भारतीय कृषि
ICAR
INDIAN COUNCIL OF
AGRICULTURAL RESEARCH

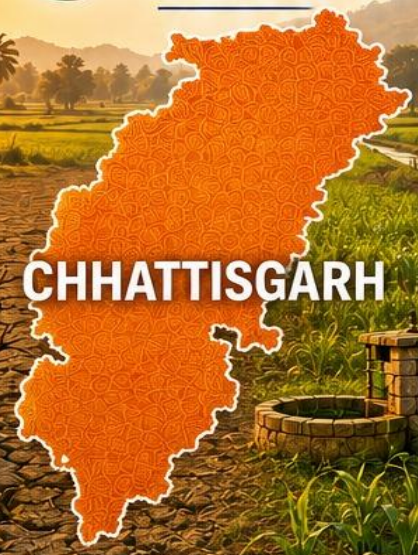
DISTRICT WISE
CONTINGENCY PLAN
TO DEAL WITH
EL NIÑO

PREPAREDNESS | RESPONSE | RESILIENCE

BUILDING A
DROUGHT RESILIENT
CHHATTISGARH


PADDY


MAIZE



EARLY WARNING & MONITORING | WATER MANAGEMENT | SUSTAINABLE AGRICULTURE | COMMUNITY PARTICIPATION

TOGETHER, LET'S BUILD A RESILIENT CHHATTISGARH

PREPARE TODAY • PROTECT TOMORROW • PROSPER TOGETHER

Chhattisgarh

Chhattisgarh, located in central India, is predominantly an agrarian state, with a large majority of its population depending on farming and allied activities for their livelihood. Often referred to as the "rice bowl of central India" of the country, the state is renowned for its rich diversity of indigenous rice varieties and remains one of the leading rice-producing regions in India. The state's varied agro-climatic conditions, ranging from the fertile alluvial plains of the Mahanadi river basin to the red and yellow soils of the plateau and hilly tracts in Bastar and Surguja, support a range of cropping patterns. During the kharif (monsoon) season. Most farmers are small and marginal landholders, and agriculture is largely dependent on the southwest monsoon due to limited irrigation facilities. Consequently, agricultural productivity is greatly influenced by the timing and distribution of rainfall.

Chhattisgarh has diverse agro-climatic zones, fertile alluvial and red-lateritic soils, and a tropical climate that supports the cultivation of a wide variety of crops. Paddy (rice) is the principal crop and occupies the largest share of the cultivated area during the kharif season. Other important crops include maize, wheat, pulses, oilseeds, millets, and various cash crops. The state also has significant potential for horticulture, producing fruits such as mango, guava, banana, papaya, and custard apple, along with vegetables like tomato, brinjal, chilli, onion, and potato. The favorable climate also supports the cultivation of spices, medicinal plants, and floriculture.

Despite its agricultural importance, the sector faces several challenges, including dependence on erratic monsoon rainfall, low irrigation coverage in many regions, fragmented landholdings, soil degradation, inadequate storage and marketing facilities, and limited adoption of modern agricultural technologies. These factors often lead to low productivity and unstable farm incomes.

Historical impact of El Nino in Chhattisgarh

El Niño had a significant impact on the agriculture and water resources of the state, primarily by weakening the southwest monsoon and causing below-normal rainfall. Since agriculture in the state is largely rain-fed, deficient and uneven rainfall during El Niño years has adversely affected crop production, especially paddy, the state's principal crop. Historical El Niño events such as 1982–83, 1987, 1997–98, 2002, 2009, 2015–16, and 2023–24 was associated with delayed monsoon onset, prolonged dry spells, and rainfall deficits in many parts of Chhattisgarh.

The 2002 and 2009 El Niño events caused severe drought conditions, resulting in reduced paddy cultivation, lower crop yields, and substantial agricultural losses. The strong 2015–

16 El Niño also affected monsoon rainfall, leading to moisture stress, poor crop growth, and reduced water availability for irrigation. During these years, many farmers experienced delayed sowing, crop failure in rain-fed areas, and decreased agricultural income. Water scarcity also affected livestock, fisheries, and domestic water supplies due to declining reservoir levels, groundwater recharge, and river flows.

The impact of El Niño has been particularly severe for small and marginal farmers, who depend heavily on seasonal rainfall for cultivation. Reduced agricultural production has led to income losses, increased indebtedness, and seasonal migration in some drought-prone districts.

Effect on major crops

Paddy (Rice): Paddy is the most affected crop because of its high water requirement. Delayed monsoon, inadequate rainfall, and prolonged dry spells reduce nursery establishment, transplanting, grain filling, and overall yield.

Maize: Low soil moisture during germination and flowering causes poor plant growth, reduced cob formation, and lower grain yield.

Pulses: Crops such as pigeon pea (arhar), black gram (urd), green gram (moong), and chickpea experience reduced flowering, pod formation, and seed development due to moisture stress.

Oilseeds: Groundnut, soybean, sesame, and mustard suffer from poor germination, reduced seed filling, and lower oil content because of insufficient rainfall.

Millets: Millets such as kodo millet, little millet, and finger millet are relatively drought tolerant but may still experience reduced growth and lower yields under prolonged dry conditions.

Vegetables: Crops like tomato, brinjal, chilli, onion, and potato require regular water supply. Water scarcity reduces growth, fruit development, quality, and overall productivity.

Horticultural Crops: Mango, guava, banana, papaya, and custard apple are affected by moisture stress, leading to flower and fruit drop, smaller fruits, and reduced yields

Contingency plans for major crops in Chhattisgarh

Crop	Problems During El Niño	Contingency Plan
Paddy (Rice)	Delayed monsoon, moisture stress, poor transplanting, low yield	Use short-duration and drought-tolerant rice varieties, adopt direct seeding or delayed transplanting, practice the System of Rice Intensification (SRI), provide life-saving irrigation, and harvest rainwater.
Maize	Poor germination, stunted growth, reduced cob formation	Sow early-maturing drought-tolerant varieties, adopt ridge and furrow planting, apply mulching, and ensure timely weed and nutrient management.
Pulses	Reduced flowering, pod formation, and seed yield	Grow drought-tolerant varieties, practice timely sowing, adopt intercropping with cereals, and conserve soil moisture through mulching and field bunding.
Oilseeds	Poor germination, low seed development, reduced oil content	Cultivate drought-tolerant crops such as soybean, sesame, and mustard, ensure timely sowing, apply balanced fertilizers, and adopt moisture conservation practices.
Millets	Moisture stress, reduced growth, and lower yield	Promote drought-resistant millet varieties, practice timely sowing, use moisture conservation techniques, and encourage mixed cropping.
Vegetables	Water stress, poor growth, lower quality, and reduced yield	Use drip or sprinkler irrigation, grow short-duration varieties, apply organic mulching, and adopt Integrated Pest Management (IPM).
Horticultural Crops	Flower and fruit drop, poor fruit development	Install drip irrigation, harvest rainwater, mulch around fruit trees, prune damaged branches, and provide protective irrigation during dry spells.

Agriculture plays a crucial role in the economy and livelihoods of the people of Chhattisgarh. However, the state's heavy dependence on monsoon rainfall makes it highly vulnerable to El Niño-induced climate variations. Historical El Niño events have caused rainfall deficits, drought conditions, water scarcity, and reduced productivity of major crops, especially paddy. Other crops such as maize, pulses, oilseeds, millets, vegetables, and horticultural crops have also suffered due to moisture stress and irregular rainfall.

To minimize the impact of El Niño, adopting climate-resilient agricultural practices is essential. The use of drought-tolerant crop varieties, improved irrigation systems, rainwater harvesting, soil moisture conservation, crop diversification, and timely weather advisories can help farmers manage climate risks. Strengthening agricultural infrastructure and promoting sustainable farming practices will improve the resilience of Chhattisgarh's agriculture. These measures will support stable crop production, enhance farmers' incomes, and contribute to long-term agricultural development in the state.

Area under major crops

Crop	Area (lakh ha)
Paddy	39.05
Maize	1.11

Districts vulnerable to El Nino

Highly	Medium	Low
Sukma, Narainpur, Balarampur, Bijapur, Korba, Koriya, Bastar, Kondagaon, Surajpur, Surguja	Raj Nandgaon, Kawardha (Kabeerdham)	Nil

Actionable Comprehensive Plans for Contingency

State	CHHATTISGARH	District	BALARAMPUR

Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	1000.4	More than 19%	Less than 810.324
June	138.5		
July	313.6		
August	293.9		
September	254.4		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	2927	Gross irrigated area:	5285
Net Rainfed area	146479	Gross rainfed area	153183

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	742	963
Wells	584	890
Tanks	542	956
Other sources	1059	2476

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	98633	14	98619
2	Jowar	7	-	
3	Maize	33662	146	33516
4	Bajra	50		50
5	Ragi	122		122

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	3323		3323
2	Groundnut	515		515
3	Sesamum	4095		4095
4	SOyabean	1		1
5	Sunflower	-		
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	-		
2	Jute	3		3
3	Mesta	1		1
4	Sunhemp	262		262

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	1189	1189	0
2	Tobacco	1	1	0
3	Guar seed	-		
4	Other Fodder crops	-		

Onset of monsoon between 16 – 31 July

Major Farming situation	**Crops to be sown**	**Agronomic measures**
1) Upland	**Rice**- anjali, purnima, annda, Indrabarani dhan-1	Deep summer ploughing, Direct Seeding of Sprouted rice seed under puddled condition Increase seed rate by 20 %, weed management by post emergence herbicide
	Pegionpea-UPAS-120, Rajivlochan, ICPL-151, ICPL-87	Proper Spacing with recommended dose of fertilizer & seed Inoculation with Rhizobium culture and weed management
	Urd- JU-2,JU-3,PDU-1TAU-2,TU-94-2	Proper Spacing with recommended dose of fertilizer & seed Inoculation with Rhizobium culture
	Moong-Pusa Vishal,BM-4,HUN-12,Pragya,Pairi Moong	Proper Spacing with recommended dose of fertilizer & seed Inoculation with Rhizobium culture
	Niger- GA-10, JNC-6, JNC-1, IGP-76	Broadcasting with recommended dose of fertilizer, seed treatment

	Horse gram – BK-1, NK-21, JND-2	Line sowing with recommended dose of fertilizer, Seed treatment, weed management by pre emergence herbicide
	Sesame-selection-5,TC-25,JT-21	Line sowing & seed Inoculation with Rhizobium culture, weed management by pre emergence herbicide
2) Midland	**Rice**-Sawarna,MTU-1010, Samleswari, Danteswari, Purnima, Indra Barani dhan -1, Chandrahasni, Karma Masuri, PA-6444, PHB-71, KRH-1, Indira sona	Deep summer ploughing, Grow short and medium duration variety Direct Seeding of Sprouted rice seed under puddled condition Weed management by post emergence herbicide
3) Low land	**Rice**-Sawarna Bambleshwari, Danteswari, Karma masuri, Mahamaya, IGKV R-1, IGKV R-2	Deep summer ploughing, Grow short and medium duration variety Direct Seeding of Sprouted rice seed under puddled condition, seed treatment by fungicide, Weed management by post emergence herbicide

Common Weed associated in Upland and Low land crops

Upland crops weeds	Ageratum conyzoides, Celosia argentea, Echinochloa Spp., Euphorbia hirta, Eclipta alba, panicum spp., Cyperus spp., cynodon dactylon, Achyranthes aspera, Amaranthus spp., Anagallis Arvensis, Argemone mexicana, Avena fatua, Dactyloctenium aegyptium, Saccharum Spontaneum, Tribulus terrestris
Lowland crops weeds	Echinochloa, Cyperus, Eichhornia crassipes, Oxylis

Weed control measures

Crops	**Pre emergence**	**Post emergence**
Rice	Pyzerosulfuron @ 20g/ha	Fenoxy prop ethyl @ 80 ml/ha Almix@ 4 g ai/ha, Bis pyribac sodium@40g/ha
Maize	Atrazine @1.5 kg/ha Pendimethalin @1 L/ha	
Pigeon pea	Pendimethalin @ 1 L/ha Fluchloralin @ 0.75 to 1 L/ha	Imazathapyr
Urd	Pendimethalin @ 1 L/ha Fluchloralin @ 0.75 to 1 L/ha	
Horse gram	Pendimethalin @ 1 L/ha Fluchloralin @ 0.75 to 1 L/ha	
Sesame	Pendimethalin @ 1 L/ha Fluchloralin @ 0.75 to 1 L/ha	
Niger	Pendimethalin @ 1 L/ha Fluchloralin @ 0.75 to 1 L/ha	
Groundnut	Pendimethalin @ 1 L/ha Fluchloralin @ 0.75 to 1 L/ha	
Sugarcane	Atrazine @1.5 kg/ha Pendimethalin @1 L/ha	2,4-D @ 1 kg/ha Atrazine @
Horticulture		
Potato	Pendimethalin @ 1 L/ha Fluchloralin @ 0.75 to 1 L/ha	Fenoxy prop ethyl + chlorimuron Ethyl @ 80 + 4 g/ha

