/ Greengram/ Cowpea	Groundnut+ Blackgram/ Greengram/ Cowpea Groundnut: GOGn-5,VRI-2, 3 Blackgram: VBN-6, 4 Greengram: Paiyur-1, 2 Cowpea: Vamban-2, PKM-1	Groundnut+ Blackgram/ Greengram/ Cowpea Groundnut: GOGn-5,VRI-2, 3 Blackgram: VBN-6, 4 Greengram: Paiyur-1, 2 Cowpea: Vamban-2, PKM-1	Sorghum+ Blackgram/ Greengram/ Cowpea Sorghum: CO-26, 28 Blackgram: VBN-6, 4 Greengram: Paiyur-1, 2 Cowpea: Vamban-2, PKM-1

(1)	(2)	(3)	(4)	(5)
	Groundnut + Pigeonpea+ Castor	Groundnut + Pigeonpea+Castor Groundnut: GOGn-5,VRI-2, 3 Pigeonpea: SA-1, COPH-2, Vamban-2 Castor: TMV-6, SA-2,TMVCH-1, GCH-4	Groundnut + Pigeonpea+Castor Groundnut: GOGn-5,VRI-2, 3 Pigeonpea: SA-1, COPH-2, Vamban-2 Castor: TMV-6, SA-2,TMVCH-1, GCH-4	Sorghum+ Blackgram/ Greengram/ Cowpea Sorghum: CO-26, 28 Blackgram: VBN-6, 4 Greengram: Paiyur-1, 2 Cowpea: Vamban-2, PKM-1, Cowpea-152
Red and black soils	Rice (Aug-Jan)- Sesame/ Groundnut (Feb-Apr)	Rice (Aug-Jan)- Sesame/ Groundnut (Feb-Apr)	Cotton (Sep-Feb)- Fallow	Horsegram (Sep-Dec)- Fallow

Tiruppur District

Tiruppur district falls under Western agroclimatic zone (TN-3) in Tamilnadu. The district receives a mean annual rainfall of 650 mm of which 160 mm is received during south west monsoon and 335mm in north east monsoon and 155 mm in summer. The soil types in the district are red soils (see map). The district has an area of 73000 ha (37.2% of net sown area) under rainfed situation. The major rainfed crops cultivated in the district are maize, sorghum, groundnut, horsegram, greengram, cowpea, sesame and irrigated crops are rice and sugarcane.



Normal sowing window for major field crops

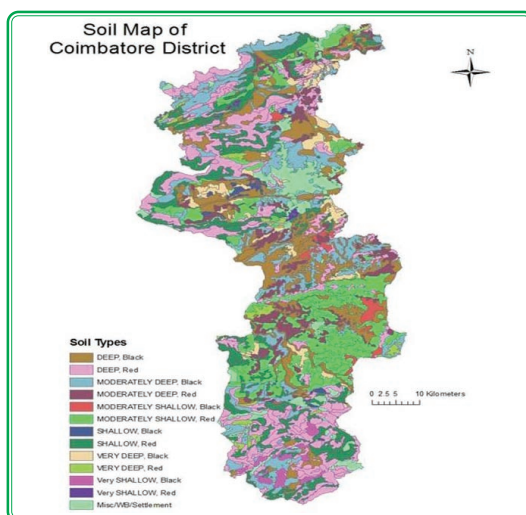
Season/ Situation	Rice	Maize	Sorghum	Groundnut
<i>Kharif</i> - Rainfed	--	1 st week of July to 1 st week of August	2 nd week of June to 4 th week of July	3 rd week of June to 2 nd week of July
<i>Kharif</i> - Irrigated	2 nd week of June to 3 rd week of July	2 nd week of May to 3 rd week of June	2 nd week of July to 2 nd week of August	--
<i>Rabi</i> - Rainfed	--	2 nd week of October to 1 st week of November	3 rd week of October to 2 nd week of November	--
<i>Rabi</i> - Irrigated	3 rd week of October to 2 nd week of November	2 nd week of November to December	1 st week of December to 4 th week of December	--

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars		
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)
(1)	(2)	(3)	(4)	(5)
Shallow red soils	Groundnut + Pigeonpea	Groundnut + Pigeonpea Groundnut: TMV-7,10, 13, COGn-5, VRI-2, DRG-12 Pigeonpea: CO-6	Sorghum/ Pearl millet/ Horsegram Sorghum: CO-25, 26, COH-4 pearl millet: ICMV-221, CO-7, GHB-5581 Horsegram: CO-7,11,12	Fodder sorghum/ Horsegram Fodder sorghum: CSV-21F,HC-171, SSG-59-3, Pusachari-1 Horsegram: CO-7,11,12

Coimbatore District

Coimbatore district falls under Western agroclimatic zone (TN-3), High Altitude and Hill agroclimatic zone (TN-7) in Tamilnadu. The district receives a mean annual rainfall of 694 mm of which 193 mm is received during south west monsoon and 327 mm in north east monsoon. The soil types in the district are red and black soils (see map). The district has an area of 137000 ha (43.7 % of net sown area) under rainfed situation. The major rainfed crops cultivated in the district are sorghum, groundnut, maize, chickpea, cowpea and irrigated crops are rice, cotton, sugarcane.



Normal sowing window for major field crops

Season/ Situation	Sorghum	Maize	Groundnut	Cotton	Rice
<i>Kharif</i> - Rainfed	2 nd week of June to 4 th week of July	--	2 nd week of June to 2 nd week of July	4 th week of June to 2 nd week of July	--
<i>Kharif</i> -Irrigated	--	1 st week of July to 1 st week of August	1 st week of May to 4 th week of June	1 st week of August to 4 th week of August	1 st week of July to 3 rd week of July
<i>Rabi</i> - Rainfed	3 rd week of September to 2 nd week of October	2 nd week of October to 1 st week of November	--	4 th week of September to 2 nd week of October	--
<i>Rabi</i> -Irrigated	4 th week of January to 2 nd week of February	2 nd week of November to 4 th week of December	2 nd week of December to 1 st week of January	--	1 st week of September to 3 rd week of September

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars		
	Normal onset of monsoon (2 nd week of June)	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)
(1)	(2)	(3)	(4)	(5)
Red and black soils (<i>Kharif & Rabi</i>)	Groundnut/ Sorghum/ Maize / Sunflower/ Pearl millet – Rabi pulses	Groundnut / Sorghum/ Maize/ Sunflower/ Pearl millet – Rabi pulses	Groundnut / Sorghum/ Maize/ Sunflower/ Pearl millet/ Chickpea Groundnut: CO-2, VRI-2, VRI(Gn)-5, ALR-3, COGn-5, TMV-7 Sorghum: CO-26, CO(S)-28, BSR-1, COH- 4 Maize: CO-1, COH(M)-4, 5, COBC-1 Sunflower: CO-4, Morden, TCSH-1, KBSH-1, 44, PHC-1091, MSFH-1 Pearl millet: CO-9, 13, CO(Ra)-14, Paiyur-1	Pure crop of Sorghum/ Pearl millet/ Horsegram/ Chickpea Sorghum: CO-26, CO(S)-28, BSR-1, COH-4 Pearl millet: CO-9, CO-13, CO(Ra)-14, Paiyur-1 Horsegram: Co-1, Paiyur- 1, 2

2.4.4 MAJOR CROPS IN CAUVERY DELTA ZONE

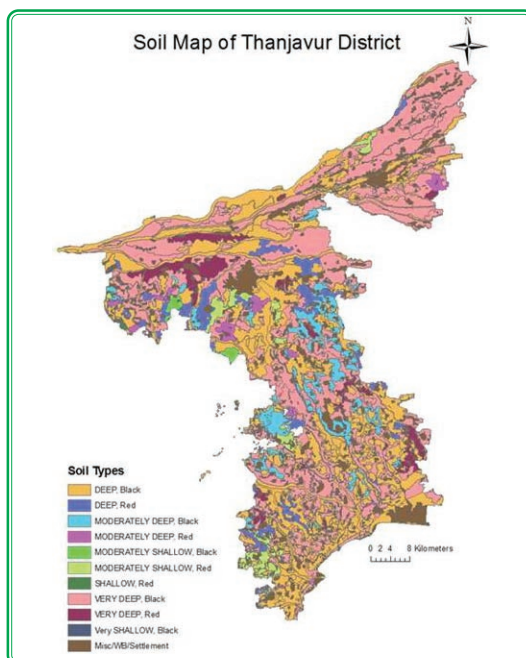
- Cauvery delta zone encompasses 7 districts and the major crops cultivated during *kharif* season under rainfed conditions are: Sorghum, Maize, Pigeonpea, Groundnut, Sunflower, Sesame and Cotton.
- Major crops cultivated during *kharif* season under irrigated conditions are: Rice in Thanjavur, Thiruvarur, Nagapattinam, Tiruchirapalli, Perambalur.
- Major crops cultivated during *rabi* under rainfed conditions are: Rice in Nagapattinam, Perambalur; Sorghum in Perambalur; Maize in Perambalur; Blackgram in Nagapattinam, Thiruvarur, Thanjavur, Tiruchirapalli; Greengram in Thiruvarur, Nagapattinam and Thanjavur.

- Major crops cultivated during *rabi* season under irrigated conditions are: Rice in Thiruvarur, Thanjavur, Nagapattinam, Tiruchirapalli, Perambalur, Karur; Blackgram in Thiruvarur.

Kharif rainfed crops	Districts
Sorghum	Tiruchirapalli, Karur, Perambalur
Maize	Perambalur, Tiruchirapalli
Pigeonpea	Karur, Tiruchirapalli
Groundnut	Perambalur, Tiruchirapalli, Thanjavur, Karur, Nagapattinam, Thiruvarur
Sesame	Karur, Thanjavur, Thiruvarur
Sunflower	Tiruchirapalli, Karur
Cotton	Perambalur, Tiruchirapalli, Nagapattinam, Thiruvarur, Thanjavur

Thanjavur District

Thanjavur district falls under Cauvery Delta agroclimatic zone (TN-4) in Tamilnadu. The district receives a mean annual rainfall of 1053 mm of which 342 mm is received during south west monsoon and 546 mm in north east monsoon. The soil types in the district are red and black soils, (see map). The district has an area of 27000 ha (13.9 % of net sown area) under rainfed situation. The major rainfed crops cultivated in the district are blackgram, groundnut, sesame, maize and irrigated crops are rice, sugarcane.