Tomato	Pendimethalin @ 1 L/ha Fluchloralin @ 0.75 to 1 L/ha	

Outbreak of diseases and control measures

Outbreak of diseases and control measures	**Vegetative stage**	**Flowering stage[l]**	**Crop maturity stage**	**Post harvest**
Rice	Leaf blast (Spray Propiconazole @ 1 ml/liter of water	Sheath blight (Spray Validamycin @ 3 g/liter)	Neck blast (Spray Propiconazole 1 ml/liter of water	-
Maize	Leaf blight (Hexaconazole @ 1 ml/liter)	Banded leaf and sheath blight (Validamycin 3 g/liter)	Banded leaf and sheath blight (Validamycin 3 g/liter)	-
Pigeon pea	Sterility mosaic (Hand weeding)	Wilt of pigeon pea (Seed treatment with fungicide before sowing)	-	-
Urd	Yellow mosaic (Imedachloprid 4 ml/15liter)	Yellow mosaic (Imedachloprid 4 ml/15liter)	-	-
Groundnut	Tikka disease of groundnut (Carbendazim 1 gm/liter)	Bud necrosis of groundnut (Imedachloprid 4 ml/15liter)	-	Aspergillus rotting of seeds
Sugarcane	Whip Smut of sugarcane (Healthy sugarcane sets)	Red rot of sugarcane (Healthy sugarcane setts, Sett treatment with fungicide/hot water during planting)	Red rot of sugarcane (Healthy sugarcane setts, Sett treatment with fungicide/hot water during planting)	-
Horticulture				
Potato	Late blight of potato (seed treatment, spray of Metalaxyl 500 ppm)	Late blight of potato (spray of Metalaxyl 500 ppm)	Bacterial wilt of potato (hand weeding of affected plants)	-
Tomato	-do-	-do-	-do-	-

Condition: Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period) at vegetative stage

		Suggested Contingency measures		
Major Farming situation	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measues**	**Remarks on Implementation**
1) Upland	Rice-Fallow Vr. Local Pegionpea -Fallow: variety - Mainpat local Maize – Fallow : variety. hybrid & local Fallow- Horse Gram/Niger/Toriya Vr. Local Groundnut -Fallow Variety- local	1) Thinning (Lower the plant population per unit area) 2) Life saving irrigation 3) .Protection against diseases and pests	1)Inter cultivation (soil Mulching) Conservation furrow 2. Life saving Irrigation 3. Opening of conservation furrows Construction of check dam/ culvert, perennial nalas bandhan for water harvesting. 4. Spray of 2% urea in paddy.	1)Supply of Inter cultural Implements through RKVY 2) Farm pond through IWSM programme 3) Seed supply through seed corporation
2) Midland	Rice-Fallow	1)Conserve water in crop field 2)Life saving irrigation if facility available		
3) Low land	Rice-Fallow Rice-linseed/Lathyrus/pea/lentil			

Condition: Mid season drought (long dry spell at flowering/ fruiting stage)

		Suggested Contingency measures		
Major Farming situation	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**
1) Upland	Rice-Fallow Vr. Local	1) Weeding and Weed mulching 2) Life saving irrigation 3) Could be harvested for fodder purpose 4) Protection against diseases and pests 5) Earthing and inter cultural operation	1. Life saving Irrigation 2. Rainwater conserve during kharif by construction of check dam/ culvert, perennial nalas bandhan for water harvesting.	1) Farm pond through IWSM programme
	Pegionpea -Fallow: variety - Mainpat local			
	Maize-Fallow: variety. hybrid & local			
	Fallow- Horse Gram/Niger/Toria Vr. Local			
	Groundnut -Fallow Variety- local			
2) Midland	Rice-Fallow	1) Life saving irrigation &weeding and weed mulching 2)Could be harvested for fodder purpose		
3) Low land	Rice-Fallow			
	Rice-linseed/Lathyrus/pea/lentil			

Condition: Terminal drought (Early withdrawal of monsoon)

Major Farming situation	**Normal Crop/cropping system**	**Crop management**	**Rabi Crop planning**	**Remarks on Implementation**
1) Upland shallow red soils	Rice-Fallow Vr. Local	For precautionary measures use early and medium variety	1)Make a plan for Early sowing of Niger ,Hourse gram, Toria	
	Pegionpea -Fallow: variety - Mainpat local			
	Maize-Fallow: variety. hybrid & local			
	Fallow- Horse Gram/Niger/Toriya Vr. Local			
	Groundnut -Fallow Variety- local			
2) Midland Yellow Red soil	Rice-Fallow	1. Life saving Irrigation 2. Rainwater conserve during kharif for rabi	1)Make plan for Utera cultivation of linseed,Lathyrus, lentil, Toria	
	Rice-Wheat			
3) Low land Yellow soil	Rice-linseed/Lathyrus/pea/lentil			

2.1.2 Drought - Irrigated situation

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delayed release of water in canals due to low rainfall	low land tube well, canal irrigated red& yellow soil	Rice (low land Condition)	**Aerobic Rice** **Wheat**,- GW-366, GW-273, GW173,DL-788-2,C-306 **Mustard**-Varun,Pusa bold, varun,vardan,Pusa jai Kisan **Gram**-JG-74,JG-315,vaibhav **Pea-** Ambika, Subra, Paras, Rachna **Utera cultivation** – Linseed/lethyrus	1) limited Irrigation 2) Alternate Furrow irrigation 3)Sprinkler Irrigation 4) weed management	• intercultural by touchi, wheel hoe • Seed supply through seed corporation • Linkage with state agril. Engg. Dept. for supply of tractor and animal drawn seed drill for line sowing

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Limited release of water in canals due to low rainfall	low land tube well, canal irrigated red& yellow soil	Rice-Rice	**Aerobic Rice** **Wheat,**- GW-366, GW-273,GW173,DL-788-2,C-306 **Mustard**- Varun,Pusa bold, varun,vardan,Pusa jai Kisan **Gram**-JG-74,JG-315,vaibhav **Pea-** Ambika, Subra, Paras, Rachna **Utera cultivation** – Linseed/lethyrus	1)Transplanting SRI system 2) limited irrigation at critical crop stage 3)Sprinkler Irrigation 4) weed management	• Linkage with MNREGA for WC measures: Digging of shallow dug wells and renovation of existing WHSs • Utilize harvested rain water of WHS in crop production by adopting drip system or sprinklers that may be converged from micro irrigation scheme of Agriculture Department
Non release of water in canals under delayed onset of monsoon in catchment	low land tube well, canal irrigated red& yellow soil	Rice-Rice	**Aerobic Rice** Wheat,- GW-366, GW-273,GW173,DL-788-2,C-306 **Mustard**- Varun,Pusa bold, varun,vardan,Pusa jai Kisan **Gram** -JG-74,JG-315,vaibhav **Pea-** Ambika, Subra, Paras, Rachna **Utera cultivation** – Linseed/lethyrus	1)limited irrigation 2) Alternate furrow Irrigation 3) Sprinkler Irrigation 4) weed management	
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	low land tube well, canal irrigated red& yellow soil	Rice-Rice	**Aerobic Rice** **Wheat**- GW-366, GW-273,GW173,DL-788-2,C-306 **Mustard** - Varun,Pusa bold, varun,vardan,Pusa jai Kisan **Gram**- JG-74,JG-315,vaibhav **Pea-** Ambika, Subra, Paras, Rachna **Utera cultivation** – Linseed/lethyrus	1)limited irrigation 2) Alternate furrow Irrigation 3) sprinkler Irrigation	• intercultural by touchi, wheel hoe • Seed supply through seed corporation • Linkage with state agril. Engg. Dept. for supply of tractor and animal drawn seed drill for line sowing
Insufficient groundwater recharge due to low rainfall	low land tube well, canal irrigated red& yellow soil	Rice-Wheat	**Wheat**,- GW-273,GW173,DL-788-2,C-306 **Mustard**- Varun,Pusa bold, varun,vardan,Pusa jai Kisan **Gram**-JG-74,JG-315,vaibhav **Pea-** Ambika, Subra, Paras, Rachna **Utera cultivation** – Linseed/lethyrus	1) limited Irrigation 2) Alternate Furrow irrigation 3)irrigate crops at critical stages	• Linkage with MNREGA for WC measures: Digging of shallow dug wells and renovation of existing WHSs • Utilize harvested rain water of WHS in crop production by adopting drip

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
					system or sprinklers that may be converged from micro irrigation scheme of Agriculture Department

Resource management technologies

- Different methods of rice cultivation Direct seeded rice and SRI method of rice cultivation
- Zero till wheat sowing using zero till seed cum fertilizer drill
- Desilting and renovation of defuncted check dam
- Raised bed practices for seedling production in vegetables
- Ridge and furrow method in different crops
- Line sowing of mustard through seed drill
- Mulching with organic residues in vegetables
- Water harvesting through construction of farm ponds
- Green manuring in dhaincha in paddy

Actionable Comprehensive Plans for Contingency

State	CHHATTISGARH	District	BASTAR

Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	1169.6	More than 19%	Less than 947.376
June	231.6		
July	348.3		
August	326		
September	263.7		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	11031	Gross irrigated area:	11031
Net Rainfed area	153755	Gross rainfed area	162470

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	885	885
Wells	5913	5913
Tanks	104	104
Other sources	4129	4129

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	127999	1904	126095
2	Jowar	23	-	
3	Maize	23217	5500	17717
4	Bajra	2		2
5	Ragi	644	3	641

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	106		106
2	Groundnut	5		5
3	Sesamum	91		91
4	SOyabean	125		125
5	Sunflower	11	11	0
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	-		
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	209	109	100
2	Tobacco	12	12	0
3	Guar seed	-		5
4	Other Fodder crops	5		5

Early season drought(delayed onset)					
Delay by 4 weeks (Specify month) 2nd week of July?	Midland (mal)	Rice	Rice-sowing with *Lehi* system with plastic drum seeder Poornima(105 days), Annada,(105 days), Danteshwari(105days), MTU 1001(120 days), MTU 1010(110 days), Karma Mahsuri(125 days),Samleshwari 112days),IGKVR1,	• Do hand weeding at 20-25 days after sowing. • To avoid biasi operation following recommended herbicide will be used • Fenoxaprep-p-ethyl 9 EC @ 60 ml. a.i/ ha (625 ml formulation) at 15-20 days +ethoxisulphuron 15 g/ha. a.i (100 ml/ha formulation) or Chlorimura+Metsulfuron 20% @ 4 gms ai/ ha.(20 gram formulation) • For broad leaves and narrow leaves both weed Bispyribac sodium 10% @ 20-25 a.i/ha. (200-250 gm formulation) or pinoxsulam 24% 22.5 gram a.i/ha.(93gram/ha.formulation) • 60:40:30 N: P: K full dose of P & K and ½ dose of N should	• Percolation tank should be excavated on the upper corner for recharge/ life saving irrigation. • Trenches should be dug out on the upper side and lower side of field for protective irrigation

				be applied basal remaining N should be top dressed at tillering and PI stage. • Weeding by implement(Hand Hoe)	
	Lowland	Rice	Rice – *Khurra boni* (advanced dry seeding) may be adopted; as after the onset of monsoon these fields get inundated and limit sowing operations •Bamlesh-wari (140 days) Swarna(145 days), Jaldoobi(140 days), Indira Sugandhit Dhan-1(130 days), Pusa Basmati (130 days),IGKVR2 (130days),IGKVR1244(130days)	• Do hand weeding at 20-25 days after sowing. • To avoid *biasi* operation following recommended herbicide will be used • Fenoxaprep-p-ethyl 9 EC @ 60 ml. a.i/ ha (625 ml formulation) at 15-20 days +ethoxisulphuron 15 g/ha. a.i (100 ml/ha formulation) or Chlorimura+Metsulfuron 20% @ 4 gms ai/ ha.(20 gram formulation) • For broad leaves and narrow leaves both weed Bispyribac sodium 10% @ 20-25 a.i/ha. (200-250 gm formulation) or pinoxsulam 24% 22.5 gram a.i/ha.(93gram/ha.formulation) • 80:60:40 N: P: K full dose of P & K and ½ dose of N should be applied basal remaining N should be top dressed at tillering and PI stage. • Weeding by implement Ambika Paddy Weeder & Cono Weeder)	• Farm pond for water storage/ irrigation. • Trenches should be dug out on the lower side of field for in protective irrigation
	Upland (*Maran*)	Finger millet – (Local variety)	Finger millet improved varieties like : GPU 28 (120 days) PES-400 (90-92days) GPU-66, Indira ragi 1 (130 days)	• Line sowing with recommended dose of fertilizers. • One hand weeding at 25- 30 DAS • Sowing across the slope • Opening of furrow at 10-15 m interval Intercultural operations at 12 DAS and 21 DAS for thinning and removal of weeds	
		Sesame	Sesame - Early variety RT-54, TKG- 55, TKG-21 Local (c)	• One hand weeding at 25-30 DAS • Sowing across the Slope	

Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)					
At vegetative stage	Upland	Rice	• Foliar spray of Urea 2-3 % solution in place of top dressing during moisture stress condition. • Life saving irrigation should be given so that crops can be saved. • Green leaf hopper (At PI stage BPMC	• In the standing crops the hand weeding/Mulching should be done so that moisture remaining within soil may be conserved to the maximum extent possible. • Trenches should be dug out on the upper side and lower side of field for in	