Normal sowing window for major field crops

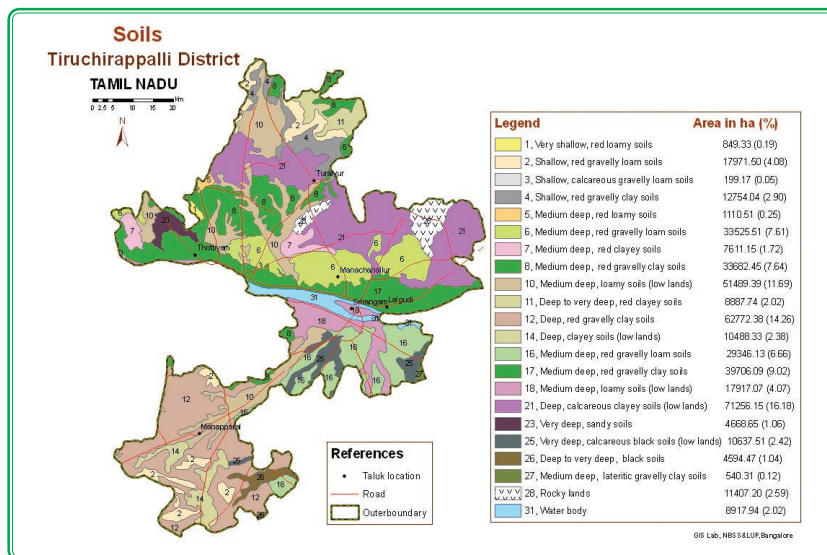
Season/ Situation	Blackgram	Groundnut	Sesame	Maize	Rice
<i>Kharif</i> - Rainfed	2 nd week of June to 4 th week of July	--	2 nd week of June to 4 th week of July	--	2 nd week of June to 4 th week of June
<i>Kharif</i> - Irrigated	--	--	--	4 th week of May to 1 st week of June	3 rd week of May to 1 st week of June
<i>Rabi</i> - Irrigated	3 rd week of January to 4 th week of January	3 rd week of January to 4 th week of January	3 rd week of January to 4 th week of January	--	3 rd week of October to 1 st week of November

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars		
	Normal onset of monsoon (2 nd week of June)	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)
(1)	(2)	(3)	(4)	(5)
Red and black soils	Rice-Pulses/ Sesame	Rice-Pulses/ Sesame Rice: ADT-36,37, 42,43, IR-50, 64 Sesame: CO-1, TMV-3,4,5	Green manure (Jun-Sep)-Rice (Aug)-Pulses Rice (Aug): IR-20, CO-43, ADT-39	Green manure/ Sesame-Maize/ / Fodder-Pulses Sesame: CO-1, TMV-3, 4, 5

Tiruchirappalli District

Tiruchirappalli district falls under Cauvery Delta agroclimatic zone (TN-4) and High Altitude and Hilly agroclimatic zone (TN-7) in Tamilnadu. The district receives a mean annual rainfall of 815 mm of which 295 mm is received during south west monsoon and 386 mm in north east monsoon. The soil types in the district are red and black soils (see map). The district has an area of 739000 ha (40.6 % of net sown area) under rainfed situation. The major rainfed crops cultivated in the district are groundnut, blackgram, maize, sorghum, sunflower and irrigated crops are rice, sugarcane.



Normal sowing window for major field crops

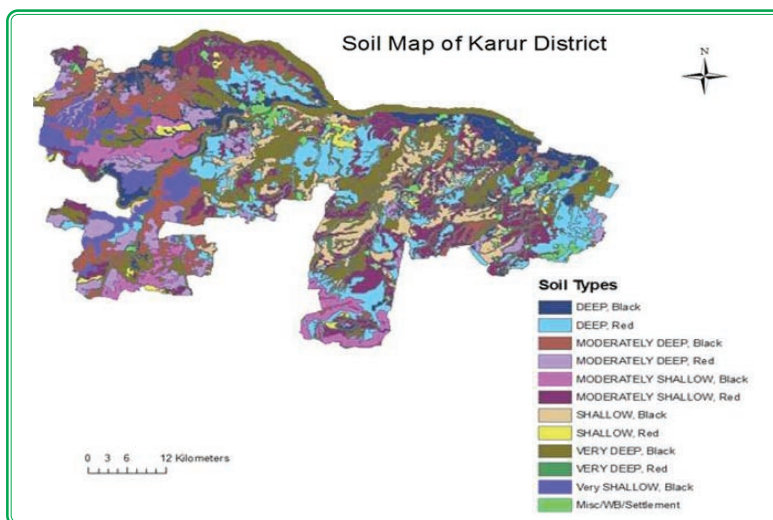
Season/Situation	Groundnut	Blackgram	Maize	Rice	Sugarcane
<i>Kharif</i> - Rainfed	1 st week of June to 1 st week of July	--	1 st week of June to 4 th week of July	--	--
<i>Kharif</i> -Irrigated	2 nd week of May to 1 st week of June	1 st week of July to 4 th week of August	1 st week of April to 4 th week of May	1 st week of June to 1 st week of July	--
<i>Rabi</i> - Rainfed	--	--	1 st week of September to 4 th week of October	--	--
<i>Rabi</i> -Irrigated	--	1 st week of December to 4 th week of February	1 st week of January to 4 th week of February	3 rd week of October to 1 st week of November	1 st week of December to 4 th week of March

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars		
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)
(1)	(2)	(3)	(4)	(5)
Red and black soils	Rice-Pulses/ Sesame	Rice-Pulses/ Sesame Rice: ADT-36,37, 42,43, IR-50, 64 Sesame: CO-1, TMV-3, 4, 5	Green manure (Jun-Sep)-Rice (Aug)-Pulses Rice (Aug): IR-20, CO-43, ADT-39	Pulses (Jun-Sep) - Sunflower/ Coriander/ Cotton (Oct-Feb)-Fallow Millets/ Greenmanure/ Sesame(Jun-Sep) - Maize/ Fodder (Oct-Feb)-Pulses (Feb-May) Sunflower: Morden, CO-4, TCSH-1, KBSH-1
Red, black and laterite soils	Groundnut + Pigeonpea	Groundnut + Pigeonpea Groundnut: TMV-7, VRI-2, CO- 2 Pigeonpea: APK-1, VBN (RG)-3	Groundnut + Pigeonpea Groundnut: TMV-7, VRI-2, CO- 2 Pigeonpea: APK-1, VBN (RG)-3	Sorghum/ Millets+ Blackgram/ Greengram/ Sesamum/ Cucurbits Sorghum: K Tall, CO-26, CO (S)-28, BSR-1 Blackgram: VBN-1, 2, 3, VBN(Bg)- 4, Greengram: Paiyur-1, CO-6, VBN-1, VBN(Gg)-2 Sesame: CO-1, TMV-3,5, SVPR-1, VRI (SV)-2
	Clusterbean/ Bhendi	Clusterbean/ Bhendi Clusterbean: Pusa Sadhabahar, Pusa Navbahar, Pusa Mausami Bhendi: CO-3, COBH-1, Pusa Sawani, Varhaupkar	Clusterbean/ Bhendi Clusterbean: Pusa Sadhabahar, Pusa Navbahar, Pusa Mausami Bhendi: CO-3, COBH-1, Pusa Sawani, Varhaupkar	--

Karur District

Karur district falls under Cauvery Delta agroclimatic zone (TN-4) in Tamilnadu. The district receives a mean annual rainfall of 665 mm of which 223 mm is received during south west monsoon and 311 mm in north east monsoon. The soil types in the district are red soils (see map). The district has an area of 463000 ha (38.4% of net sown area) under rainfed situation. The major rainfed crops cultivated in the district are sorghum, groundnut, sunflower, sesame, pulses and irrigated crops are rice and sugarcane.



Normal sowing window for major field crops

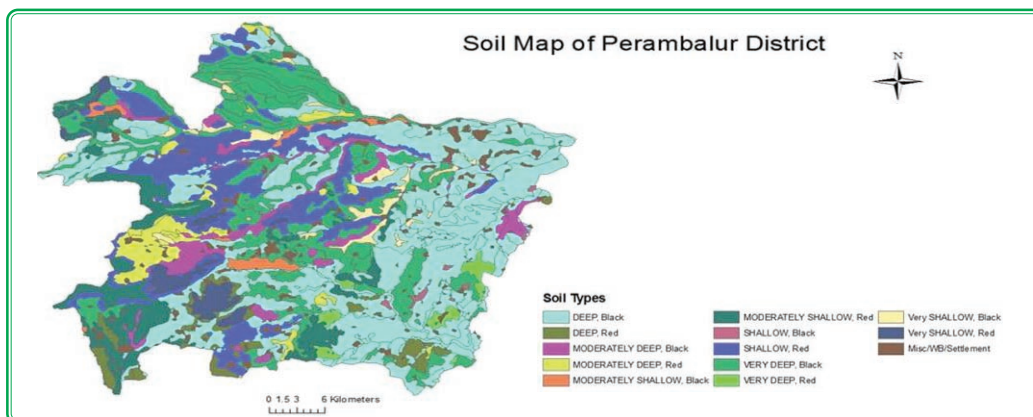
Season/ Situation	Sorghum	Rice	Groundnut	Sesame	Sunflower
<i>Kharif</i> - Rainfed	1 st week June to 3 rd week July	--	1 st week of July to 1 st week of August	2 nd week of June to 4 th week of July	2 nd week of June to 1 st week of July
<i>Kharif</i> -Irrigated	2 nd week of April to 1 st week of May	2 nd week of June to 2 nd week of July	2 nd week of May to 1 st week of June	--	2 nd week of April to 1 st week of May
<i>Rabi</i> - Rainfed	2 nd week of September to 1 st week of October	--	--	--	1 st week of October to 1 st week of November
<i>Rabi</i> -Irrigated	1 st week of January to 1 st week of February	2 nd week of August to 1 st week of September	--	3 rd week of January to 4 th week of January	--

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars		
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)
(1)	(2)	(3)	(4)	(5)
Red soils	Groundnut	Groundnut (TMV(Gn)-13, VRI-2, TMV-7, 10, ALR-3)	Groundnut (TMV(Gn)-13, VRI-2, TMV-7, 10, ALR-3)	-
	Groundnut + Pigeonpea (6:1ratio)	Groundnut + Pigeonpea (6:1ratio) Groundnut : VRI-2, TMV-7, 10 ALR-3 Pigeonpea: (CO(RG)-7)	Groundnut + Pigeonpea (6:1ratio) Groundnut : VRI-2, TMV-7,10 ALR-3 Pigeonpea: (CO(RG)-7)	Groundnut + Pigeonpea (12 :1 ratio)/ Sorghum + Pigeonpea (mixed) Groundnut : VRI-2, TMV-7, 10, ALR-3 Pigeonpea: CO(RG)-7 Sorghum: CO-26, CO(S)-28

Perambalur District

Perambalur district falls under Cauvery Delta agroclimatic zone (TN-4) and North Western agroclimatic zone (TN-2) in Tamilnadu. The district receives a mean annual rainfall of 950 mm of which 294 mm is received during south west monsoon and 513 mm in north east monsoon. The soil types in the district are black soils (see map). The district has an



area of 145500 ha under rainfed situation (68% of net sown area). The major rainfed crops cultivated in the district are maize, cotton, groundnut, sunflower and irrigated crops are rice and sugarcane.