			@ 1 ml/litre of water) • Under Broadcasting situation *biasi* should be done at 30-35 DAS followed by *saghan chalai* as per availability of sufficient moisture. In the standing crops the hand weeding/ mulching should be done so that moisture remaining within soil may be conserved to the maximum extent possible. • Trenches should be dug out on the upper side and lower side of field for in situ moisture conservation.	situ moisture conservation. • In the standing crops the hand weeding/Mulching should be done so that moisture remaining within soil may be conserved to the maximum extent possible. • Trenches should be dug out on the upper side and lower side of field for in situ moisture conservation	
	Upland	Kodo millet Indira kodo1, JK 155, JK 48 and JK 439	• Improved variety with recommended dose of fertilizer • Two intercultural operations at 15-20 DAS should be done under line-sown situation.	• Contour bunding on full length of field for interception of runoff • Hand weeding should be done	
	Upland	Little Millet JK 8, BG1, OLM 36	• Improved variety with recommended dose of fertilizer • Thinning at 15 days after germination • Life saving irrigation should be given so that • crops can be saved.	•Trenches should be dug out on the upper side and lower side of field for in situ moisture conservation. •Hand weeding should be done.	
		Finger Millet - PR 202, GPU 48 and GPU 67	• Improved variety with recommended dose of fertilizer • Intercultural operations should be done at 12 DAS and 21 DAS for thinning and removal of weeds • Remaining 50% N should be applied in two splits at tillering & PI stages	• Remaining 50% N should be applied in two splits at tillering & PI stages • Sowing should be done across the slope • One hand weeding at 25-30 DAS	
Terminal drought (Early withdrawal of monsoon)					
		Upland Rice	●Life saving irrigation should be provided if water is available. If crop does not recover then niger (Devmali (GA-10) & Utaccamand) should be	• Sowing across the slope. • Herbicide like; Pendimethilin/ Alachlore should be applied @1.5kg ai/ha mix with 500 lit of water	

			sown with improved variety and recommended fertilizer • Intercultural operations at 12 DAS and 21 DAS for thinning • One hand weeding should be done at 15-20 DAS		
		Midland Rice	Life saving irrigation should be provided if water is available. If crop does not recover then Horsegram (Indira kulti 1) should be sown with improved variety and recommended fertilizer • 1-2 hand weeding should be done. • Life saving irrigation should be given so that crops can be saved	• 20:40:20 NPK kg/ha should be applied with full dose at the time of sowing. • Sowing should be done across the slope. • Two inter culture operations should be done at 20 and 40 DAS • 0.5 ml Calyxin (0.05 %) spray should be done to control powdery mildew.	
		Lowland Rice	• Life saving irrigation should be provided if water is available	• Insects and diseases should be controlled in time	

Resource management technologies

- Different methods of rice cultivation methods like direct seeded rice, System of Rice Intensification (SRI) - A tool to save water
- Ridge and furrow method in different vegetable crops like chilli (Pusa jwala), tomato
- Dhaincha green manuring in paddy
- Desilting and renovation of defuncted check dam
- Drip irrigation in turmeric
- Zero till wheat sowing using zero till seed cum fertilizer drill /Happy seeder
- Raised bed practices for seedling production in vegetables
- Line sowing of mustard through seed drill
- Mulching with organic residues in vegetables

Actionable Comprehensive Plans for Contingency

State	CHHATTISGARH	District	BIJAPUR

Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	1368.9	More than 19%	Less than 1108.809
June	220.3		
July	423.4		
August	443.4		
September	281.8		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	2477	Gross irrigated area:	2477
Net Rainfed area	83041	Gross rainfed area	83114

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	-	-
Wells	84	84
Tanks	2370	2370
Other sources	23	23

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	83816	2329	81487
2	Jowar	17	-	
3	Maize	287	8	279
4	Bajra	-		
5	Ragi	17		17

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	3		3
2	Groundnut	16		16
3	Sesamum	4		4
4	SOyabean	-		
5	Sunflower	-		
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	1		1
2	Jute	-		
3	Mesta	-		
4	Sunhemp	9		9

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	-		
2	Tobacco	-		
3	Guar seed	-		
4	Other Fodder crops	-		

Early season drought (delayed onset)					
Delay by 4 weeks (Specify month) 2nd week of July	Midland (mal)	Rice	Rice- Sowing should be done with *Lehi* system/ pre-germinated seeds with plastic drum seeder in lines. Only early duration varieties should be sown like; Poornima(105 days), Annada,(105 days), Danteshwari(105days), MTU 1001(120 days), MTU 1010(110 days), Karma Mahsuri(125 days),Samleshwari 112days),IGKVR1,	• Do hand weeding at 20-25 days after sowing. • To avoid *biasi* operation following recommended herbicide will be used like; Fenoxaprep-p-ethyl 9 EC @ 60 ml. a.i/ ha (625 ml formulation) at 15-20 days +ethoxisulphuron 15 g/ha. a.i (100 ml/ha formulation) or Chlorimura+Metsulfuron 20% @ 4 gms ai/ ha.(20 gram formulation) • For broad leaves and narrow leaves both weed Bispyribac sodium 10% @ 20-25 a.i/ha. (200-250 gm formulation) or	• Percolation tank should be excavated on the upper corner for recharge/ life saving irrigation. • Trenches should be dug out on the upper side and lower side of field for in situ moisture conservation.

				pinoxsulam 24% 22.5 gram a.i/ha.(93gram/ha.formulation) • 60:40:30 N: P: K full dose of P & K and ½ dose of N should be applied basal remaining N should be top dressed at tillering and PI stage. • Weeding by implement(Hand Hoe)	
	Lowland	Rice	Rice - Sowing should be done with *Lehi* system/ pre-germinated seeds with plastic drum seeder in lines. Medium to mid-late duration varieties should be sown like; Bamlesh-wari (140 days) Swarna (145 days), Jaldoobi (140 days), Indira Sugandhit Dhan- 1(130 days), Pusa Basmati (130 days),IGKVR2 (130days),IGKVR1244(130days)	• Do hand weeding at 20-25 days after sowing. • To avoid *biasi* operation following reco0mmended herbicide will be used like; Fenoxaprep-p-ethyl 9 EC @ 60 ml. a.i/ ha (625 ml formulation) at 15-20 days +ethoxisulphuron 15 g/ha. a.i (100 ml/ha formulation) or Chlorimura+Metsulfuron 20% @ 4 gms ai/ ha.(20 gram formulation) • For broad leaves and narrow leaves both weed Bispyribac sodium 10% @ 20-25 a.i/ha. (200-250 gm formulation) or pinoxsulam 24% 22.5 gram a.i/ha.(93gram/ha.formulation) • 80:60:40 N: P: K full dose of P & K and ½ dose of N should be applied basal remaining N should be top dressed at tillering and PI stage. • Weeding by implement Ambika Paddy Weeder & Cono Weeder)	• Farm pond for water storage/ irrigation structures should be formed. • Trenches should be dug out on the lower side of field for in situ moisture conservation
	Upland (Maran)	Finger millet – (Local variety)	Finger millet improved varieties like : GPU 28 (120 days) PES-400 (90-92days) GPU-66, Indira ragi 1 (130 days)	• Line sowing with recommended dose of fertilizers. • One hand weeding at 25- 30 DAS • Sowing across the slope • Opening of furrow at 10-15 m interval Intercultural operations at 12 DAS and 21 DAS for thinning and removal of weeds	
		Sesame	Sesame - Early variety RT-54, TKG- 55, TKG-21 Local (c)	• One hand weeding at 25-30 DAS • Sowing across the Slope	
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)					
At vegetative stage	Upland	Rice	• Foliar spray of Urea 2-3 % solution in place of top dressing during moisture stress condition. • Life saving irrigation should be given so that crops can be saved. • weeding/Mulching should be done so that moisture remaining within soil may be	• In the standing crops the hand weeding/Mulching should be done so that moisture remaining within soil may be conserved to the maximum extent possible. • Trenches should be dug out on the upper side and lower side of field for in situ moisture conservation.	

			conserved to the maximum extent possible. • Trenches should be dug out on the upper side and lower side of field for in situ moisture conservation.	• In the standing crops the hand weeding/Mulching should be done so that moisture remaining within soil may be conserved to the maximum extent possible. • Trenches should be dug out on the upper side and lower side of field for in situ moisture conservation	
	Upland	Kodo millet Indira kodo1, JK 155, JK 48 and JK 439	• Improved variety with recommended dose of fertilizer • Two intercultural operations at 15-20 DAS	• Contour bunding on full length of field for interception of runoff • Hand weeding should be one	
	Upland	Little Millet JK 8, BG1, OLM 36	• Improved variety with recommended dose of fertilizer • Thinning at 15 days after germination • Life saving irrigation should be given so that • crops can be saved.	Trenches should be dug out on the upper side and lower side of field for in situ moisture conservation. Hand weeding should be done.	
		Finger Millet - PR 202, GPU 48 and GPU 67	• Improved variety with recommended dose of fertilizer • Intercultural perations at 12 DAS and 21 DAS for thinning and removal of weeds • Remaining 50% N in two splits at branching & PI stage	• Remaining 50% N in two splits at tillering & PI stage • Sowing across the slope • One hand weeding at 25-30 DAS	
Terminal drought (Early withdrawal of monsoon)					
		Upland Rice	Niger (Devmali (GA 10) & Utaccmand) should be sown with recommended fertilizer • Intercultural perations at 12 DAS and 21 DAS for thinning ●One hand weeding should be done at 15-20 DAS ● Horsegram (Indira kulti 1) should be sown with recommended fertilizer • 1-2 hand weeding. • Life saving irrigation should be given so that crops can be saved provided water is available	• Sowing should be done across the slope. • Pendimethilin/Alachlore @1.5kg ai/ha mix with 500 lit water for weed control • 20:40:20 NPK kg/ha full dose at the time of sowing 15-20 DAS. • Sowing across the slope. • Two inter culture operations at 20 and 40 DAS • 0.5 ml Calyxin (0.05 %) spray to control powdery mildew.	

Resource management technologies

- Different methods of rice cultivation Direct seeded rice and SRI method of rice cultivation
- Zero till wheat sowing using zero till seed cum fertilizer drill
- Desilting and renovation of defected check dam
- Raised bed practices for seedling production in vegetables
- Ridge and furrow method in different crops
- Line sowing of mustard through seed drill
- Mulching with organic residues in vegetables
- Water harvesting through construction of farm ponds
- Green manuring in dhaincha in paddy

Actionable Comprehensive Plans for Contingency

State	CHHATTISGARH	District	KAWARDHA(KABEERDHAM)

Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	872.1	More than 19%	Less than 706.401
June	139.5		
July	265.9		
August	261		
September	205.7		

Forecast probability for the season (as per IMD): Normal

Irrigation info:

Net irrigated area:	90865	Gross irrigated area:	136456
Net Rainfed area	97449	Gross rainfed area	157000

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	29211	36911
Wells	61654	99545
Tanks	-	-
Other sources	-	-

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	132759	54349	78410
2	Jowar	9	-	
3	Maize	1327	3	1324
4	Bajra	-		
5	Ragi	-		

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	4991	5	4986
2	Groundnut	727	5	722
3	Sesamum	157		157
4	SOyabean	7132	66	7066
5	Sunflower	-		
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	-		
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	31593	31000	593
2	Tobacco	-		
3	Guar seed	-		
4	Other Fodder crops	-		

Kabirdham District
Crop Plan- Beginning of the season

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Change in crop/cropping system[c]**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 4 weeks (July 2nd week)	**Shallow to Medium Black soil**	Rice	Local varieties to be avoided Direct line sowing of early rice varieties such as Danteswari, IR- 36, IR-64, Samleshwari, Poornima, MTU-1010, Indira Barani Dhan 1	Normal	
		Soybean	JS-335, JS -93-05, JS 97-52 and Indira Soya 9	Normal	
		Pigeon pea	Pigeonpea (JKM189, UPAS 120, BDN 2, Rajivlochan, Asha, TJT-501, JTH-1, Vipula, GT-101, AKT-8811, BSMR-736, JKM-7, GT-100, JA-4, Jagriti, Pragati, Number-148, C-11, Prabhat)	Normal	

		Maize	Chandan Maize-1, Chandan Maize-2, Chandan Maize-3 Maize- Hishell, P 3785, Bio 9681, 900M, Seedtech 2324, Pro 4640, DMH 117, Pro Agro- 4212 PEM 1 , VH - 9,17HQPM-1 NMH-731NK-30, NMH-803KMH-3426	Normal	
		Black gram	TU 94-2, TAU-2, KU 96-3, Indira Urd 1	Normal	

Contingency measures- Mid season

Condition			**Suggested Contingency measures**		
Mid season drought (long dry spell)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measues[d]**	**Remarks on Implementation[e]**
At flowering/ fruiting stage	**Shallow to Medium Black soil**	Rice	Repeated intercultivation-weeding / life saving irrigation/ Pre-mature harvest of maize and black gram as a fodder or incorporation of black gram	Mulching, inter tilling, Use 2% DAP spray or 5% kaolin	
		Soybean			
		Pigeon pea			
		Maize			
		Black gram			