Normal sowing window for major field crops

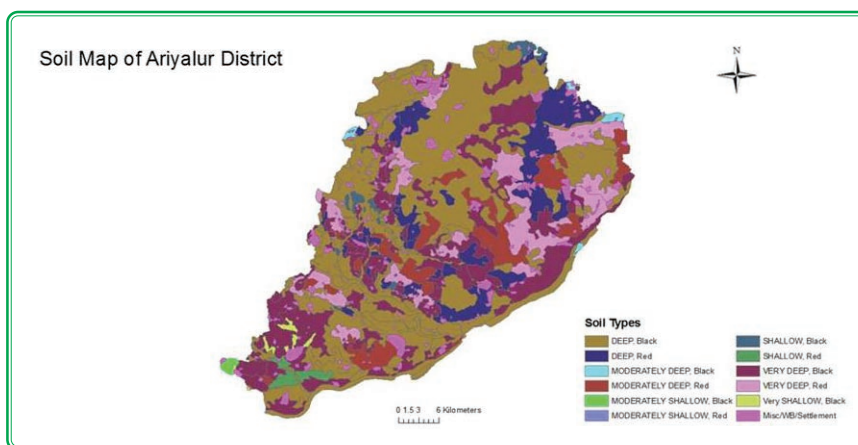
Season/ Situation	Maize	Rice	Groundnut	Cotton	Sugarcane
<i>Kharif</i> - Rainfed	1 st week of June to 1 st week of July	--	--	1 st week of June to 3 rd week of June	--
<i>Kharif</i> - Irrigated	--	2 nd week of June to 2 nd week of July	--	2 nd week of August to 2 nd week of October	--
<i>Rabi</i> - Rainfed	--	--	--	--	2 nd week of December to 2 nd week of January
<i>Rabi</i> - Irrigated	--	2 nd week of September to 2 nd week of October	2 nd week of December to January	--	--

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars		
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)
(1)	(2)	(3)	(4)	(5)
Black soils	Cotton	Cotton (MCU-7, SVPR-3, Anjali, K-11)	Maize Hybrid+ Pulses/ Pigeonpea/ Groundnut Maize Hybrid: COH(M)-4) Pigeonpea: SA -1, Vamban-2 Groundnut: COGn-4, 5, TMV-7	Pigeonpea+ Onion/ Sorghum Pigeonpea: CO-5, COPH-2, Vamban-1 Sorghum: CO-26, APK-1, Paiyur-1,2
	Rice (Jun-Sep)- Rice (Oct-Jan)- Pulses/ Sesame (Feb-May)	Rice (Jun-Sep)- Rice (Oct-Jan)- Pulses/ Sesame (Feb-May)	Sweet sorghum (Jun-Sep) – Rice (Oct-Jan)– Pulses/ Sesame (Feb-May)	Millets/ Green manure/ Sesame (Jun-Sep) - Maize/ Fodder (Oct-Feb)-Pulses (Feb-May)

Ariyalur District

Ariyalur district falls under Cauvery Delta agroclimatic zone (TN-4) in Tamilnadu. The district receives a mean annual rainfall of 945 mm of which 367 mm is received during south west monsoon and 485mm in north east monsoon. The soil types in the district are red and black soils (see map). The district has an area of 85000 ha (6.8% of net sown area) under rainfed situation. The major crops cultivated in the district are groundnut, maize, sorghum and irrigated crops are rice, sugarcane.



Normal sowing window for major field crops

Season/ Situation	Rice	Groundnut	Maize	Sorghum
<i>Khariif</i> - Rainfed	1 st week of June to 1 st week of July	1 st week of June to 2 nd week of July	--	--
<i>Khariif</i> - Irrigated	2 nd week of June to 2 nd week of July	--	--	1 st week of August to 2 nd week of September
<i>Rabi</i> - Rainfed	--	--	2 nd week of September to 2 nd week of October	--

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars		
		Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)
(1)	(2)	(3)	(4)	(5)
Red soils	Groundnut	Sesame/ Blackgram Sesame: TMV-3, CO-1 Blackgram : VBN-1, 2	Sesame/ Blackgram Sesame : TMV-3, CO-1 Blackgram : VBN-1, 2	-
	Rice (Rainfed) (ADT-36)	Rice (Rainfed) (ADT-36)	Rice (Rainfed) (ADT-36)	Pearl millet/ Sorghum/ Thenai/ Varagu Pearl millet : CO-4,7 Sorghum: CO-4, COH-4, BSR-1 Thenai: CO-6,7 Varagu: CO-3

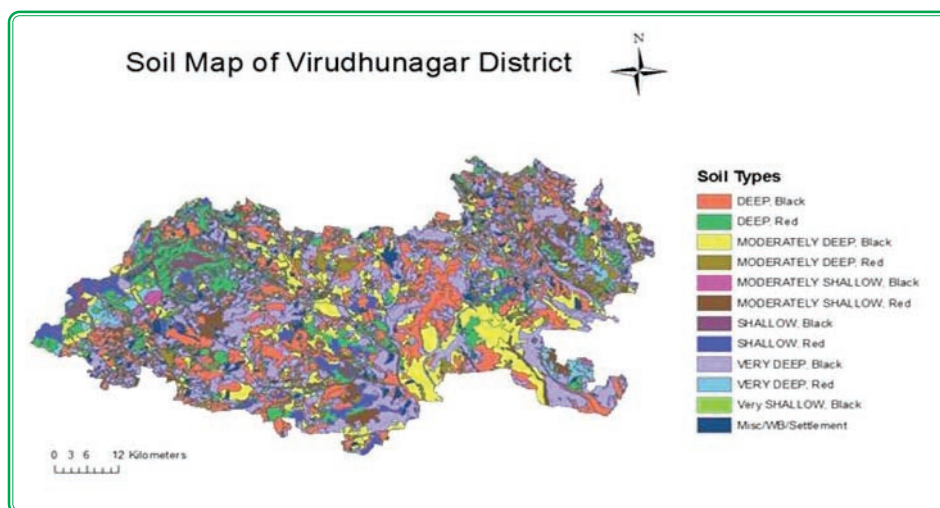
2.4.5 MAJOR CROPS IN SOUTHERN ZONE

- Southern zone encompasses 3 districts and the major crops cultivated during *kharif* season under rainfed conditions are: Maize, Blackgram, Greengram, Groundnut and Cotton
- Major crops cultivated during *kharif* season under irrigated conditions are: Rice in Tirunelveli, Toothugudi; Sorghum in Tirunelveli.
- Major crops cultivated during *rabi* under rainfed conditions are: Sorghum in Toothugudi, Virudhunagar; Maize in Tirunelveli, Toothugudi, Virudhunagar; Blackgram in Tirunelveli, Virudhunagar; Greengram in Toothugudi, Tirunelveli and Virudhunagar.
- Major crops cultivated during *rabi* season under irrigated conditions are: Rice in Tirunelveli, Virudhunagar, Toothugudi; Maize in Virudhunagar and Tirunelveli.

Kharif rainfed crops	Districts
Maize	Virudhunagar
Blackgram	Tirunelveli, Virudhunagar
Greengram	Virudhunagar
Groundnut	Virudhunagar, Tirunelveli
Cotton	Virudhunagar, Toothugudi, Tirunelveli

Virudhunagar District

Virudhunagar district falls under Southern agroclimatic zone (TN-6) in Tamilnadu. The district receives a mean annual rainfall of 830 mm of which 182 mm is received during south west monsoon and 431mm in north east monsoon. The soil types in the district are red and black soils (see map). The district has an area of 77900 ha (57 % of net sown area) under rainfed situation. The major rainfed crops cultivated in the district are greengram, sorghum, maize, groundnut and irrigated crops are rice, cotton



Normal sowing window for major field crops

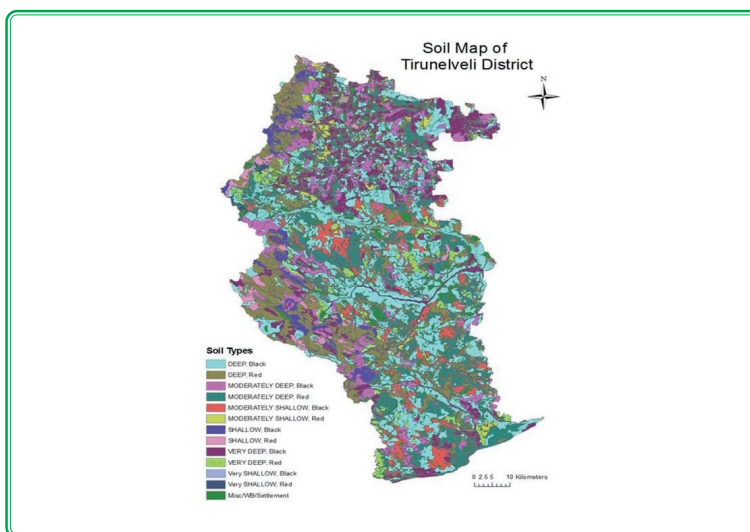
Season/ Situation	Sorghum	Rice	Maize	Greengram	Cotton
<i>Kharij</i> - Rainfed	1 st week of June to 3 rd week of July	--		1 st week of June to 1 st week of July	--
<i>Kharij</i> -Irrigated	1 st week of June to 1 st week of July	--	1 st week of June to 1 st week of July	1 st week of June to 1 st week of July	1 st week of June to 1 st week of July
<i>Rabi</i> -Rainfed	3 rd week of October to 1 st week of November	--	3 rd week of October to 1 st week of November	3 rd week of October to 1 st week of November	3 rd week of October to 1 st week of November
<i>Rabi</i> -Irrigated	2 nd week of September to 2 nd week of October	2 nd week of September to 2 nd week of October	2 nd week of September to 2 nd week of October	2 nd week of September to 2 nd week of October	2 nd week of September to 2 nd week of October

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars		
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)
(1)	(2)	(3)	(4)	(5)
Blacksoils	Cotton+ Pulses/ Lablab Sorghum + Pigeonpea/ Lablab	Cotton + Pulses/ Lablab Sorghum+ Pigeonpea/ Lablab Cotton:KC-3 Pigeonpea:SA-1, Vamban-2, APK-1 Blackgram: TMV-1,Vamban-3 Greengram : K-1, KM-2, CO- 6 Sorghum: CO-26, APK-1, COH-2	Cotton (KC- 3) Sorghum+ Pigeonpea/ Lablab	Sunflower (CO (SFV)-5)
	Rice (Jun-Sep)- Chillies (Oct-Feb)	Rice (Jun-Sep)- Chillies (Oct-Feb)	Maize/ Clusterbean / Lablab/ Bhendi (Jun-Oct) - Pulses (Nov-Feb)	Sorghum/ Minor millets/ Sesame/ Fodder (Sep-Feb)
Redsoils	Groundnut+ Pigeonpea/ Maize	Groundnut+ Pigeonpea/ Maize Groundnut: CO-3, COGn-4, VRI-3, ALR-3 Pigeonpea: CO-6, COPH-2 Maize: COH(M)-4, CO-1	Pearlmillet (CO (Cu)- 9)	Coriander/ Senna Coriander: PKM-1 Senna : KKM-1

Tirunelveli District

Tirunelveli district falls under Southern agroclimatic zone (TN-6) in Tamilnadu. The district receives a mean annual rainfall of 737 mm of which 93 mm is received during south west monsoon and 430 mm in north east monsoon. The soil types in the district are red soils (see map). The district has an area of 56700 ha (32.5 % of net sown area) under rainfed situation. The major rainfed crops cultivated in the district are maize, sorghum, pearl millet, blackgram and irrigated crops are rice, cotton.



Normal sowing window for major field crops

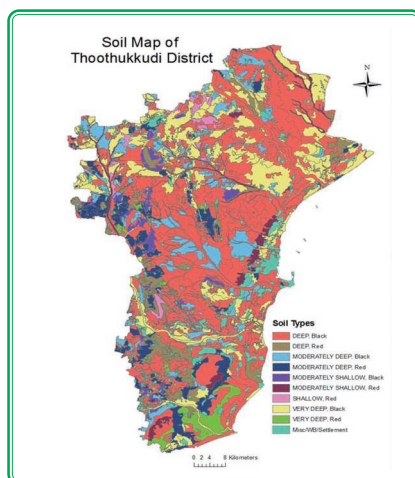
Season/ Situation	Rice	Maize	Cotton	Sorghum	Pearl millet
<i>Kharif</i> - Rainfed	--	--	--	1 st week of June to 3 rd week of June	1 st week of June to 3 rd week of June
<i>Kharif</i> - Irrigated	1 st week of June to 4 th week of July	1 st week of May to 4 th week of July	1 st week of May 4 th to week of July	1 st week of May to 4 th week of July	--
<i>Rabi</i> - Rainfed	--	1 st week of September to 4 th week of October	1 st week of September to 4 th week of October	1 st week of September to 4 th week of October	1 st week of September to 4 th week of October
<i>Rabi</i> - Irrigated	1 st week of September to 4 th week of November	1 st week of March to 4 th week of April	1 st week of February to 4 th week of March	1 st week of February to 4 th week of March	1 st week of March to 4 th week of April

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars		
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)
(1)	(2)	(3)	(4)	(5)
Red soils	Sorghum/ Pearl millet	Sorghum/ Pearl millet Sorghum: CO-26, CO(S)-28 Pearl millet: CO-7, 9	Blackgram/ Daincha / Sunhemp Blackgram: TMV-1, ADT-5, KBG-512	Green manures: Daincha / Sunhemp
	Rice (Jun-Sep)- Rice (Oct-Jan)- Pulses/ Sesame (Feb-May)	Rice (June-Sep)- Rice (Oct-Jan)- Pulses/ Sesame (Feb-May)	Sweet sorghum (Jun-Sep)–Rice (Oct-Jan)–Pulses (Feb-May)	Cowpea/ Green manure (Jun-Jan)

Thoothugudi

Thoothugudi district falls under Southern zone (TN-6) in Tamilnadu . The district receives a mean annual rainfall of 626 mm of which 33 mm is received during south west monsoon and 445 mm in north east monsoon. The soil types in the district are deep black and red soils (see map). The district has an area of 129600 ha (76.3 % of net sown area) under rainfed situation. The major crops cultivated in the district are greengram, blackgram, pearl millet, maize, rice.



Normal sowing window for major field crops

Season/ Situation	Greengram	Rice	Maize	Blackgram	Pearl millet
<i>Kharif</i> -Irrigated	--	1 st week of June to 1 st week of July	--	--	--
<i>Rabi</i> - Rainfed	1 st week of October to 2 nd week of November	--	4 th week of October to 2 nd week of November	4 th week of October to 2 nd week of November	4 th week of October to 2 nd week of November
<i>Rabi</i> -Irrigated	--	4 th week of October to 3 rd week of November	4 th week of October to 2 nd week of November	--	--

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars		
	Normal onset of monsoon (1 st week of October)	Delay by 2 weeks (3 rd week of October)	Delay by 4 weeks (1 st week of November)	Delay by 6 weeks (3 rd week of November)
(1)	(2)	(3)	(4)	(5)
Deep and very deep black soils	Blackgram/ Greengram/ Pearl millet/ Maize/ Sorghum/	Blackgram/ Greengram/ Pearl millet/ Maize/ Sorghum Blackgram: TMV-1, VBN-2, 4 Greengram: VBN- 4, CO-6 Pearlmillet: CO-7, CO(Cu)-9, ICMV- 221 Maize: HM-8, 10, CHM-4 Sorghum: CO-24, 25, 26, CSH-15R	Sunflower/ Pearl millet/ Finger millet/ Foxtail millet/ Little millet/ Coriander/ Chickpea Sunflower: CO-4 Pearl millet: CO-7, CO (Cu)-9, ICMV- 221 Finger millet: CO-11, 13, 14 Coriander: PKM-1 Chickpea: CO-3, 4	Medicinal senna/ Fodder sorghum/ Horsegram/ Mixed crop of Senna+ Coriander+Cowpea Medicinal senna: KKM-1 Fodder sorghum: CO-27, K-11 Horsegram: CO-7, 11, 12 Coriander: CO-2, 3, C(CR)-04

(1)	(2)	(3)	(4)	(5)
Deep red soils	Sorghum+Cowpea	Sorghum+Cowpea	Sunflower/ Pearl millet Sunflower: CO-4 Pearl millet: CO-7,CO(Cu)-9, ICMV- 221	Medicinal senna/ Fodder sorghum/ Horsegram Medicinal senna: KKM-1 Fodder sorghum: Co-27, K-11 Horsegram: CO-7,11,12
Red and black soils	Rice (Jun-Sep)- Rice (Oct-Jan)- Pulses/ Sesame (Feb-May)	Rice (Jun-Sep)- Rice (Oct-Jan)- Pulses/ Sesame (Feb-May)	Sweet sorghum (Jun-Sep)–Rice (Oct-Jan)–Pulses (Feb-May)	Maize/ Sunflower (Jun-Sep)- Senna (Oct-Jan)

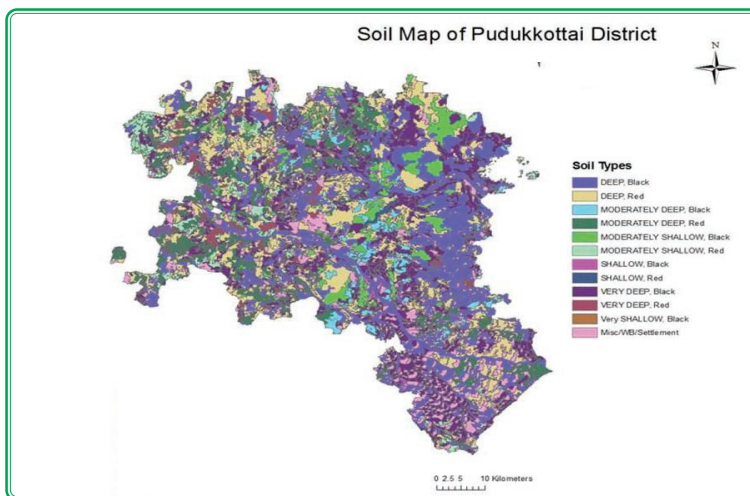
2.4.6 MAJOR CROPS IN SOUTH ZONE

- South zone encompasses 6 districts and the major crops cultivated during *kharif* season under rainfed conditions are: Sorghum, Maize, Greengram, Cowpea, Groundnut and Cotton
- Major crops cultivated during *kharif* season under irrigated conditions are: Rice in Madurai, Theni, Dindigul; Maize in Dindigul and Theni.
- Major crops cultivated during *rabi* under rainfed conditions are: Rice in Ramanathapuram, Sivagangai, Pudukottai; Sorghum in Dindigul, Theni, Ramanathapuram; Maize in Dindigul; Blackgram in Dindigul, Ramanathapuram; Greengram in Dindigul; Cowpea in Dindigul.
- Major crops cultivated during *rabi* season under irrigated conditions are: Rice in Pudukottai, Sivagangai, Ramanathapuram, Madurai, Dindigul, Theni; Maize in Dindigul and Theni.

<i>Kharif</i> rainfed crops	Districts
Sorghum	Dindigul, Madurai, Theni
Maize	Dindigul, Madurai
Greengram	Madurai
Cowpea	Dindigul
Groundnut	Pudukottai, Dindigul, Ramanathapuram, Sivagangai, Madurai
Cotton	Ramanathapuram

Pudukkottai District

Pudukkottai district falls under South agroclimatic zone (TN-6) and Cauvery Delta agroclimatic zone (TN-4) in Tamilnadu. The district receives a mean annual rainfall of 922 mm of which 351 mm is received during south west monsoon and 418 mm in north east monsoon. The soil types in the district are red and black soils (see map). The district has an area of 48800 ha (34.9 % of net sown area) under rainfed situation. The major rainfed crops cultivated in the district are groundnut, maize, blackgram and irrigated crops are rice, sugarcane.



Normal sowing window for major field crops

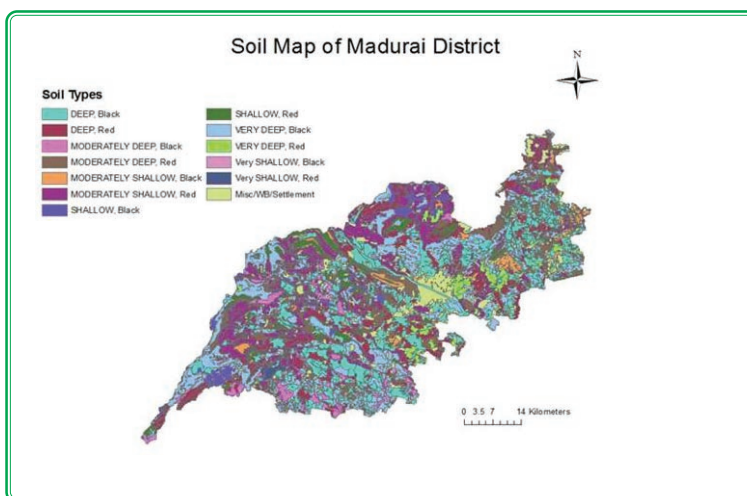
Season/ Situation	Rice	Groundnut	Maize	Blackgram	Sugarcane
<i>Kharif</i> - Rainfed	2 nd week of June to 4 th week of July	2 nd week of June to 4 th week of July	--	1 st week of July to 4 th week of July	1 st week of December to 4 th week of April
<i>Kharif</i> - Irrigated	1 st week of August to 4 th week of September	1 st week of August to 4 th week of October	--	1 st week of August to 4 th week of August	--
<i>Rabi</i> - Rainfed	1 st week of November to 4 th week of November	1 st week of April to 4 th week of April	--	1 st week of February to 4 th week of <i>March</i>	--
<i>Rabi</i> - Irrigated	1 st week of December to 4 th week of January	1 st week of December to 4 th week of January	1 st week of September to 4 th week of September	1 st week to 4 th week of January	--

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars		
	Normal onset of monsoon (2 nd week of June)	Delay by 2 weeks (4 th week of June)	Delay by 4 weeks (2 nd week of July)	Delay by 6 weeks (4 th week of July)
(1)	(2)	(3)	(4)	(5)
Laterite and red soils	Groundnut + Pigeonpea (5 : 1)	Groundnut + Pigeonpea (5 : 1) Groundnut : VRI-4, 5, TMV-7 Pigeonpea : CO-6, SA-1, Vamban-2	Pulses (Jun-Sep) –Finger millet (Oct-Feb)	Fodder sorghum / Fodder cowpea/ Castor / Cucurbits (Jun-Jan)
	Groundnut + Cowpea	Groundnut + Cowpea Groundnut : VRI-2, TMV-7 Cowpea: PKM-1, Cowpea-152, COCT-7	Groundnut + Cowpea Groundnut : VRI-2, TMV-7 Cowpea: PKM-1, Cowpea-152, COCT-7	Groundnut + Cowpea Groundnut : VRI-2, TMV-7 Cowpea: PKM-1, Cowpea-152, COCT-7
	Maize/ Castor	Maize/ Castor Maize: Vivek-17, 27, PEEH-5 Castor:TMV-5, 6, SA-2,TMVCH-1, DCH-519	Maize/ Castor Maize: Vivek-17, 27, PEEH-5 Castor:TMV-5, 6, SA-2,TMVCH-1, DCH-519	
	Fallow	Fallow	Fallow	Kodo millet/ Cowpea Kodo millet: CO-3, Cowpea: PKM-1
	Rice (Jun-Sep)- Rice (Oct-Jan)- Pulses/ Sesame (Feb-May)	Rice (Jun-Sep)- Rice (Oct-Jan)- Pulses/ Sesame (Feb-May)	Maize/ Clusterbean/ Lablab/ Bhendi/ Pulses/ Sesame/ Green manure (Jun-Sep)-Rice (Aug-Jan) - Pulses (Feb-May)	Millets/ Green manure/ Sesame (Jun-Sep)-Maize/ Fodder/ Pulses (Oct-Feb)

Madurai District

Madurai district falls under Southern agroclimatic zone (TN-6) in Tamilnadu. The district receives a mean annual rainfall of 840 mm of which 305 mm is received during south west monsoon and 373 mm in north east monsoon. The soil types in the district are black soils (see map). The district has an area of 58400 ha (40.2% of net sown area) under rainfed situation. The major rainfed crops cultivated in the district are sorghum, pearl millet, cotton, maize, groundnut, greengram and irrigated crops are rice, sugarcane.