Contingency measures- End of the season

Condition			**Suggested Contingency measures**		
Terminal drought (Early withdrawal of monsoon)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management**	**Rabi Crop planning[d]**	**Remarks on Implementation[e]**
	Shallow to Medium Black soil	Rice	Harvest mature or physiological mature plants, irrigation if possible,	Mustard / Chickpea / Lathyrus / Linseed	
		Soybean			
		Pigeon pea			
		Maize			
		Black gram			

Drought - Irrigated situation

Condition			**Suggested Contingency measures**		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
Delayed release of water in canals due to low rainfall	**Shallow to Medium Black soil**	Rice (Transplanting)	Raise rice seedlings by Daipog method, In aged nurseries, spray 2% potash solution to increase tolerance to moisture stress	When rice nurseries are over matured than transplanting such nurseries 1/3rd upper portion can be cut/ removed before planting, SRI practice and pre-germinated seed sown on puddle field	• Linkage with RKVY / NFSM / state seed corporation for timely supply of seed of suitable varieties of upland crops and rice
		Maize/ Toria or Maize/ coriander			
		Chick pea	No change / utera cultivation,	• Sow Rabi crops immediately after harvest of Kharif crops taking advantages of residual moisture. • Pre-soaked seeds be sown for proper germination in the ensuring Rabi season. Ridge and furrow cultivation, sprinkle	
		Rapeseed/Mustard			
		Wheat	Chickpea (JG-74, JG-315, JG-11, JG-16, Vaibhav, JG-130, JGK-1, KAK-2, JGG-1, BGD-72, BG-391) / Lathyrus (Prateek, Ratan, Mahateora)/ / lentil		

Condition			Suggested Contingency measures		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
			(Lens 4076, DPL-62 (Sheri), IPL-81 (Noori), JL-3) / Pea (Ambika, Paras, Shubhra) / linseed (R-552, Kiran, T-397, Padmini, Shekhar)/ Wheat (HW-2004, Lok-1, Sujata, GW-373 and other recommended varieties of VV)	irrigation system use and irrigate crop at critical stage of crop as possible as in order to use water Efficiently	
		Sugarcane	sugarcane may be intercropped with short duration high value mid season income generating crops like toria, mustard, peas, gram and spices etc.	Drip and sprinkler irrigation systems, Skip furrow irrigation system	

Condition			Suggested Contingency measures		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
Limited release of water in canals due to low rainfall	**Shallow to Medium Black soil**	Rice (Transplanting)	In aged nurseries, spray 2% potash solution to increase tolerance to moisture stress, Direct seeded line sowing of rice	SRI practice adopt, Irrigation at 1 to 4 days after disappearance of ponded water	• Linkage with RKVY, State Agril. Engg. Dept. for supply of tractor and animal drawn seed drill for line sowing • Linkage with MNREGA for WC measures: Digging of shallow dug wells and renovation of existing WHSs
		Chick pea	No change / utera cultivation,	• Sow Rabi crops immediately after harvest of Kharif crops taking advantages of residual moisture. • Pre-soaked seeds be sown for proper germination in the ensuring Rabi season. Ridge and furrow cultivation, sprinkle irrigation system use and irrigate crop at critical stage of crop as possible as in order to use water Efficiently	
		Rapeseed/Mustard			
		Wheat	Chickpea / Lathyrus / lentil / Pea / linseed / Wheat ((HW-2004, Lok-1, Sujata, GW-373 and other recommended varieties of VV))		
		Sugarcane	Sugarcane (Co-419, Co-1305, Co-8338, Co. J.86-141, Co-775) may be intercropped with short duration high value mid season	Drip and sprinkler irrigation systems, Skip furrow irrigation system	

Condition			Suggested Contingency measures		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
			income generating crops like toria, mustard, peas, gram and spices etc.		

Condition			Suggested Contingency measures		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
Non release of water in canals under delayed onset of monsoon in catchment	**Shallow to Medium Black soil**	Rice (Transplanting)	Direct seeded line sowing of rice/soybean	Use 2% DAP spray	
		Chick pea	Utera cultivation, Chickpea+Mustard	• Sow Rabi crops immediately after harvest of Kharif crops taking advantages of residual moisture. • Pre-soaked seeds be sown for proper germination in the ensuring Rabi season.	
		Rapeseed/Mustard			
		Wheat	Chickpea / Lathyrus / lentil / Pea / linseed / Wheat ((HW-2004, Lok-1, Sujata, GW-373 and other recommended varieties of VV))		
		Sugarcane	Chickpea / Lathyrus / lentil / Pea / linseed / Wheat	Drip and sprinkler irrigation systems, Skip furrow irrigation system	

Condition			Suggested Contingency measures		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	**Shallow to Medium Black soil**	Rice (Transplanting)	Direct seeded line sowing of rice/soybean	Use 2% DAP spray	
		Chick pea	No change / utera cultivation,	• Sow Rabi crops immediately after harvest of Kharif crops taking advantages of residual moisture. • Pre-soaked seeds be sown for proper germination in the ensuring Rabi season. Ridge and furrow cultivation, sprinkler irrigation system use and irrigate crop at critical stage of crop as possible as in order to use water Efficiently	
		Rapeseed/Mustard			
		Wheat	Chickpea / Lathyrus / lentil / Pea / linseed / Wheat ((HW-2004, Lok-1, Sujata, GW-373 and other recommended varieties of VV))		
		Sugarcane	sugarcane may be intercropped with	Drip and sprinkler irrigation systems,	

Condition			Suggested Contingency measures		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
			short duration high value mid season income generating crops like toria, mustard, peas, gram and spices etc.	Skip furrow irrigation system	

Condition			Suggested Contingency measures		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
Insufficient groundwater recharge due to low rainfall	**Shallow to Medium Black soil**	Rice (Transplanting)	Direct seeded line sowing of rice/soybean	Use 2% DAP spray	
		Chick pea	No change / utera cultivation,	• Sow Rabi crops immediately after harvest of Kharif crops taking advantages of residual moisture. • Pre-soaked seeds be sown for proper germination in the ensuring Rabi season. Ridge and furrow cultivation, sprinkle irrigation system use and irrigate crop at critical stage of crop as possible as in order to use water Efficiently	
		Rapeseed/Mustard			
		Wheat	Chickpea / Lathyrus / lentil / Pea / linseed / Wheat ((HW-2004, Lok-1, Sujata, GW-373 and other recommended varieties of VV))		
		Sugarcane	sugarcane may be intercropped with short duration high value mid season income generating crops like toria, mustard, peas, gram and spices etc.	Drip and sprinkler irrigation systems, Skip furrow irrigation system	
Any other condition (specify)					

Resource management technologies

- Different methods of rice cultivation methods like direct seeded rice, System of Rice Intensification (SRI) - A tool to save water
- Ridge and furrow method in different vegetable crops like chilli (Pusa jwala), tomato
- Dhaincha green manuring in paddy
- Desilting and renovation of defuncted check dam
- Drip irrigation in turmeric
- Zero till wheat sowing using zero till seed cum fertilizer drill /Happy seeder
- Raised bed practices for seedling production in vegetables
- Line sowing of mustard through seed drill
- Mulching with organic residues in vegetables

Actionable Comprehensive Plans for Contingency

State	CHHATTISGARH	District	KONDAGAON

Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	1176	More than 19%	Less than 952.56
June	194.7		
July	361.4		
August	342.7		
September	277.2		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	10778	Gross irrigated area:	10778
Net Rainfed area	133234	Gross rainfed area	142856

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	118	118
Wells	8338	8338
Tanks	193	193
Other sources	2129	2129

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	114135	1471	112664
2	Jowar	8	-	
3	Maize	18339	5971	12368
4	Bajra	-		
5	Ragi	1097		1097

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	43		43
2	Groundnut	7		7
3	Sesamum	77		77
4	SOyabean	-		
5	Sunflower	61	53	8
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	-		
2	Jute	-		
3	Mesta	5		5
4	Sunhemp	2		2

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	5		5
2	Tobacco	-		
3	Guar seed	-		
4	Other Fodder crops	-		

Crop Plan- Beginning of the season

Early season drought(delayed onset)					
Delay by 4 weeks (Specify month) 2nd week of July	Midland (mal)	Rice	Rice-Sowing by Lehi system or pre-germinated seeds with plastic drum seeder in lines of varieties like; Poornima(105 days), Annada,(105 days), Danteshwari(105days), MTU 1010(110 days), Karma Mahsuri(125 days),Samleshwari 112days),IGKVR1, Indira Barani Dhan 1(115 days)	• Do hand weeding at 20-25 days after sowing. • To avoid *biasi* operation following recommended herbicide shall be used like; Fenoxaprep-p-ethyl 9 EC @ 60 ml. a.i/ ha (625 ml formulation) at 15-20 days +ethoxisulphuron 15 g/ha. a.i (100 ml/ha formulation) or Chlorimura+Metsulfuron 20% @ 4 gms ai/ ha.(20 gram formulation) • For broad leaves and narrow leaves both weed Bispyribac sodium 10% @ 20-25 a.i/ha. (200-250 gm formulation) or pinoxsulam 24% 22.5 gram a.i/ha.(93gram/ha.formulation)	• Percolation tank should be excavated on the upper corner for recharge/ life saving irrigation. • Trenches should be dug out on the upper side and lower side of field for in situ moisture conservation.

				• 60:40:30 N: P: K full dose of P & K and ½ dose of N should be applied basal remaining N should be top dressed at tillering and PI stage. • Weeding by implement(Hand Hoe)	
	Lowland	Rice	Rice - Sowing by Lehi system or pre-germinated seeds with plastic drum seeder in lines of varieties like; Bamleshwari (140 days) Swarna(145 days), Jaldoobi(140 days), Indira Sugandhit Dhan-1(130 days), Pusa Basmati (130 days), IGKVR2 (130days), IGKVR1244 (130days)	• Do hand weeding at 20-25 days after sowing. • To avoid *biasi* operation following recommended herbicide shall be used like; Fenoxaprep-p-ethyl 9 EC @ 60 ml. a.i/ ha (625 ml formulation) at 15-20 days +ethoxisulphuron 15 g/ha. a.i (100 ml/ha formulation) or Chlorimura+Metsulfuron 20% @ 4 gms ai/ ha.(20 gram formulation) • For broad leaves and narrow leaves both weed Bispyribac sodium 10% @ 20-25 a.i/ha. (200-250 gm formulation) or pinoxsulam 24% 22.5 gram a.i/ha.(93gram/ha.formulation) • 80:60:40 N: P: K full dose of P & K and ½ dose of N should be applied basal remaining N should be top dressed at tillering and PI stage. • Weeding by implement Ambika Paddy Weeder & Cono Weeder)	• Farm pond for water storage/ irrigation. • Trenches should be dug out on the • lower side of field for in situ moisture conservation
	Upland (Maran)	Finger millet – (Local variety)	Finger millet improved varieties like : GPU 28 (120 days) PES-400 (90-92days) GPU-66, Indira ragi 1 (130 days)	• Line sowing with recommended dose of fertilizers. • One hand weeding at 25- 30 DAS • Sowing across the slope • Opening of furrow at 10-15 m interval Intercultural operations at 12 DAS and 21 DAS for thinning and removal of weeds	
		Sesame	Sesame - Early variety RT-54, TKG- 55, TKG-21 Local (c)	• One hand weeding at 25-30 DAS • Sowing across the Slope	

Contingency measures- Mid season

Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)					
At vegetative stage	Upland	Rice	• Foliar spray of Urea 2-3 % solution in place of top dressing during moisture stress condition. • Life saving irrigation should be given so that crops can be saved.	• In the standing crops the hand weeding/mulching should be done so that moisture remaining within soil may be conserved to the maximum extent possible.	