Normal sowing window for major field crops

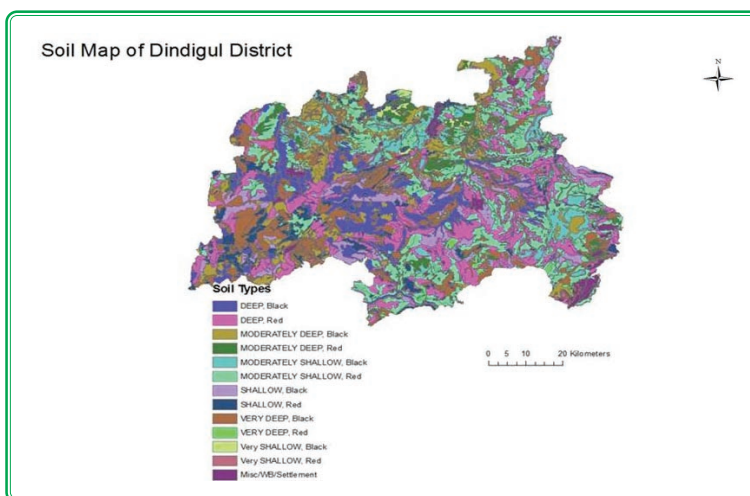
Season/ Situation	Rice	Sorghum	Pearl millet	Cotton	Sugarcane
<i>Khariif</i> - Rainfed	--	1 st week of June to 3 rd week of June	1 st week of June to 3 rd week of July	1 st week of June to 3 rd week of June	--
<i>Khariif</i> - Irrigated	1 st week of June to 1 st week of July	1 st week of June to 1 st week of July	1 st week of June to 1 st week of July	--	--
<i>Rabi</i> - Rainfed	--	2 nd week of October to 4 th week of October	2 nd week of October to 4 th week of October	2 nd week of October to 4 th week of October	--
<i>Rabi</i> -Irrigated	1 st week of October to 4 th week of October	--	--	1 st week of August to 3 rd August	1 st week of December to 4 th week of January

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars		
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)
(1)	(2)	(3)	(4)	(5)
Shallow / deep black soils	Cotton + Blackgram	Cotton + Blackgram	Pearl millet (CO-7, COCU-9)	Pearl millet (CO-7, COCU-9)
	Sorghum + Cowpea	Sorghum + Cowpea Cowpea: CO-6, COCP-7, VBN-2	Sunflower (CO-4, TCSH-1, Morden)	Sunflower (CO-4, TCSH-1, Morden)
	Maize	Maize (COMH-4,5, COBC-1)	Maize (COMH-5)	Coriander (CO-6)
	Greengram/ Blackgram/ Pigeonpea	Greengram/ Blackgram/ Pigeonpea Blackgram: VBN-1, 2, 3 Pigeonpea : CO(RG)-7, APK-1	Blackgram (VBN-1,2,3)	Minor millets
	Rice (Jun-Sep)- Rice (Oct-Jan)- Pulses (Feb-Apr)	Rice (Jun-Sep)- Rice (Oct-Jan)- Pulses (Feb-Apr)	Pulses/ Millets (Jun-Sep)-Rice (Oct-Jan)-Fallow	Maize/ Millets (Jun-Sep)-Pulses (Oct-Jan)

Dindigul District

Dindigul district falls under South agroclimatic zone (TN-6) in Tamilnadu. The district receives a mean annual rainfall of 836 mm of which 251 mm is received during south west monsoon and 399 mm in north east monsoon. The soil types in the district are red soils (see map). The district has an area of 139500 ha (58.1% of net sown area) under rainfed situation. The major crops cultivated in the district are maize, sorghum, rice, pulses and groundnut.



Normal sowing window for major field crops

Season/ Situation	Rice	Maize	Pulses	Groundnut	Sugarcane
<i>Kharif</i> - Rainfed	--	1 st week of June to 3 rd week of July	1 st week of June to 3 rd week of July	1 st week of June to 3 rd week of July	--
<i>Kharif</i> - Irrigated	2 nd week of July (<i>Kharif</i>) to 1 st week of August (<i>late Kharif</i>)	--	1 st week of June to 1 st week of August	--	--
<i>Rabi</i> - Rainfed	--	--	1 st week of December to 1 st week of January	--	--
<i>Rabi</i> -Irrigated	2 nd week of September to 2 nd week of October	--	2 nd week of December to 2 nd week of January	--	3 rd week of November to 4 th week of December

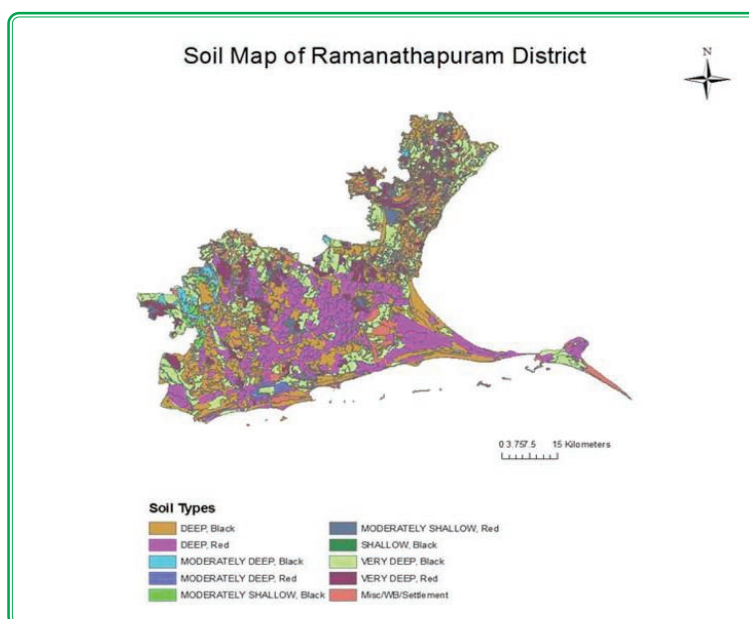
Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars		
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)
(1)	(2)	(3)	(4)	(5)
Deep red and moderately shallow red soils	Groundnut + Pigeonpea Groundnut: TMV-7,10, VRI-2,3,4, ALR-3 Pigeonpea : VBN-3	Groundnut + Pigeonpea Groundnut: TMV-7,10, VRI-2,3,4, ALR-3 Pigeonpea : VBN-3	Groundnut + Pigeonpea Groundnut: TMV-7,10, VRI-2,3,4, ALR-3 Pigeonpea : VBN-3	Groundnut + Pigeonpea Groundnut: TMV-7,10, VRI-2,3,4, ALR-3 Pigeonpea : VBN-3
	Groundnut + Maize	Groundnut + Maize Groundnut: TMV-7,10, VRI-2, 3, 4 Maize: HM-8, 10	Groundnut + Maize Groundnut: TMV-7,10, VRI-2, 3, 4 Maize: HM-8, 10	Groundnut + Maize Groundnut: TMV-7,10, VRI-2, 3, 4 Maize: HM-8, 10
	Groundnut	Groundnut: TMV-7,10,VRI-2	Groundnut: TMV-7,10,VRI-2	Groundnut: TMV-7,10,VRI-2
	Cowpea	Cowpea (COCT-7)	Cowpea (COCT-7)	Cowpea (VBN-3)
	Pigeonpea	Pigeonpea (VBN-3)	Pigeonpea (VBN-3)	Pigeonpea (CO-5,VBN-1,2,3)
	Blackgram	Blackgram (CO-5,VBN-1,2,3)	Blackgram (CO-5,VBN-1,2,3)	Blackgram (CO-5,VBN-1,2,3)
	<i>Rabi</i>	Normal onset of monsoon (2 nd week of Oct)	Delay by 2 weeks (4 th week of October)	Delay by 4 weeks (2 nd week of November)
Deep red and moderately shallow red soils	Maize	Maize (HM-8,10, COHM-4)	Maize (CO-1, COHM-4, COBC-1)	Maize (CO-1, COHM-4, COBC-1)
	Pigeonpea	Pigeonpea (CO-6,7)	Pigeonpea (APK-1,COPH-2, CORG-7)	Pigeonpea (APK-1,COPH-2, CORG-7)
	Blackgram (VBN-1, 2 ,3, 4)	Blackgram (VBN-1, 2 ,3, 4)	Blackgram (VBN-1, 2 ,3, 4)	Blackgram (VBN-1, 2 ,3, 4)

(1)	(2)	(3)	(4)	(5)
	Cowpea	Cowpea (PKM-1)	Cowpea (COCT-7)	Cowpea (COCT-7)
	Sunflower (TCSH-1, MFSH-17, CO-2, Morden)	Sunflower (TCSH-1, MFSH-17, CO-2, Morden)	Sunflower (TCSH-1, MFSH-17, CO-2, Morden)	Sunflower (TCSH-1, MFSH-17, CO-2, Morden)
	Rice (Oct-Jan)- Pearl millet/ Vegetables/ Sesame/ Pulses/ Groundnut (Feb-May)	Rice (Oct-Jan)- Pearl millet/ Vegetables/ Sesame/ Pulses/ Groundnut (Feb-May)	Maize (Aug-Nov)- Pulses/ Sesame (Dec-Mar)	Pulses/ Sesame/ Fodder sorghum/ Pearl millet (Aug-Feb)

Ramanathapuram District

Ramanathapuram district falls under South agroclimatic zone (TN-6) in Tamilnadu. The district receives a mean annual rainfall of 840 mm of which 136 mm is received during south west monsoon and 507 mm in north east monsoon. The soil types in the district are red and black soils (see map). The district has an area of 119900 ha (62.6% of net sown area) under rainfed situation. The major rainfed crops cultivated in the district are groundnut, blackgram, sorghum, sesame, greengram, cotton and irrigated crops are rice, cotton.