			• Green leaf hopper (At PI stage BPMC @ 1 ml/litre of water) • In the standing crops the hand weeding/Mulching should be done so that moisture remaining within soil may be conserved to the maximum extent possible. • Trenches should be dug out on the upper side and lower side of field for in situ moisture conservation.	• Trenches should be dug out on the upper side and lower side of field for in situ moisture conservation. • In the standing crops the hand weeding/Mulching should be done so that moisture remaining within soil may be conserved to the maximum extent possible. • Trenches should be dug out on the upper side and lower side of field for in situ moisture conservation	
	Upland	Kodo millet Indira kodo1, JK 155, JK 48 and JK 439	1. Two intercultural operations should be done at 15-20 DAS	2. Contour bunding on full length of field for interception of runoff 3. Hand weeding should be one	
	Upland	Little Millet JK 8, BG1, OLM 36	1. Thinning at 15 days after germination 2. Life saving irrigation should be given so that crops can be saved.	Trenches should be dug out on the upper side and lower side of field for in situ moisture conservation. Hand weeding should be done.	
		Finger Millet - PR 202, GPU 48 and GPU 67	1. Intercultural operations at 12 DAS and 21 DAS for thinning and removal of weeds 2. · Remaining 50% N in two splits at branching & PI stage	3. Remaining 50% N in two splits at branching & PI stage 4. One hand weeding at 25-30 DAS	

Contingency measures- End of the season

Terminal drought (Early withdrawal of monsoon)					
		Upland Rice	●Protective irrigation should be provided if water is available. If crop doesn't recover then Niger (Devmali & Utakmandal) should be sown with recommended fertilizers 1. Intercultural operations at 12 DAS and 21 DAS for thinning 2. One hand weeding @15-20 DAS	3. Sowing across the slope. 4. Pendimethilin/ Alachlor @1.5kg ai/ha mix with 500 lit water	
		Midland Rice	●Protective irrigation should be provided if water is available. If crop doesn't recover then Horse gram (Indira kulti 1) should be sown with recommended fertilizer 1. 1-2 hand weeding. 2. Life saving irrigation should be given so that crops can be saved	1. 20:40:20 NPK kg/ha full dose at the time of sowing 15-20 DAS. 2. Sowing across the slope. 3. Two inter culture operations at 20 and 40 DAS 4. 0.5 ml Calyxin (0.05 %) spray to control powdery mildew.	
		Lowland Rice	1. Life saving irrigation should be provided if water is available	2. Insect & pests should be	

				controlled in time	

Resource management technologies

- Different methods of rice cultivation methods like direct seeded rice, System of Rice Intensification (SRI) - A tool to save water
- Ridge and furrow method in different vegetable crops like chilli (Pusa jwala), tomato
- Dhaincha green manuring in paddy
- Desilting and renovation of defuncted check dam
- Drip irrigation in turmeric
- Zero till wheat sowing using zero till seed cum fertilizer drill /Happy seeder
- Raised bed practices for seedling production in vegetables
- Line sowing of mustard through seed drill
- Mulching with organic residues in vegetables

Actionable Comprehensive Plans for Contingency

State	CHHATTISGARH	District	KORBA

Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	1263.6	More than 19%	Less than 1023.516
June	182.7		
July	421.9		
August	372.9		
September	286.1		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	5107	Gross irrigated area:	5107
Net Rainfed area	117589	Gross rainfed area	118397

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	4152	4152
Wells	655	655
Tanks	70	70
Other sources	230	230

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	116038	4586	111452
2	Jowar	15	-	
3	Maize	2206	10	2196
4	Bajra	1		1
5	Ragi	9		9

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	516		516
2	Groundnut	105		105
3	Sesamum	733	1	732
4	SOyabean	-		
5	Sunflower	-		
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	-		
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	-		
2	Tobacco	-		
3	Guar seed	-		
4	Other Fodder crops	-		

Korba District
Crop Plan- Beginning of the season

Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop / Cropping system[b]**	**Change in crop / cropping system[c] including variety**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 4 weeks (July third week)	1) Farming situation: Unbunded shallow light soils	Cropping system 1: Maize	Short-duration variety	Higher seed rate	Line sowing
		Cropping system 2: Pulses Mungbean (Pusa Vishal,HUM 1, HUM-16, BM 4, HUM 12) / Urdbean (TU 94-2, TAU-2, KU 96-3, Indira Urd 1)	Short-duration variety	Higher seed rate	Line sowing

		Pigeonpea (ICPL87, JKM189, UPAS 120, BDN 2, Rajivlochan)			
		Cropping system3: Oilseeds	Short-duration variety	Higher seed rate	Line sowing
	2) Farming situation: Unbunded sloppy black soils	Cropping system 1: Rice - Danteshwari, Samleshwari, Purnima, Annada Maize- Hishell, P 3785, Bio 9681, 900M, Seedtech 2324, Pro 4640, DMH 117, Pro Agro- 4212 PEM 1 , VH -9,17HQPM-1 NMH-731NK-30, NMH-803KMH-3426	Rice- Indira barani dhan-1, Samleshwari, Sahbhagi Dhan-1, Danteshwari, Poornima	Higher seed rate	Line sowing
		Cropping system 2: Soybean	Short-duration recommended variety	Higher seed rate	Line sowing
		Cropping system 3: Pigeon pea	Short/ medium duration recommended variety	Higher seed rate	Line sowing
		Cropping system 4: Sesame	Short-duration recommended variety	Higher seed rate	Line sowing
	3) Farming situation: Bunded mid-land; heavy black soils	Cropping system 1: Rice - MTU1010, IR64, IR 36, Indira Barani Dhan 1, Chandrahasni, Samleshwari	Rice- Poornima, Samleshwari, Danteshwari, Indira barani dhan-1	Sowing of pre-germinated seeds; closer transplanting with more no. of seedlings/hill	Puddled field; chopped the seedlings
4) Farming situation: Bunded low-lands; heavy black soils	Cropping system 1: Rice - Rice- Mahamaya, s swarna, Sampda, IGKV R1, IGKV R2, Bamleshwari, Indira Sona	Rice- Chandrahasni IR64, karma masuri, Indira Barani Dhan -1, MTU 1010	The farmers who had gone for last year's certified seed purchasing and grown early maturing field crops like rice, Soybean are advised that they should save their seed upto one month age of the crop for re-sowing purposes	Puddled field; chopped the seedlings	

Contingency measures- Mid season

Condition			**Suggested Contingency measures**		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measues[d]**	**Remarks on Implementation[e]**
At vegetative stage	1) Farming situation:	Cropping system 1: Maize Cropping system 2: Pulses	Weed control, thinning, partial leaf removal	Mulching, intercultural operations,	

	Unbunded shallow light soils	Mungbean (Pusa Vishal,HUM 1, HUM-16, BM 4, HUM 12) / Urdbean (TU 94-2, TAU-2, KU 96-3, Indira Urd 1) Pigeonpea (ICPL87, JKM189, UPAS 120, BDN 2, Rajivlochan)		foliar application of nutrients	
		Cropping system 3: Oilseeds			
	2) Farming situation: ***Unbunded sloppy black soils***	Cropping system 1: Rice - Indira Barani Dhan 1, Samleshwari, Annda, Danteshwari Maize- Hishell, P 3785, Bio 9681, 900M, Seedtech 2324, Pro 4640, DMH 117, Pro Agro- 4212 PEM 1 , VH - 9,17HQPM-1 NMH-731NK-30, NMH-803KMH-3426	Weed control, thinning	Mulching, intercultural operations, foliar application of nutrients	
		Cropping system 2: Soybean	Weed control, thinning, partial leaf removal		
		Cropping system 3: Pigeon pea			
		Cropping system 4: Sesame			
	3) Farming situation: ***Bunded mid-land; heavy black soils***	Cropping system 1: Rice - MTU1010, IR64, IR 36, Chandrahasni, Indira barani dhan-1, Samleshwari,	Weed control, thinning	Mulching, intercultural operations, repairing of bunds, foliar application of nutrients	
	4) Farming situation: ***Bunded low-lands; heavy black soils***	Cropping system 1: Rice - Rice-Mahamaya, s swarna, Sampda, IGKV R1, IGKV R2, Bamleshwari, Indira Sona	Weed control, thinning	Mulching, intercultural operations, repairing of bunds, foliar application of nutrients	

Mid season drought (long dry spell)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measues[d]**	**Remarks on Implementation[e]**
At flowering/ fruiting stage	1) Farming situation: ***Unbunded shallow light soils***	Cropping system 1: Maize	Weed control, thinning, partial leaf removal, life saving irrigation; if available	Mulching, intercultural operations, foliar application of nutrients	
		Cropping system 2: Pulses Mungbean (Pusa Vishal,HUM 1, HUM-16, BM 4, HUM 12) / Urdbean (TU 94-2, TAU-2, KU 96-3, Indira Urd 1) Pigeonpea (ICPL87, JKM189, UPAS 120, BDN 2, Rajivlochan)			

		Cropping system 3: Oilseeds			
	2) Farming situation: ***Unbunded sloppy black soils***	Cropping system 1: Rice - Indira Barani Dhan 1, Samleshwari, Annda, Danteshwari Maize- Hishell, P 3785, Bio 9681, 900M, Seedtech 2324, Pro 4640, DMH 117, Pro Agro- 4212 PEM 1 , VH - 9,17HQPM-1 NMH-731NK-30, NMH-803KMH-3426	Weed control, thinning, life saving irrigation, if available	Mulching, intercultural operations, foliar application of nutrients	
		Cropping system 2: Soybean	Weed control, thinning, partial leaf removal, life saving irrigation; if available		
		Cropping system 3: Pigeon pea			
		Cropping system 4: Sesame			
	3) Farming situation: ***Bunded mid-land; heavy black soils***	Cropping system 1: Rice - MTU1010, IR64, IR 36, Chandrahasni, Indira barani dhan-1, Samleshwari,	Weed control, thinning, life saving irrigation, if available	Mulching, intercultural operations, repairing of bunds, foliar application of nutrients	
	4) Farming situation: ***Bunded low-lands; heavy black soils***	Cropping system 1: Rice - Rice-Mahamaya, swarna, Sampda, IGKV R1, IGKV R2, Bamleshwari, Indira Sona	Weed control, thinning, life saving irrigation; if available	Mulching, intercultural operations, repairing of bunds, foliar application of nutrients	

Contingency measures- End of the season

Terminal drought (Early withdrawal of monsoon)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Rabi Crop planning[d]**	**Remarks on Implementation[e]**
	1) Farming situation: ***Unbunded shallow light soils***	Cropping system 1: Maize	Partial leaf removal, life saving irrigation	*Toria* after maize harvest	Harvest the crop at physiological maturity
		Cropping system 2: Pulses Mungbean (Pusa Vishal,HUM 1, HUM-16, BM 4, HUM 12) / Urdbean (TU 94-2, TAU-2, KU 96-3, Indira Urd 1) Pigeonpea (ICPL87, JKM189, UPAS 120, BDN 2, Rajivlochan)			
		Cropping system 3: Oilseeds			
	2) Farming situation: ***Unbunded sloppy black soils***	Cropping system 1: Rice - Indira Barani Dhan 1, Samleshwari, Annada, Danteshwari Maize- Hishell, P 3785, Bio 9681, 900M, Seedtech 2324, Pro 4640, DMH 117, Pro Agro- 4212 PEM 1 , VH -	Life saving irrigation, if available	Plan for sowing of gram, linseed, field pea (Vars. Ambika, Adarsh,	Harvest the crop at physiological maturity , Sowing should be done after field preparation

		9,17HQPM-1 NMH-731NK-30, NMH-803KMH-3426		Shubhra, Rachna, Aparna, JP-885), safflower (JSF-1, JSI-7, Bhima, A-1, HUS-305, Manjeera, Nari-NH-1, Nari H-15) & vegetables etc.	
		Cropping system 2: Soybean	Partial leaf removal, life saving irrigation		
		Cropping system 3: Pigeon pea			
		Cropping system 4: Sesame			
	3) Farming situation: ***Bunded mid-land; heavy black soils***	Cropping system 1: Rice - MTU1010, IR64, IR 36, Chandrahasni, Indira barani dhan-1, Samleshwari,	Life saving irrigation, if available	Plan for sowing of gram, linseed, field pea, wheat, safflower etc.	Harvest the crop at physiological maturity
	4) Farming situation: ***Bunded low-lands; heavy black soils***	Cropping system 1: Rice - Rice-Mahamaya, s swarna, Sampda, IGKV R1, IGKV R2, Bamleshwari, Indira Sona	Life saving irrigation , if available	Plan for sowing of gram, linseed, field pea, wheat, lathyrus *(utera)*etc.	Harvest the crop at physiological maturity

2.1.2 Drought under Irrigated situation

Condition			**Suggested Contingency measures**		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
Delayed release of water in canals due to low rainfall	1) Farming situation: Mid-land Alfisols	Rice- MTU1010, IR64, IR 36, Chandrahasni, Indira barani dhan-1, Samleshwari,	Rice-Gram/Sunflower/ Linseed	Drilling in lines, use of higher seed rate	-
		Rice-Wheat	Rice-Gram/Sunflower/ Linseed	Drilling in lines, use of higher seed rate	-
		Maize/ Toria or Maize/ coriander			
	2) Farming situation: Lowland Vertisols	Rice- Mahamaya, swarna, Sampda, Chandrahasni, karma masuri, IGKV R1, IGKV R2, IGKV R 1244	Rice-Gram/Sunflower/ Linseed	Drilling in lines, use of higher seed rate	-
		Rice-Wheat	Rice-Gram/Sunflower/ Linseed	Drilling in lines, use of higher seed rate	-

Condition			Suggested Contingency measures		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
		Maize/ Toria or Maize/ coriander			
Condition			**Suggested Contingency measures**		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
Limited release of water in canals due to low rainfall	1) Farming situation: Mid-land Alfisols	Rice- MTU1010, IR64, IR 36, Chandrahasni, Indira barani dhan-1, Samleshwari,	Rice-Gram/Sunflower/ Linseed	Drilling in lines, adoption of moisture conservation practices	-
		Rice-Wheat	Rice-Gram/Sunflower/ Linseed	Drilling in lines, adoption of moisture conservation practices	-
		Cropping system 3:			
	2) Farming situation: Lowland Vertisols	Rice- Mahamaya, swarna, Sampda, Chandrahasni, karma masuri, IGKV R1, IGKV R2, IGKV R 1244	Rice-Gram/Sunflower/ Linseed	Drilling in lines, adoption of moisture conservation practices	-
		Rice-Wheat	Rice-Gram/Sunflower/ Linseed	Drilling in lines, adoption of moisture conservation practices	-
		Cropping system 3:			
Condition			**Suggested Contingency measures**		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
Non release of water in canals under delayed onset of monsoon in catchment	1) Farming situation: Mid-land Alfisols	Rice- MTU1010, IR64, IR 36, Chandrahasni, Indira barani dhan-1, Samleshwari,	Rice –Gram/ linseed/sunflower	Early sowing in *Rabi* & moisture conservation	-
		Rice-Wheat	Rice –Gram/ linseed/sunflower	Early sowing in *Rabi* & moisture conservation	-
		Cropping system 3:			
	2) Farming situation: Lowland Vertisols	Rice- Mahamaya, swarna, Sampda, Chandrahasni, karma masuri, IGKV R1, IGKV R2, IGKV R 1244	Rice-Lathyrus	Relay cropping of Lathyrus	-
		Rice-Wheat	Rice-Lathyrus	Relay cropping of Lathyrus	-
		Cropping system 3:			
Condition			**Suggested Contingency measures**		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
Lack of inflows into tanks due to	1) Farming situation: Mid-land Alfisols	Rice- MTU1010, IR64, IR 36, Chandrahasni,	Rice –Gram/ linseed/sunflower	Early sowing in *Rabi* & moisture conservation	-

Condition			Suggested Contingency measures		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
insufficient /delayed onset of monsoon		Indira barani dhan-1, Samleshwari,			
		Rice-Wheat	Rice –Gram/ linseed/sunflower	Early sowing in *Rabi* & moisture conservation	-
		Cropping system 3:			
	2) Farming situation: Lowland Vertisols	Rice- Mahamaya, swarna, Sampda, Chandrahasni, karma masuri, IGKV R1, IGKV R2, IGKV R 1244	Rice-Lathyrus	Relay cropping of Lathyrus	-
		Rice-Wheat	Rice-Lathyrus	Relay cropping of Lathyrus	-
		Cropping system 3:			

Condition			Suggested Contingency measures		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
Insufficient groundwater recharge due to low rainfall	1) Farming situation: Mid-land Alfisols	Rice- MTU1010, IR64, IR 36, Chandrahasni, Indira barani dhan-1, Samleshwari,	Rice- Pulses/oilseeds	Early sowing in *Rabi* & moisture conservation	-
		Rice-Wheat	Rice- Pulses/oilseeds	Early sowing in *Rabi* & moisture conservation	-
		Cropping system 3:			
	2) Farming situation: Lowland Vertisols	Rice- Mahamaya, swarna, Sampda, Chandrahasni, karma masuri, IGKV R1, IGKV R2, IGKV R 1244	Rice- Pulses/oilseeds		
		Rice-Wheat	Rice- Pulses/oilseeds		
		Cropping system 3:			

Resource management technologies

- Different methods of rice cultivation methods like direct seeded rice, System of Rice Intensification (SRI) - A tool to save water
- Ridge and furrow method in different vegetable crops like chilli (Pusa jwala), tomato
- Dhaincha green manuring in paddy
- Desilting and renovation of defuncted check dam
- Drip irrigation in turmeric
- Zero till wheat sowing using zero till seed cum fertilizer drill /Happy seeder
- Raised bed practices for seedling production in vegetables
- Line sowing of mustard through seed drill
- Mulching with organic residues in vegetables

Actionable Comprehensive Plans for Contingency

State	CHHATTISGARH	District	KORIYA

Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	1108.2	More than 19%	Less than 897.642
June	175.6		
July	370.8		
August	317.9		
September	243.9		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	2789	Gross irrigated area:	3134
Net Rainfed area	47363	Gross rainfed area	51363

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	789	923
Wells	1542	1750
Tanks	78	81
Other sources	380	380

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	42280	425	41855
2	Jowar	19	-	
3	Maize	2028		2028
4	Bajra	-		
5	Ragi	4		4

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	1768		1768
2	Groundnut	311		311
3	Sesamum	215		215
4	SOyabean	-		
5	Sunflower	-		
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	-		
2	Jute	-		
3	Mesta	22		22
4	Sunhemp	1		1

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	2	2	0
2	Tobacco	-		
3	Guar seed	-		
4	Other Fodder crops	-		

Crop Plan- Beginning of the season

Major Farming situation	**Crops to be sown**	**Agronomic measures**
1) Upland	**Rice**- anjali, purnima, annda, Indrabarani dhan-1	Deep summer ploughing, Direct Seeding of Sprouted rice seed under puddled condition Increase seed rate by 20 %, weed management by post emergence herbicide
	Pegionpea-UPAS-120, Rajivlochan, ICPL-151, ICPL-87	Proper Spacing with recommended dose of fertilizer & seed Inoculation with Rhizobium culture and weed management
	Urd- JU-2,JU-3,PDU-1TAU-2,TU-94-2	Proper Spacing with recommended dose of fertilizer & seed Inoculation with Rhizobium culture
	Moong-Pusa Vishal,BM-4,HUN-12,Pragya,Pairi Moong	Proper Spacing with recommended dose of fertilizer & seed Inoculation with Rhizobium culture
	Niger- GA-10, JNC-6, JNC-1, IGP-76	Broadcasting with recommended dose of fertilizer, seed treatment
	Horse gram – BK-1, NK-21, JND-2	Line sowing with recommended dose of fertilizer, Seed treatment, weed management by pre emergence herbicide

	Sesame-selection-5,TC-25,JT-21	Line sowing & seed Inoculation with Rhizobium culture, weed management by pre emergence herbicide
2) Midland	**Rice**-Sawarna,MTU-1010, Samleswari, Danteswari, Purnima, Indra Barani dhan -1, Chandrahasni, Karma Masuri, PA-6444, PHB-71, KRH-1, Indira sona	Deep summer ploughing, Grow short and medium duration variety Direct Seeding of Sprouted rice seed under puddled condition Weed management by post emergence herbicide
3) Low land	**Rice**-Sawarna Bambleshwari, Danteswari, Karma masuri, Mahamaya, IGKV R-1, IGKV R-2	Deep summer ploughing, Grow short and medium duration variety Direct Seeding of Sprouted rice seed under puddled condition, seed treatment by fungicide, Weed management by post emergence herbicide

Contingency measures- Mid season

Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period) at vegetative stage		**Suggested Contingency measures**		
Major Farming situation	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**
1) Upland	Rice-Fallow Vr. Local	1) Thinning (Lower the plant population per unit area) 2) Life saving irrigation 3) .Protection against diseases and pests	1)Inter cultivation (soil Mulching) Conservation furrow 2. Life saving Irrigation 3. Opening of conservation furrows construction of check dam/ culvert, perennial nalas bandhan for water harvesting. 4. Spray of 2% urea in paddy.	1)Supply of Inter cultural Implements through RKVY 2) Farm pond through IWSM programme 3) Seed supply through seed corporation
	Pegionpea -Fallow: variety - Mainpat local			
	Maize-Fallow: variety. hybrid & local			
	Fallow- Horse Gram/Niger/Toriya Vr. Local			
	Groundnut -Fallow Variety- local			
2) Midland	Rice-Fallow	1)Conserve water in crop field 2)Life saving irrigation if facility available		
3) Low land	Rice-Fallow			
	Rice-linseed/Lathyrus/pea/lentil			

Mid season drought (long dry spell at flowering/fruiting stage)		Suggested Contingency measures		
Major Farming situation	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measues**	**Remarks on Implementation**
1) Upland	Rice-Fallow Vr. Local Pegionpea -Fallow: variety - Mainpat local Maize-Fallow: variety. hybrid & local Fallow- Horse Gram/Niger/Toria Vr. Local Groundnut -Fallow Variety- local	1) Weeding and Weed mulching 2) Life saving irrigation 3) Could be harvested for fodder purpose 4) Protection against diseases and pests 5) Earthing and inter cultural operation	1. Life saving Irrigation 2. Rainwater conserve during kharif by construction of check dam/ culvert, perennial nalas bandhan for water harvesting.	1) Farm pond through IWSM programme
2) Midland	Rice-Fallow	1) Life saving irrigation &weeding and weed mulching 2)Could be harvested for fodder purpose		
3) Low land	Rice-Fallow Rice-linseed/Lathyrus/pea/lentil			

Contingency measures- End of the season

Terminal drought (Early withdrawal of monsoon)				
Major Farming situation	**Normal Crop/cropping system**	**Crop management**	**Rabi Crop planning**	**Remarks on Implementation**
1) Upland shallow red soils	Rice-Fallow Vr. Local Pegionpea -Fallow: variety - Mainpat local Maize-Fallow: Variety. hybrid & local Fallow- Horse Gram/Niger/Toriya Vr. Local Groundnut -Fallow Variety- local	For precautionary measures use early and medium variety	1)Make a plan for Early sowing of Niger ,Hourse gram, Toria	
2) Midland Yellow Red soil	Rice-Fallow Rice-Wheat	1. Life saving Irrigation 2. Rainwater conserve during kharif for rabi	1)Make plan for Utera cultivation of linseed,Lathyrus, lentil, Toria	
3) Low land Yellow soil	Rice-linseed/Lathyrus/pea/lentil			

2.1.3 Drought - Irrigated situation

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delayed release of water in canals due to low rainfall	low land tube well, canal irrigated red& yellow soil	Rice (low land Condition)	**Aerobic Rice** **Wheat**,- GW-366, GW-273, GW173,DL-788-2,C-306 **Mustard**-Varun,Pusa bold, varun,vardan,Pusa jai Kisan **Gram**-JG-74,JG-315,vaibhav **Pea-** Ambika, Subra, Paras, Rachna **Utera cultivation** – Linseed/lethyrus	1) limited Irrigation 2) Alternate Furrow irrigation 3)Sprinkler Irrigation 4) weed management	• intercultural by touchi, wheel hoe • Seed supply through seed corporation • Linkage with state agril. Engg. Dept. for supply of tractor and animal drawn seed drill for line sowing • Linkage with MNREGA for WC measures: Digging of

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Limited release of water in canals due to low rainfall	low land tube well, canal irrigated red& yellow soil	Rice-Rice	**Aerobic Rice** **Wheat,**- GW-366, GW-273,GW173,DL-788-2,C-306 **Mustard**- Varun,Pusa bold, varun,vardan,Pusa jai Kisan **Gram**-JG-74,JG-315,vaibhav **Pea-** Ambika, Subra, Paras, Rachna **Utera cultivation** – Linseed/lethyrus	1)Transplanting SRI system 2) limited irrigation at critical crop stage 3)Sprinkler Irrigation 4) weed management	shallow dug wells and renovation of existing WHSs • Utilize harvested rain water of WHS in crop production by adopting drip system or sprinklers that may be converged from micro irrigation scheme of Agriculture Department
Non release of water in canals under delayed onset of monsoon in catchment	low land tube well, canal irrigated red& yellow soil	Rice-Rice	**Aerobic Rice** Wheat,- GW-366, GW-273,GW173,DL-788-2,C-306 **Mustard**- Varun,Pusa bold, varun,vardan,Pusa jai Kisan **Gram** -JG-74,JG-315,vaibhav **Pea-** Ambika, Subra, Paras, Rachna **Utera cultivation** – Linseed/lethyrus	1)limited irrigation 2) Alternate furrow Irrigation 3) Sprinkler Irrigation 4) weed management	
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	low land tube well, canal irrigated red& yellow soil	Rice-Rice	**Aerobic Rice** **Wheat**- GW-366, GW-273,GW173,DL-788-2,C-306 **Mustard** - Varun,Pusa bold, varun,vardan,Pusa jai Kisan **Gram**- JG-74,JG-315,vaibhav **Pea-** Ambika, Subra, Paras, Rachna **Utera cultivation** – Linseed/lethyrus	1)limited irrigation 2) Alternate furrow Irrigation 3) sprinkler Irrigation	• intercultural by touchi, wheel hoe • Seed supply through seed corporation • Linkage with state agril. Engg. Dept. for supply of tractor and animal drawn seed drill for line sowing • Linkage with MNREGA for WC measures: Digging of shallow dug wells and renovation of existing WHSs • Utilize harvested rain water of WHS in crop production by adopting drip system or sprinklers that may be converged from micro irrigation scheme of Agriculture Department
Insufficient groundwater recharge due to low rainfall	low land tube well, canal irrigated red& yellow soil	Rice-Wheat	**Wheat**,- GW-273,GW173,DL-788-2,C-306 **Mustard**- Varun,Pusa bold, varun,vardan,Pusa jai Kisan **Gram**-JG-74,JG-315,vaibhav **Pea-** Ambika, Subra, Paras, Rachna **Utera cultivation** – Linseed/lethyrus	1) limited Irrigation 2) Alternate Furrow irrigation 3)irrigate crops at critical stages	