Normal sowing window for major field crops

Season/ Situation	Rice	Groundnut	Blackgram	Cotton
Rabi- Rainfed	2 nd week of September to 2 nd week of October	1 st week of October to 1 st week of November	1 st week of November to 4 th week of November	1 st week of January to 3 rd week of January
Rabi-Irrigated	3 rd week of October to 3 rd week of November	--	--	2 nd week of December to 4 th week of December

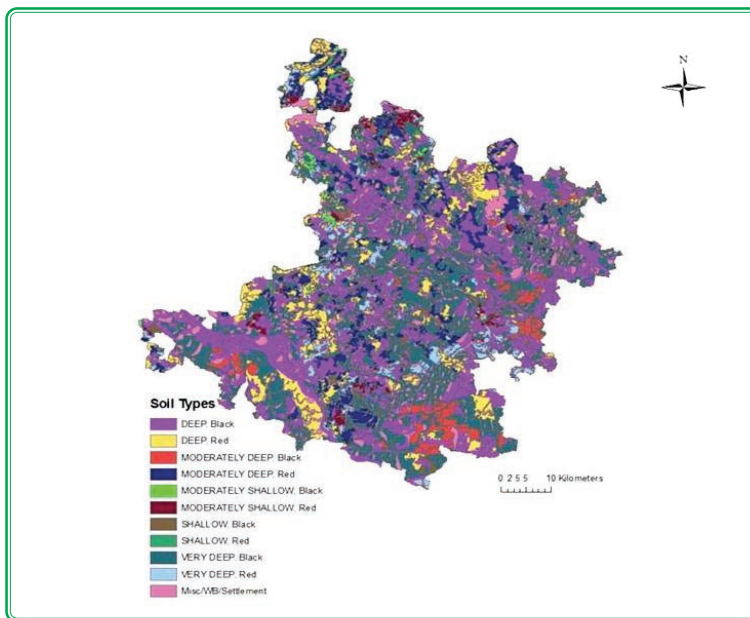
Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars		
	Normal onset of monsoon (1 st week of October)	Delay by 2 weeks (3 rd week of October)	Delay by 4 weeks (1 st week of November)	Delay by 6 weeks (3 rd week of November)
(1)	(2)	(3)	(4)	(5)
Red, black and laterite soils	Rice	Rice (MDU-5, ADT-36, 43, RH-1, ASD- 45, PMK- 3)	Rice (PMK-3, Anna- 4, RMD(R)-1, ADT- 36,43, 45)	Blackgram/ Greengram/ Cowpea grain/ Fodder cowpea Sorghum/ Fodder sorghum/ Pearl millet/ Fodder pearl millet/ Maize/ Finger millet/ Sunflower/ Annual Pigeonpea/ Sesamum/ Panivaragu/ Kudhiraivalli/ Watermelon Blackgram: VBN (Bg)-4, VBN- 5 Greengram: VBN (Gg)- 2

(1)	(2)	(3)	(4)	(5)
				Cowpea grain: CO- 2, VBN- 2, CO(CP)-7 Fodder Cowpea: CO-5, COFC- 8 Sorghum: CO-26, K-11, K Tall BSR-1, APK-1 Fodder Sorghum: CO-27, K-10 Pearl millet: CO-7, CO(Cu)-9, ICMV- 221 Fodder Pearl millet: CO-8 Maize: COH(M)-4, COBC-1 Finger millet: (CO-13, CO (Ra)-14 Sunflower: Morden, CO-4 Annual Pigeonpea: CPH- 2, CO(RG)-7, APK-1, VBN (RG)-3 Sesamum: TMV- 5,7, SVPR- 1, 2 Panivaragu: CO-4, K-2 Kudhiraivalli:CO-1 Coriander: CO (CR)-4 Watermelon: Sugar Baby, Arka Manik, Arka Jyoti, Pusa Bedana
	Groundnut	Groundnut (CO-3, COGn-4,5, VRI(Gn)-5, TMV-7, VRI-2)	Groundnut (TMV-7, VRI- 2)	- do -

Sivagangai District

Sivagangai district falls under South agroclimatic zone (TN-6) in Tamilnadu. The district receives a mean annual rainfall of 821mm of which 290 mm is received during south west monsoon and 416 mm in north east monsoon. The soil types in the district are red and black soils (see map). The district has an area of 34100 ha (29.8% of net sown area) under rainfed situation. The major rainfed crops cultivated in the district are groundnut, blackgram, sesame and irrigated crops are rice, sugarcane.



Normal sowing window for major field crops

Season/ Situation	Rice	Groundnut	Pulses	Sesame	Sugarcane
<i>Kharif</i> - Rainfed	2 nd week of July to 1 st week of August (late <i>Kharif</i>)	1 st week of June to 3 rd week of July	1 st week of June to 3 rd week of July	1 st week of June to 3 rd week of July	--
<i>Rabi</i> - Rainfed	2 nd week of September to 2 nd week of October	2 nd week of September to 2 nd week of October	--	--	--
<i>Rabi</i> -Irrigated	--	--	--	--	3 rd week of November to 4 th week of December

Contingency crop plan

Farming situation	Normal crop/ cropping system	Suggested contingency crops/ cropping systems and cultivars		
	Normal onset of monsoon (1 st week of June)	Delay by 2 weeks (3 rd week of June)	Delay by 4 weeks (1 st week of July)	Delay by 6 weeks (3 rd week of July)
(1)	(2)	(3)	(4)	(5)
Deep and very deep red soils	Groundnut	Groundnut + Pigeonpea (6:1) Groundnut: TMV-7, VRI-2, 3, JL-24 Pigeonpea: VBN-3	Groundnut + Pigeonpea(6:1) Groundnut: TMV-7, JL-24, VRI-2, 3 Pigeonpea: VBN-3	Groundnut/ Blackgram/ Greengram/ Sorghum/ Cowpea Groundnut: TMV-7, JL-24, VRI-2, 3 Blackgram: VBN-3, 5 Greengram: VBN-3 Sorghum: CO-26, 28, 30, K Tall, APK-1, Cowpea: CO-6,7
Deep and very deep black soils	Sesame	Sesame (TMV- 5, 7, SVPR- 1, 2)	Sesame (TMV- 5, 7, SVPR- 1, 2)	Sesame/ Sunflower/ Coriander Sesame: TMV-5, 7, SVPR-1, 2 Sunflower: Sunbred, K-2, Morden Coriander: CO-2, 3
	Rice	Rice (ADT-36, 37, 43, 45, PMK-3, MDU-5, ASD-16)	Rice (ADT-36, 37, 43, 45, PMK-3, MDU-5, ASD-16)	-

3.0. Contingency measures for mitigating impact of drought in standing crops

A. Early season drought during June and July

- Normal onset of monsoon followed by prolonged dry spell of 15 days or more immediately after sowing of *kharif* crops leads to poor germination. Sesame and millets sown at a shallow depth of 1 to 3 cm are the most affected followed by pulses, sunflower and sorghum which are sown at a depth of 3 to 5 cm. Germination failures are more common in lighter soils than in heavy soils.
- If the moisture stress occurs at a very early stage i.e., within a week to 10 days after sowing, it is recommended to resow with subsequent rains for better plant stand.
- Thinning of plants is advocated in small seeded crops which are closely planted, to reduce crop stand to conserve soil moisture
- Undertake interculture to break soil crust, remove weeds and create soil mulch for conserving soil moisture. Use organic mulches such as weed biomass, subabul lopping, tree leaves, straw and other available crop residue or organic manures to conserve soil moisture
- Avoid top dressing of fertilizers till sufficient moisture is available in soil.
- Make conservation furrows at 10 to 15 m intervals or adopt ridge and furrow across the slope for effective conservation of soil moisture as well as rainwater in bold seeded, dibbled and wide spaced crops (>30 cm) such as cotton, maize, pigeonpea and oilseed crops. In medium deep black soils of north interior Karnataka and Maharashtra, take up compartmental bunding (bunds of 15 cm height formed on all the four sides to form a check basin of 6 m x 5 m size) for better retention of soil moisture.
- In cotton sown in shallow and medium deep black soils in Maharashtra, Andhra Pradesh and Karnataka, pot watering may be taken up along with gap filling when the crop stand is less than 75%. In case of non-availability of hybrid cotton seed, gap filling may be done with pigeonpea in Maharashtra to maintain adequate plant stand. When germination is less than 30%, re-sowing may be taken up with a closer plant to plant spacing of 45 cm. Raising of cotton seedlings in polythene bags for transplanting when sufficient moisture is available after receipt of rains can be practiced to compensate loss in plant stand with seedlings of similar age.
- In northern dry zone of Karnataka, when the normal sown crops completely wither, sow alternate crops like sunflower, setaria, dolichos, horsegram soon after receipt of rains.

- In this zone after planting of *rabi* sorghum and safflower if the soil moisture is inadequate thin out the plant population.
- In Vidarbha, in sorghum, groundnut and chickpea spray 2% urea during prolonged dryspells.
- In Vidarbha region, in case of failure of *kharif* crops, take up sowing of photoinsensitive crops such as pearl millet, sunflower, sesame and pigeonpea once adequate rains are received.
- Provide micro-irrigation with drip for wide spaced crops such as cotton, maize, chillies and vegetables and sprinklers for groundnut, maize and vegetables wherever ground/ surface water is available.

B. Mid season drought during mid-July to mid-September

- Take up repeated interculture to remove weeds and create soil mulch to conserve soil moisture.
- During 40-45 DAS, if there is a severe moisture stress, ratooning or thinning may be done in *kharif* sorghum and pearl millet. Thinning by removing every third row in *rabi* sorghum in black soils of Maharashtra and Karnataka is advantageous.
- Avoid top dressing of fertilizers until receipt of rains.
- Make conservation furrows for moisture conservation.
- Foliar spray of 2% KNO₃ or 2% urea solution or 1% water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 to supplement nutrition during dry spells.
- Prepare shallow furrow while hoeing by tying ropes to prongs, which will provide soil support to plants and conserve soil moisture.
- Open alternate furrows in row crops such as soybean or furrows for every 6-8 rows of pigeonpea with Baram plough in medium to deep soils of Maharashtra. Open conservation furrows at 10-15 m interval in shallow to medium deep red and black soils.
- Adopt surface mulching with crop residue or tree loppings of *Glyricidia* wherever possible. If farm waste is not available, use blade to form a thin layer of soil mulch to avoid cracks.
- Apply 10 Kg N/ha in sorghum and oilseed crops soon after receipt of rains .
- Provide supplemental irrigation (10 mm depth) with harvested rain water in ponds by adopting micro-irrigation (sprinklers) wherever possible.

- Apply 2 sprays of Planofix 2 ml/ 9 lit of water at 45 and 55 DAS to prevent shedding of squares and small sized bolls in cotton grown in medium deep soils in north interior Karnataka. Practice topping to reduce transpirational losses or restrict excess growth by spraying growth regulator (NAA 4 ml/15 l of water) in cotton cultivated in medium to deep black soils.
- In medium to deep black soils and *rabi* cropping areas of Karnataka and Maharashtra, close the soil cracks by deep intercultivation in *rabi* sorghum and safflower.
- In castor and pigeonpea, if the drought affected plants to recoup with the revival of the rains, spray 2 to 3% urea after the foliage is wetted with the rains.
- In deep black soils of Vidarbha, the land may be tilled properly in case *khari* crop fails sow *rabi* crops like safflower, pigeonpea in september.
- In Madhya Maharashtra provide protective irrigation from the harvested water in farm pond or any other source, if available for eg: 5 cm to *rabi* sorghum during pre-boot stage (65-70 DAS).

C. Late season or terminal drought during mid-September to mid-October

- Give life saving or supplemental irrigation, if available, from harvested pond water or other sources.
- Harvest at physiological maturity with some realizable yield or harvest for fodder and prepare for *rabi* sowing in double cropped areas.
- In *rabi* sorghum and chickpea mixed/ intercropping in Bijapur region, uproot *rabi* sorghum.
- Ratoon maize or pearl millet or adopt relay crops as chickpea, safflower, *rabi* sorghum and sunflower with minimum tillage after soybean in medium to deep black soils in Maharashtra or take up contingency crops (horsegram / cowpea) or dual purpose forage crops on receipt of showers under receding soil moisture conditions.

4.0 Fodder production strategies during drought

In general, livestock farmers do not make special efforts for forage and pasture management during drought years. This leads to severe fodder crisis, which ultimately force distress sale of valuable animals for slaughter. Early season drought reduces the area under fodder crops, whereas mid season drought impacts fodder availability especially during lean period. Terminal drought has much less effect on fodder production but it affects the availability of seed material for the succeeding year. Most of the fodder crops can be revived with rain and subsequent fertilization. The most significant effect on fodder crops during drought conditions are reduced forage yields and more lignification due to low soil moisture. Further, grazing on such areas severely damages the crop stand and affects their revival even if some rains are received during later period.

It is essential to assess feed resources, supply and utilization of quantity and quality of feed stuffs as well as the nutritional requirements of animals for targeted increase in production through feeding and the measures required to provide better nutrition during drought. The critical need is to build up proper reserves against bad years, which come frequently and more or less in regular cycle. Moreover, it is necessary to achieve a good balance between feed production and feed requirement. This requires construction of Feed Balance Sheet which helps in knowing the shortage or surplus of feed supply in normal years so that strategies can be formulated for drought years. The goal is to obtain estimates of feed requirement and utilization on one side and feed availability/ resources on the other side.

Fodder requirement in peninsular India

To assess the fodder requirement, Adult Cattle Unit (ACU) of 350 kg body weight (Sastry, 1993) was considered to homogenize the species, breed, sex, age and production differences, besides taking into account the dry matter requirement per animal per day, as suggested by Banerjee (2000). Hence, the dry fodder requirement was estimated taking the dry matter requirement of 2.5 percent per ACU, i.e., 8.75 kg of dry matter per ACU, which would include 4.4 kg of dry fodder, assuming 10 percent moisture in the fodder.

Table 1. Fodder requirement on as such basis*

Particulars	Andhra Pradesh	Tamilnadu	Karnataka	Maharashtra
Total ACU	30,7,19,582	1,34,05,969	1,43,52,247	2,12,59,912
Dry fodder requirement (m tonnes)	48.56	21.19	22.68	33.61
Green fodder requirement (m tonnes)	107.05	46.71	50.01	74.08

*Based on 18th Livestock Census, 2010

Fodder supply in peninsular India

For green fodder, calculation of pasture grasses, green forage, silage crops, certain types of tree leaves and shrubs etc. were considered.

Table 2. Green fodder supply (2009-10)

	Andhra Pradesh	Tamilnadu	Karnataka	Maharashtra
Area under fodder crops (in '000 ha)	86	173	39	1001
Permanent Pastures and other grazing lands (in '000 ha)	566	110	914	1242
Land under miscellaneous tree crops and groves (in '000 ha)	295	253	288	250
Total Green Fodder (m tonnes)	4.307	7.382	2.6775	41.3465
Culturable waste lands (in '000 ha)	647	326	413	917

Green fodder production is estimated assuming an average per hectare yield of 1.5 tonnes from the forest areas, 0.75 tonnes from permanent pastures and grazing lands and 40 tonnes from cultivated areas.

Table 3. Dry fodder supply in Million tonnes (2009-10)

	Conversion Factor	Andhra Pradesh	Tamilnadu	Karnataka	Maharashtra
Cereals	2:1	13.86	7.31	9.84	10.22
Pulses	1.7:1	1.43	0.20	1.12	2.37
Oilseeds	2.5:1	1.50	0.94	1.01	2.81
Dry fodder Production		8.37	4.15	5.98	7.63

For dry fodder, production of various crops is projected using growth trends and crop residue production is estimated using standard conversion ratios for cereals, pulses and oilseeds. For dry roughages, harvested by - products like straw and chaff of cereals and pulses, hay which includes dry leguminous and non-leguminous grasses etc. were considered.

There is a huge gap between demand and supply of green as well as dry fodder in all the states of peninsular India. This necessitates a strategy to address the Hollow Gut Syndrome. Fodder deficit is mainly attributed to the limitations in increasing the area under cultivation, availability of quality seeds of varieties/hybrids, poor quality of dry fodder like paddy/wheat straw etc. Besides, low priority accorded to investment in fodder production, lack of post-harvest management for surplus fodder, poor management of grazing/pasture lands and inadequate research, extension and manpower support have only aggravated the situation.

Grazing conditions in the peninsular India have deteriorated partly due to the cyclical drought and also due to the increasing pressure on the land by ever increasing population. This means that whenever a drought occurs, the existing grazing resources are depleted very fast leading to livestock mortality due to starvation and opportunistic diseases. Thus, in every drought, pastoral households lose their livestock particularly cattle and small ruminants.

A multi-pronged strategy is essential to meet the fodder requirement of the region:

- Production of quality seeds (breeder and foundation seeds) of selected promising varieties/hybrids with participation of farmers.
- Organizing fodder production programme by promoting appropriate and region-specific varieties.
- Post-harvest management techniques like fodder block making units, chaff cutter for fodder processing and silage making.

Following are some fodder production strategies which can mitigate fodder scarcity to some extent in rural areas under drought conditions.

Intensive irrigated fodder production systems: High yielding perennial (hybrid Napier varieties like CO-3, CO-4, APBN-1 etc.) and multicut fodders varieties (MP Chari, SSG etc.) could be the fodder crops chosen under this system as it efficiently utilizes limited land resources and other agricultural inputs for getting maximum forage per unit area.

Intensive rainfed fodder production systems: Growing of two or more annual fodder crops as sole crops in mixed stands of legume (Stylo or cowpea or hedge lucerne etc.) and cereal fodder crops like sorghum, ragi in rainy season followed by berseem or lucerne etc., in *rabi* season in order to increase nutritious forage production round the year

Short duration fodder production from tank beds: Due to silt deposition, tank beds are highly fertile and retain adequate moisture in the soil profile for cultivation of short season fodder crops like sorghum and maize fodder.

Integrated fodder production systems: Fodder crops like *Stylosanthes hamata* and *Cenchrus ciliaris* can be sown in the inter spaces between the tree rows in orchards or plantations as hortipastoral and *silvipastoral* systems for fodder production.

Fodder production systems through alley cropping: Alley cropping is a system in which food/fodder crops are grown in alleys formed by hedge rows of trees or shrubs (*Leucaena leucocephala*, *Gliricidia*, *Calliandra*, *Sesbania* etc.). The essential feature of the system is that hedge rows are cut back at planting and kept pruned during cropping to prevent shading and to reduce competition with food crops. The main objective of alley cropping is to get green and palatable fodder from hedgerows in the dry season and produce reasonable quantum of grain and stover in the alleys during the rainy/cropping season. This calls for cutting back (lopping) of hedge rows during the dry season. A welcome feature of alley cropping is its ability to produce green fodder even in years of severe drought. At Rajkot in 1985, rainfall received during *kharif* season was only 30% of the normal. There was total failure of 3 legume crops tried in the system. In sole crop plots, production was limited to 0.5 – 1.7 t/ha of green fodder. However, in alley cropped plots, *Leucaena* hedge rows produced over 5t/ha of green fodder. Similar was the experience at the Anantapur Centre in 1984. The cropping season rainfall was only 144 mm as against the normal of 495 mm. All crops (groundnut, pigeonpea and sorghum) failed, and even stover production was severely affected. However, the *Leucaena* hedgerows produced 2 t/ha of dry leaf material. Thus, alley cropping systems can allay a part of the risk faced by small farmers in India.

Perennial non-conventional fodder production systems: Perennial deep rooted top feed fodder trees and bushes such as *Prosopis cineraria*, *Hardwickia binata*, *Albizia* species, *Zizyphus numularia*, *Colospermum mopane*, *Leucaena leucocephala*, *Azadirachta indica*, *Ailanthus excelsa*, *Acacia nilotica* trees and modified plants of cactus are highly drought tolerant and produce top fodder. Sowing of inter spaces of tree rows with drought tolerant grasses such as *C. ciliaris*, *C. setigerus* and *Lasirius indicus* etc., further enhance forage production from these systems.

Fodder production systems at homesteads: *Azolla*, a blue green algae which has more than 25 % crude protein and a doubling time of 5-7 days can be grown in pits in backyards depending on the number of milch animals owned by the farmer. *Azolla* yield is much more than the perennial fodder varieties like APBN-1/CO-3 etc and is around 1000 MT per ha at the rate of 300 gm/sq.m/day even after taking into account of unused space between two beds. It is more nutritious than the leguminous fodder crops like lucerne, cowpea, berseem etc and can be fed to cattle, buffalo, sheep, goat and also poultry after mixing with concentrate mixture in the ratio of 1:1:1

Hydroponic Fodder Production Systems: Fodder can be produced in large quantities within 8 days from seed to grass for all livestock. These include, barley, oat, lucerne and rye grass. Growing grass fodder systems hydroponically is now becoming popular in drought prone areas. Hydroponic fodder production however requires large investment in the form of a commercial greenhouse, continuous supply of water and power.

Year-round forage production systems: It refers to cultivation of a combination of suitable perennial and annual forages for year round nutritious fodder supply for the livestock using limited water resources. It consists of growing annual leguminous fodders like cowpea or horsegram etc inter-planted with perennial fodders like Co-3, CO-4, APBN-

1 varieties of Hybrid napier in *kharif* and intercropping of the grasses with berseem, lucerne etc., during *rabi* season.