Resource management technologies

- Different methods of rice cultivation methods like direct seeded rice, System of Rice Intensification (SRI) - A tool to save water
- Ridge and furrow method in different vegetable crops like chilli (Pusa jwala), tomato
- Dhaincha green manuring in paddy
- Desilting and renovation of defuncted check dam
- Drip irrigation in turmeric
- Zero till wheat sowing using zero till seed cum fertilizer drill /Happy seeder
- Raised bed practices for seedling production in vegetables
- Line sowing of mustard through seed drill
- Mulching with organic residues in vegetables

Actionable Comprehensive Plans for Contingency

State	CHHATTISGARH	District	NARAINPUR

Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	1228.6	More than 19%	Less than 995.166
June	196.5		
July	385.1		
August	381.4		
September	265.6		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	278	Gross irrigated area:	278
Net Rainfed area	25773	Gross rainfed area	26125

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	-	-
Wells	278	278
Tanks	-	-
Other sources	-	-

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	22793	0	
2	Jowar	-	-	
3	Maize	641	86	555
4	Bajra	-		
5	Ragi	77		77

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	5		5
2	Groundnut	-		
3	Sesamum	3		3
4	SOyabean	-		
5	Sunflower	1	1	0
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	-		
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	1		1
2	Tobacco	-		
3	Guar seed	-		
4	Other Fodder crops	-		

Crop Plan- Beginning of the season

Early season drought(delayed onset)					
Delay by 4 weeks (Specify month) 2nd week of July	Midland (mal)	Rice	Rice- Sowing with *Lehi* system/pre-germinated seeds with plastic drum seeder in lines of varieties like; Poornima (105 days), Annada,(105 days), Danteshwari (105days), MTU 1010(110 days), Karma Mahsuri(125 days),Samleshwari 112days),IGKVR1,	• Do hand weeding at 20-25 days after sowing. • To avoid biasi operation following recommended herbicide will be used like; Fenoxaprep-p-ethyl 9 EC @ 60 ml. a.i/ ha (625 ml formulation) at 15-20 days +ethoxisulphuron 15 g/ha. a.i (100 ml/ha formulation) or Chlorimura+Metsulfuron 20% @ 4 gms ai/ ha.(20 gram formulation) • For broad leaves and narrow leaves both weed Bispyribac sodium 10% @ 20-25 a.i/ha. (200-250 gm formulation) or pinoxsulam 24% 22.5 gram a.i/ha.(93gram/ha.formulation) • 60:40:30 N: P: K full dose of P & K and ½ dose of N should be applied basal remaining N should be top dressed at tillering and PI stage. • Weeding by implement(Hand Hoe)	• Percolation tank should be excavated on the upper corner for recharge/ life saving irrigation. • · Trenches should be dug out on the upper side and lower side of field for in situ moisture conservation.
	Lowland	Rice	Rice - Sowing with *Lehi* system/pre-germinated seeds	• Do hand weeding at 20-25 days after sowing.	• Farm pond for water storage/irrigation.

			with plastic drum seeder in lines of varieties like; Bamlesh-wari (140 days) Jaldoobi(140 days), Indira Sugandhit Dhan-1(130 days), Pusa Basmati (130 days),IGKVR2 (130days),IGKVR1244(130days)	• To avoid biasi operation following recommended herbicide like; Fenoxaprep-p-ethyl 9 EC @ 60 ml. a.i/ ha (625 ml formulation) at 15-20 days +ethoxisulphuron 15 g/ha. a.i (100 ml/ha formulation) or Chlorimura+Metsulfuron 20% @ 4 gms ai/ ha.(20 gram formulation) • For broad leaves and narrow leaves both weed Bispyribac sodium 10% @ 20-25 a.i/ha. (200-250 gm formulation) or pinoxsulam 24% 22.5 gram a.i/ha.(93gram/ha.formulation) • 80:60:40 N: P: K full dose of P & K and ½ dose of N should be applied basal remaining N should be top dressed at tillering and PI stage. • Weeding by implement Ambika Paddy Weeder & Cono Weeder)	• Trenches should be dug out on the • lower side of field for in situ moisture conservation
	Upland (Marhan)	Finger millet –(Local variety)	Finger millet improved varieties like : GPU 28 (120 days) PES-400 (90-92days) GPU-66, Indira ragi 1 (130 days)	• Line sowing with recommended dose of fertilizers. • One hand weeding at 25- 30 DAS • Sowing across the slope • Opening of furrow at 10-15 m interval Intercultural operations at 12 DAS and 21 DAS for thinning and removal of weeds	
		Sesame	Sesame - Early variety RT-54, TKG- 55, TKG-21 Local (c)	• One hand weeding at 25-30 DAS • Sowing should be done across the Slope	

Contingency measures- Mid season

At vegetative stage	Upland	Rice	• Foliar spray of Urea 2-3 % solution in place of top dressing during moisture stress condition. • Life saving irrigation should be given so that crops can be saved. • Green leaf hopper (At PI stage BPMC @ 1 ml/litre of water) · • Under Broadcasting situation *biasi* should be done at 30-35 DAS followed by saghan chalai as per availability of sufficient impounded water. In the standing crops the hand weeding/ mulching should be done so that moisture remaining within soil may be conserved to the maximum extent possible. • Trenches should be dug out on the upper side and lower side of field for in situ moisture conservation.	• In the standing crops the hand weeding/mulching should be done so that moisture remaining within soil may be conserved to the maximum extent possible. • Trenches should be dug out on the upper side and lower side of field for in situ moisture conservation. • In the standing crops the hand weeding/Mulching should be done so that moisture remaining within soil may be conserved to the maximum extent possible. • Trenches should be dug out on the upper side and lower side of field for in situ moisture conservation	
	Upland	Kodo millet Indira kodo1, JK 155, JK 48 and JK 439	4. Two intercultural operations at 15-20 DAS	5. Contour bunding on full length of field for interception of runoff 6. Hand weeding should be one	
	Upland	Little Millet JK 8, BG1, OLM 36	5. Thinning at 15 days after germination 6. Life saving irrigation should be given so that 7. crops can be saved.	Trenches should be dug out on the upper side and lower side of field for in situ moisture conservation. Hand weeding should be done.	
		Finger Millet - PR 202, GPU 48 and GPU 67	5. Intercultural operations at 12 DAS and 21 DAS for thinning and removal of weeds	7. Remaining 50% N in two splits at branching & PI stage 8. Sowing across the slope 9. One hand weeding at 25-30 DAS	

			6. · Remaining 50% N in two splits at branching & PI stage		

Contingency measures- End of the season

Terminal drought (Early withdrawal of monsoon)					
		Upland Rice	●Life saving irrigation should be provided if irrigation water is available. If the crop is not recovered Niger (Devmali & Utakmandal) should be sown with recommended fertilizer 5. Intercultural operations at 12 DAS and 21 DAS for thinning should be done 6. One hand weeding should be done at 15-20 DAS	7. Sowing across the slope. 8. Pendimethilin/Alachlore @1.5kg ai/ha mix with 500 lit water	
		Midland Rice	●Life saving irrigation should be provided if irrigation water is available. If the crop is not recovered then Horse gram (Indira kulti 1) should be grown with recommended fertilizers 1. 1-2 hand weeding should be done.	5. 20:40:20 NPK kg/ha full dose at the time of sowing 15-20 DAS. 6. Sowing across the slope. 7. Two inter culture operations at 20 and 40 DAS 8. 0.5 ml Calyxin (0.05 %) spray to control powdery mildew.	
		Lowland Rice	●Life saving irrigation should be provided if irrigation water is available.	Insects & disease should be controlled in time	

Resource management technologies

- Different methods of rice cultivation methods like direct seeded rice, System of Rice Intensification (SRI) - A tool to save water
- Ridge and furrow method in different vegetable crops like chilli (Pusa jwala), tomato
- Dhaincha green manuring in paddy
- Desilting and renovation of defuncted check dam
- Drip irrigation in turmeric
- Zero till wheat sowing using zero till seed cum fertilizer drill /Happy seeder
- Raised bed practices for seedling production in vegetables
- Line sowing of mustard through seed drill
- Mulching with organic residues in vegetables

Actionable Comprehensive Plans for Contingency

State	CHHATTISGARH	District	RAJ NANDGAON

Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	1027.7	More than 19%	Less than 832.437
June	189.3		
July	325.9		
August	289.6		
September	222.9		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	45995	Gross irrigated area:	62815
Net Rainfed area	135053	Gross rainfed area	179727

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	11560	12213
Wells	32404	47495
Tanks	219	413
Other sources	1812	2694

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	173610	43660	129950
2	Jowar	5	1	4
3	Maize	190	1	189
4	Bajra	-		
5	Ragi	29	2	27

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	433		433
2	Groundnut	-		
3	Sesamum	74		74
4	SOyabean	2296	39	2257
5	Sunflower	9	9	0
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	605	87	518
2	Jute	-		
3	Mesta	2		2
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	59	41	18
2	Tobacco	-		
3	Guar seed	-		55
4	Other Fodder crops	82	27	55

Crop Plan- Beginning of the season

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Change in crop/cropping system[c]**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay by 4 weeks (2nd week of July)	Medium to shallow black soil	Rice	Direct line sowing of early rice varieties such as Danteswari, IR- 36, IR-64, Samleshwari, Poornima, MTU-1010	As recommended	Linkage with state agril. Engineering dept. for supply of tractor drawn seed drill for line sowing
		Soybean	Indira Soya-9, JS-335, JS -93-05 and JS 97-52.	As recommended	
		Pigeon pea	ICPL87, JKM189, UPAS 120, BDN 2, Rajivlochan	As recommended	

	Light to dark brown soil	Rice	Direct line sowing of early rice varieties such as Danteswari, IR- 36, IR-64, Samleshwari, Poornima, MTU-1010	As recommended	
		Maize	Chandan Maize-1, Chandan Maize-2, Chandan Maize-3 Maize- Hishell, P 3785, Bio 9681, 900M, Seedtech 2324, Pro 4640, DMH 117, Pro Agro- 4212 PEM 1 , VH -9,17HQPM-1 NMH-731NK-30, NMH-803KMH-3426	As recommended	
		Black gram	TU 94-2, TAU-2, KU 96-3, Indira Urd 1	As recommended	

Contingency measures- Mid season

Condition			**Suggested Contingency measures**		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measures[d]**	**Remarks on Implementation[e]**
At vegetative stage	Medium to shallow black soil	Rice	Repeated intercultivation / Weeding-Hoeing / thining / life saving irrigation/Stripping of crop leaves	Mulching, inter tilling, 2% urea spray	
		Soybean			
		Pigeon pea			
	Light to dark brown soil	Rice	Repeated intercultivation / Weeding-Hoeing / thining / life saving irrigation/Stripping of crop leaves	Mulching, inter tilling, 2% urea spray	
		Maize			
		Black gram			

Contingency measures- End of the season

Condition			**Suggested Contingency measures**		
Terminal drought (Early withdrawal of monsoon)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Rabi Crop planning**	**Remarks on Implementation[e]**
	Medium to shallow black soil	Rice	Harvest mature or physiological mature plants, irrigation if possible,	Mustard / Chickpea / Lathyrus / Linseed	1.Linkage with RKVY / NFSM / state seed corporation for timely supply of seed of suitable varieties of upland crops and rice
		Soybean			
		Pigeon pea			
	Shallow to medium and Light to dark brown soil	Rice	Harvest mature or physiological mature plants, irrigation if possible,	Mustard / Chickpea / Lathyrus / Linseed	
		Maize			
		Black gram			

2.1.2 Drought under Irrigated situation

Condition			Suggested Contingency measures		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
Delayed release of water in canals due to low rainfall	Medium to shallow black soil or Shallow to medium and Light to dark brown soil	Rice (Transplanting)	raise rice seedlings by Daipog method, In aged nurseries, spray 2% potash solution to increase tolerance to moisture stress	When rice nurseries are over matured than transplanting such nurseries 1/3rd upper portion can be cut/ removed before planting, SRI practice and pre-germinated seed sown on puddle field	
		Wheat	Chickpea/ Lathyrus / lentil/Pea/linseed/Wheat	• Sow Rabi crops immediately after harvest of Kharif crops taking advantages of residual moisture. • Pre-soaked seeds be sown for proper germination in the ensuring Rabi season. Ridge and furrow cultivation, sprinkler irrigation system use and irrigate crop at critical stage of crop as possible as in order to use water Efficiently	
		Mustard	No change / utera cultivation,		
		Chickpea			

Condition			Suggested Contingency measures		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
Limited release of water in canals due to low rainfall	Medium to shallow black soil or Shallow to medium and Light to dark brown soil	Rice (Transplanting)	In aged nurseries, spray 2% potash solution to increase tolerance to moisture stress, Direct seeded line sowing of rice	SRI practice adopt, Irrigation at 1 to 4 days after disappearance of ponded water	
		Wheat	Chickpea	• Sow Rabi crops immediately after harvest of Kharif crops taking	
			Lathyrus		
			Lentil		
			Pea		
			Linseed		

Condition			Suggested Contingency measures		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
		Mustard	No change / utera cultivation,	advantages of residual moisture. • Pre-soaked seeds be sown for proper germination in the ensuring Rabi season. Ridge and furrow cultivation, sprinkle irrigation system use and irrigate crop at critical stage of crop as possible as in order to use water Efficiently	
		Chickpea			