Table 4 . Normal sowing window for different fodder crops in the Peninsular India

Fodder crop	Normal sowing window
Sorghum (single cut)	June-July
Sorghum (multicut)	March-April
Pearl millet (single cut)	June-July
Pearl millet (multi cut)	March-April
Fodder maize (single cut)	March-April
Lucerne	September-October
Berseem	October
Cowpea (<i>kharif</i> crop)	June-July
Cowpea (Summer crop)	March-April

Contingency plan for fodder production

Early season drought: Short to medium duration cultivated fodder crops like sorghum (Pusa Chari Hybrid-106 (HC-106), CSH 14, CSH 23 (SPH-1290), CSV 17 etc) or Bajra (CO 8, TNSC 1, APFB 2, Avika Bajra Chari (AVKB 19) etc., or Maize (African tall, APFM 8 etc.,) which are ready for cutting by 50-60 days and can be sown immediately after the rains under rainfed conditions in arable lands during *kharif* season. If normal rain occurs during later part of the year, *rabi* crops like Berseem (Wardan, UPB 110 etc varieties) or Lucerne (CO 1, LLC 3, RL 88 etc.) can be grown as second crop with the available moisture during winter. In waste lands, fodder varieties like Bundel Anjan 3, CO1 (Neela Kalu Kattai), *Stylosanthes scabra* etc. can be sown for fodder production. Under irrigated conditions, intensive forage sequences recommended for Southern region may be followed

- Sorghum + Cowpea (3 cuts) – Maize + Cowpea – Maize + Cowpea.
- Hybrid Napier or Guinea or Setaria grass intercropped with Lucerne (8-9 cuts) or Hybrid Napier + Subabul / Sesbania (9-11 cuts/year).
- Sudan grass + Cowpea (3 cuts) – M.P. Chari + Cowpea (3 cuts).
- Para grass + Centro (*Centrosema pubescens*) (9-11 cuts/year).

Mid season drought: Suitable fodder crops of short to long duration as mentioned in Table 5. may be sown in *kharif* under rainfed conditions. Mid season drought affects the growth of the fodder crop. Once rains are received in later part of the season the crop revives and immediate fertilization helps in speedy recovery. If sufficient moisture is available, *rabi* crops like berseem (Wardan, UPB 110 etc varieties), lucerne (CO 1, LLC 3, RL 88 etc.,) can be grown during winter. In waste lands fodder varieties like Bundel Anjan 3, CO1 (Neela Kalu Kattai), *Stylosanthes scabra* etc., can be sown for fodder production.

Table 5. Fodder varieties suitable for Peninsular India

Crop/variety	Year of release/ notification	Source of Breeder seed	Recommended area of cultivation
Cultivated fodder-legumes			
Berseem / Egyptian clover			
Mescavi	1975	CCS HAU, Hisar	Entire growing area
Wardan	1981	IGFRI, Jhansi	Entire growing area
UPB 110	1993	GBPUA&T, Pantnagar	Southern zone
Lucerne			
T 9 (Type 9)	1978	CCS HAU, Hisar	Entire growing area
CO 1	1980	TNAU, Coimbatore	Tamil Nadu , Karnataka
LLC 3	1985	PAU, Ludhiana	Entire growing area
RL 88	1991	MPKV, Rahuri	All India
Cowpea			
UPC 5286	1981	GBPUA.&T, Pantnagar	All India
CO 5	1986	TNAU, Coimbatore	Tamil Nadu
Sweta (No. 998)	1987	MPKV, Rahuri	Maharashtra
UPC 287	1989	GBPUA&T, Pantnagar	All India
Bundel Lobia 1 (IFC 8401)	1992	IGFRI, Jhansi	All India
UPC 8705	1996	GBPUA&T, Pantnagar	All India
DFC 1	1996	UAS, Dharwad	Maharashtra
UPC- 625	2009	GBPUA&T, Pantnagar	All India (mixed/ intercropping with sorghum, maize, bajra.)
Guar/ Clusterbean			
Bundel Guar (IGFRI 1019-1)	1999	IGFRI, Jhansi	Arid and semi-arid regions of the country
Lablab bean			
Bundel Sem (JLP 4)	1993	IGFRI, Jhansi	All India
Cultivated fodder-cereals			
Jowar (Sorghum)			
Ruchira	1982	MPKV, Rahuri	Maharashtra
HC 136	1982	CCS HAU, Hisar	All India

MP Chari	1985	JNKVV, Jabalpur	All India
HC 260	1987	CCS HAU, Hisar	All India
HC 171	1987	CCS HAU, Hisar	All India
CSH 13 R Hybrid	1991	NRC Sorghum, Hyderabad	Maharashtra
CSV 15	1992	NRC Sorghum, Hyderabad	Maharashtra
MFSH 3	1993	Maharashtra Hybrid Seed Co.	All India
Pusa Chari Hybrid-106 (HC-106)	1997	IARI, New Delhi	Western Maharashtra during <i>Kharif</i> and summer seasons
SPV 669	1998	PRKVP, Akola	Maharashtra
Safed Moti (FSH 92079)	1999	Pro Agro Seed Co., Aurangabad	Sorghum Tract in South India
SSV 74	2000	UAS, Dharwad	South Zone
Double cut			
CO 27	1986	TNAU, Coimbatore	Tamilnadu
Multicut			
Ruchira Maldandi	1982	MPKV,Rahuri	Maharashtra
Proagro Chari (SSG-988):	1991	Proagro Seed Co. Ltd, Aurangabad	Andhra Pradesh, Tamilnadu and Maharashtra
Harasona 855	1994	Pro Agro Seed Co., Aurangabad	Maharashtra
Pant Chari-5	1999	GBPUA&T, Pantnagar	<i>Kharif</i> sorghum growing (UPFS-32) areas of Andhra Pradesh, Maharashtra and Tamilnadu for fodder under irrigated conditions in summer
COFS- 29	2001	TNAU, Coimbatore	Tamilnadu under irrigated conditions
Bajra (Pearl millet)			
Giant Bajra	1980	Rahuri, MPKV	All India
Raj Baira Chari 2	1990	Jobner, RAU	Entire growing area

CO 8	1992	TNAU, Coimbatore	Entire growing area
TNSC 1	1995	TNAU, Coimbatore	Entire growing tract
APFB 2	1997	ANGRAU, Hyderabad	South Zone
Avika Bajra Chari (AVKB 19)	2006	IGFRI-RRS, Avikanagar	Entire growing tract
Maize			
African tall	1981	MPKV, Rahuri	All India
APFM 8	1997	ANGRAU, Hyderabad	South Zone (<i>kharif & rabi</i>)
Cultivated fodder-grasses			
CO 1	1982	TNAU, Coimbatore	Tamilnadu, Andhra Pradesh, Karnataka
NB 21	1987	New Delhi, IARI	All India
Yeshwant (RBN 9)	1987	MPKV, Rahuri	Maharashtra
Pusa Giant	1990	New Delhi, IARI	All India
CO 2	1991	TNAU, Coimbatore	All India
CO 3	1996	TNAU, Coimbatore	South Zone
KKM 1	1999	TNAU, Coimbatore	South Zone
APBN 1	2001	ANGRAU, Hyderabad	Andhra Pradesh and North-west India
CO4	2006	TNAU, Coimbatore	South Zone
Sampoorna (DHN 6)	2009	RRS, Dharwad of IGFRI, Jhansi	Karnataka state under irrigated conditions
Guinea grass			
PGG 14	1988	PAU, Ludhiana	All India
Haritha	1990	KAU, Vellayani	Kerala
Marathakam	1993	KAU, Vellayani	South Zone
CO 1	1993	TNAU, Coimbatore	Tamil Nadu
CO 2	2000	TNAU, Coimbatore	Tamil Nadu
Bundel Guinea 2	2008	IGFRI, Jhansi	All India
Dinanath grass			
Bundel 1	1987	IGFRI, Jhansi	All India
Bundel 2	1990	IGFRI, Jhansi	All India
CO 1	1995	TNAU, Coimbatore	Tamilnadu
TNDN 1	1996	TNAU, Coimbatore	Tamilnadu

IGFRI 4-2-1	1987	IGFRI, Jhansi	All India
IGFRI 43-1	1988	IGFRI, Jhansi	All India
Range species-Legumes			
<i>Stylosanthes scabra</i>	1991	TNAU, Coimbatore	Tamilnadu
Anjan grass			
Bundel Anjan 1	1989	IGFRI, Jhansi	Arid & Semi-arid regions
CO 1	1989	TNAU, Coimbatore	Tamilnadu
CO 1 Neela Kalu Kattai	1991	TNAU, Coimbatore	Tamilnadu & other semiarid areas
Bundel Anjan 3	2006	IGFRI ,Jhansi	North-west, West & South India
Sain Grass			
Bundel Sen Grass (IGS 9901)	2007	IGFRI, Jhansi	All India
Dhawal grass			
Bundel Phulkara Ghas 1 (IGC 9903)	2007	IGFRI, Jhansi	All India
Motha dhaman (birdwood grass)			
Black Kolukattai	-	IGFRI, Jhansi	Arid and semi-arid
Marwar Dhaman (CAZRI-175)	-	CAZRI, Jodhpur	regions of India

Source : Forage crop varieties, Indian Grassland and Fodder Research Institute (IGFRI) and Web sources.

Late season drought: As late season drought affects seed setting, normal short duration fodder crops may be sown. Avoid multicut fodder varieties under rainfed conditions. All the available fodder must be harvested before drying-out to preserve nutritive quality. Depending on availability of moisture, *rabi* fodder crops especially low water requiring varieties of lucerne may be planted. Normal intensive foddere systems may be followed under irrigated conditions.

Augmenting green fodder when rains fail during *kharif* :

In case of complete or major failure of grain crops in *Kharif*, contingency strategies for ensuring fodder supplies include:

- Available stover from cereals may be preserved as hay and fields may be re-sown with short to medium duration fodder varieties of millets, pulses or forage crops such as:

- Sorghum - varieties / hybrids CSV-17 and CSH 14 in red soils; CSH 16, CSH 18 and CSH 21 in black soils
- Bajra - short duration varieties like Rajko, JB, PSB-2, GHB-526, HHB-67, ICMH-356, Shraddha, GK-1004 or medium duration varieties like GHB-558, Proagro-9443 and for late assured rainfall areas in light to medium soils of Marathwada region varieties like AHB-251
- Finger millet - medium duration varieties like GPU 28, PR 202, HR 911 and Pusa Composite 612, MP 480 for second fortnight of July to first fortnight of August; short duration varieties: GPU 26, GPU 45, GPU 48 and Indaf 9 for late sown conditions from second fortnight of August to 20th September
- Maize - African tall, APFM 8, PEHM-3 and FH-3077 which produce some grain and fodder
- Intercropping cowpea - varieties like Bundel Lobia-1, CO 5, CO (FC) 8, IFC 8401, UPC 8705, DFC 1 and UPC- 625 after 8 to 10 rows of finger millet
- *Rabi* fodder crops like berseem (Mescavi, Wardan, UPB 110), lucerne (CO 1, LLC 3, RL 88) should be sown in arable lands and tank beds.
- Current fallows should be used for fodder production by sowing short duration varieties of sorghum or bajra or ragi or maize or cowpea in *kharif* season and or berseem or lucerne in *rabi* season.
- In wastelands, grasses like *C. ciliaris*, *C. setigerus*, *Chloris gayana*, *Panicum maximum*, *Desmanthus virgatus*, *S. scabra* can be taken up to increase forage production.
- In areas that receive north east monsoon rains, multi-cut fodder varieties of sorghum (CO 27, Pant Chari-5 (UPFS- 32), COFS- 29 or pearl millet (Co-8) or maize (African tall) are recommended
- In areas that receive summer rains, fodder crops like cowpea and maize are recommended

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