Condition			Suggested Contingency measures		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
Non release of water in canals under delayed onset of monsoon in catchment	Medium to shallow black soil or Shallow to medium and Light to dark brown soil	Rice (Transplanting)	Direct seeded line sowing of rice/soybean	Use 2% DAP spray	
		Wheat	Chickpea / Lathyrus / lentil / Pea / linseed / Wheat ()	• Sow Rabi crops immediately after harvest of Kharif crops taking advantages of residual moisture. • Pre-soaked seeds be sown for proper germination in the ensuring Rabi season.	
		Mustard	Utera cultivation, Chickpea+Mustard		
		Chickpea			

Condition			Suggested Contingency measures		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	Medium to shallow black soil or Shallow to medium and Light to dark brown soil	Rice (Transplanting)	Direct seeded line sowing of rice/soybean	Use 2% DAP spray	
		Wheat	Chickpea / Lathyrus / lentil / Pea / linseed / Wheat ()	• Sow Rabi crops immediately after harvest of Kharif crops taking advantages of residual moisture. • Pre-soaked seeds be sown for proper germination in the ensuring Rabi season. Ridge and furrow cultivation, sprinkler irrigation system use and irrigate crop at critical stage of crop as possible as in order to use water Efficiently	
		Mustard	No change / utera cultivation,		
		Chickpea			

Condition			Suggested Contingency measures		
	Major Farming situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
Insufficient groundwater recharge due to low rainfall	Medium to shallow black soil or Shallow to medium and Light to dark brown soil	Rice (Transplanting)	Direct seeded line sowing of rice/soybean	Use 2% DAP spray	
		Wheat	Chickpea / Lathyrus / lentil / Pea / linseed / Wheat ()	• Sow Rabi crops immediately after harvest of Kharif crops taking advantages of residual moisture. • Pre-soaked seeds be sown for proper germination in the ensuring Rabi season. * Ridge and furrow cultivation, sprinkler irrigation system use and irrigate crop at critical stage of crop as possible as in order to use water Efficiently	
		Mustard	No change / utera cultivation,		
		Chickpea			
Any other condition (specify)					

Resource management technologies

- Different methods of rice cultivation methods like direct seeded rice, System of Rice Intensification (SRI) - A tool to save water
- Ridge and furrow method in different vegetable crops like chilli (Pusa jwala), tomato
- Dhaincha green manuring in paddy
- Desilting and renovation of defuncted check dam
- Drip irrigation in turmeric
- Zero till wheat sowing using zero till seed cum fertilizer drill /Happy seeder
- Raised bed practices for seedling production in vegetables
- Line sowing of mustard through seed drill
- Mulching with organic residues in vegetables

Actionable Comprehensive Plans for Contingency

State	CHHATTISGARH	District	SUKMA

Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	1209.2	More than 19%	Less than 979.452
June	201.7		
July	370.2		
August	342.5		
September	294.8		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	406	Gross irrigated area:	443
Net Rainfed area	98426	Gross rainfed area	98745

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	-	-
Wells	256	258
Tanks	15	15
Other sources	135	170

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	91617	81	91536
2	Jowar	240	-	
3	Maize	1174	96	1078
4	Bajra	-		
5	Ragi	296		296

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	186		186
2	Groundnut	1		1
3	Sesamum	1523		1523
4	SOyabean	-		
5	Sunflower	6	3	3
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	23		23
2	Jute	428		428
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	-		
2	Tobacco	-		
3	Guar seed	-		
4	Other Fodder crops	-		

Crop Plan- Beginning of the season

Early season drought(delayed onset)					
Delay by 4 weeks (Specify month) 2nd week of July	Midland (mal)	Rice	Rice-Lehi system or pre-germinated seeds with plastic drum seeder in lines of varieties like; Poornima(105 days), Annada,(105 days), Danteshwari(105days), MTU 1010(110 days),	• Do hand weeding at 20-25 days after sowing. • To avoid *biasi* operation following recommended herbicide will be used like; Fenoxaprep-p-ethyl 9 EC @ 60 ml. a.i/ ha (625 ml formulation) at 15-20 days +ethoxisulphuron 15 g/ha. a.i (100 ml/ha formulation) or Chlorimura+Metsulfu	• Percolation tank should be excavated on the upper corner for recharge/ life saving irrigation. • Trenches should be dug out on the upper side and lower side of field for in situ moisture conservation.

			Karma Mahsuri(125 days),Samleshwari 112days),IGKVR 1,	ron 20% @ 4 gms ai/ ha.(20 gram formulation) • For broad leaves and narrow leaves both weed Bispyribac sodium 10% @ 20-25 a.i/ha. (200-250 gm formulation) or pinoxsulam 24% 22.5 gram a.i/ha.(93gram/ha.formulation) • 60:40:30 N: P: K full dose of P & K and ½ dose of N should be applied basal remaining N should be top dressed at tillering and PI stage. • Weeding by implement(Hand Hoe)	
	Lowland	Rice	Rice - Lehi system or pre-germinated seeds with plastic drum seeder in lines of varieties like; Bamlesh-wari (140 days) Jaldoobi(140 days), Indira Sugandhit Dhan-1(130 days), Pusa Basmati (130 days),IGKVR2 (130days),IGKVR 1244(130days)	• Do hand weeding at 20-25 days after sowing. • To avoid *biasi* operation following recommended herbicide will be used like; Fenoxaprep-p-ethyl 9 EC @ 60 ml. a.i/ ha (625 ml formulation) at 15-20 days +ethoxisulphuron 15 g/ha. a.i (100 ml/ha formulation) or Chlorimura+Metsulfuron 20% @ 4 gms ai/ ha.(20 gram formulation) • For broad leaves and narrow leaves both weed Bispyribac sodium 10% @ 20-25 a.i/ha. (200-250 gm formulation) or pinoxsulam 24% 22.5 gram a.i/ha.(93gram/ha.formulation) • 80:60:40 N: P: K full dose of P & K and ½	• Farm pond for water storage/ irrigation. • Trenches should be dug out on the • lower side of field for in situ moisture conservation

				dose of N should be applied basal remaining N should be top dressed at tillering and PI stage. • Weeding by implement Ambika Paddy Weeder & Cono Weeder)	
	Upland (Marhan)	Finger millet –(Local variety)	Finger millet improved varieties like : GPU 28 (120 days) PES-400 (90-92days) GPU-66, Indira ragi 1 (130 days)	• Line sowing with recommended dose of fertilizers. • One hand weeding at 25- 30 DAS • Sowing across the slope • Opening of furrow at 10-15 m interval Intercultural operations at 12 DAS and 21 DAS for thinning and removal of weeds	
		Sesame	Sesame - Early variety RT-54, TKG- 55, TKG-21 Local (c)	• One hand weeding at 25-30 DAS • Sowing across the Slope	

Contingency measures- Mid season

Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)					
At vegetative stage	Upland	Rice	• Foliar spray of Urea 2-3 % solution in place of top dressing during moisture stress condition. • Life saving irrigation should be given so that crops can be saved. • Green leaf hopper (At PI stage BPMC @ 1 ml/litre of water) · • Trenches should be dug out on the upper side and lower side of field for in situ moisture conservation.	• In the standing crops the hand weeding/Mulching should be done so that moisture remaining within soil may be conserved to the maximum extent possible. • Trenches should be dug out on the upper side and lower side of field for in situ moisture conservation. • Trenches should be dug out on the upper side and lower side of	

				field for in situ moisture conservation	
	Upland	Kodo millet Indira kodo1, JK 155, JK 48 and JK 439	7. Two intercultural operations should be done at 15-20 DAS	8. Contour bunding on full length of field for interception of runoff 9. Hand weeding should be one	
	Upland	Little Millet JK 8, BG1, OLM 36	10. Improved variety with recommended dose of fertilizer 11. Thinning at 15 days after germination 12. Life saving irrigation should be given so that 13. crops can be saved.	●Trenches should be dug out on the upper side and lower side of field for in situ moisture conservation. Hand weeding should be done.	
		Finger Millet - PR 202, GPU 48 and GPU 67	10. Intercultural operations at 12 DAS and 21 DAS for thinning and removal of weeds 11. Remaining 50% N in two splits at branching & PI stage	12. Remaining 50% N in two splits at branching & PI stages 13. One hand weeding at 25-30 DAS	

Contingency measures- End of the season

Terminal drought (Early withdrawal of monsoon)					
		Upland Rice	●Protective irrigation should be given if water is available. If the crop is not recovered then Niger (Devmali & Utakmandal) should be sown with recommended fertilizer 9. Intercultural operations at 12 DAS and 21 DAS for thinning 10. One hand weeding @15-20 DAS	11. Sowing across the slope. 12. Pendimethilin/ Alachlore @1.5kg ai/ha mix with 500 lit water	
		Midland Rice	●Protective irrigation should be given if water is available. If the crop is not recovered then Horsegram (Indira kulti 1) should be sown with recommended fertilizer 1. 1-2 hand weeding. 2. Life saving irrigation should be given so that crops can be saved	9. 20:40:20 NPK kg/ha full dose at the time of sowing 15-20 DAS. 10. S owing across the slope. 11. T wo inter culture operations at 20 and 40 DAS 12. 0. 5 ml Calyxin (0.05	

				%) spray to control powdery mildew.	
		Lowland Rice	1. Life saving irrigation should be given if water is available	2. Insects and disease should be controlled in time.	

Resource management technologies

- Different methods of rice cultivation methods like direct seeded rice, System of Rice Intensification (SRI) - A tool to save water
- Ridge and furrow method in different vegetable crops like chilli (Pusa jwala), tomato
- Dhaincha green manuring in paddy
- Desilting and renovation of defuncted check dam
- Drip irrigation in turmeric
- Zero till wheat sowing using zero till seed cum fertilizer drill /Happy seeder
- Raised bed practices for seedling production in vegetables
- Line sowing of mustard through seed drill
- Mulching with organic residues in vegetables

Actionable Comprehensive Plans for Contingency

State	CHHATTISGARH	District	SURAJPUR

Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	1187	More than 19%	Less than 961.47
June	186.8		
July	409.5		
August	326.7		
September	264		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	15459	Gross irrigated area:	16790
Net Rainfed area	132706	Gross rainfed area	150272

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	568	595
Wells	10964	11932
Tanks	813	859
Other sources	3114	3404

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	117595	91	117504
2	Jowar	14	-	
3	Maize	10784	158	10626
4	Bajra	28		28
5	Ragi	4		4

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	2895		2895
2	Groundnut	2679	10	2669
3	Sesamum	1224		1224
4	SOyabean	-		
5	Sunflower	-		
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	-		
2	Jute	-		
3	Mesta	46		46
4	Sunhemp	73		73

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	3458	3458	0
2	Tobacco	-		
3	Guar seed	-		
4	Other Fodder crops	-		

Crop Plan- Beginning of the season

Major Farming situation	**Crops to be sown**	**Agronomic measures**
1) Upland	**Rice-** Tulsi, Aditya, Kalinga-3, Samleswari, Vanprabha, Indira barani dhan-1, Danteswari, Purnima	Deep summer ploughing, line sowing with recommended dose of fertilizer, weed management by post emergence herbicide
	Pegionpea -UPAS-120, Asha, Rajivlochan, ICPL-151, ICPL-87, Prabhat, Pragati **Urd-** KU-2, KU96-3, PDU-1,TAU-2,TPU-4, Pant U – 30, Indra Urd -1	Proper Spacing with recommended dose of Fertiliser & Seed Inoculation with Rhizobium culture, Earthing, weed management by post emergence herbicide
	Maize- Prakash, Vivek, Navjot, Johar makka- 216, Hi sell , BIO-9681, DHM-117, PMH-3, PRO-4640	Line sowing weed management. by Atrazin @ 2 gm./liter.water at (PE)
	Niger- GA-10, JNC-6, JNC-1, IGP-76	Broadcasting with recommended dose of fertilizer, seed treatment
	Sugarcane – CO-8201, CO-86032, CO-671, CO- 94012, CO-91010, CO-434	Deep summer ploughing, Trench/pit planting with recommended dose of fertilizer, Sett treatment with fungicides, weed management by pre emergence herbicide

	Groundnut -SB-11, JL-24, ICGS-11, ICGS-34, ICGS-43 **Sesame**-Selection-5,TC-25,JT-7, TKG-21, TKG-22, Krishna	Line sowing & seed Inoculation with Rhizobium culture, weed management by pre emergence herbicide
2) Midland	**Rice-**MTU-1010, Mahamaya, Karma masuri, Chandrahasani, IGKV R-1, IGKV R-2, PA-6444, PHB-71, KRH-1,Indira sona	Deep summer ploughing, 15-20 days old seedling use for transplanting Apply 15-20 kg ZnSo4 before planting or sowing, Apply recommended dose of Fertilizer, weed management by pre & post emergence herbicide
3) Low land	**Rice**-Sawarna ,Jaldubi, PA-6444, Mahamaya, Danteswari , Bambleswari, karma masuri, swarna sub-1, IGKV R-1, IGKV R-2	

Contingency measures- Mid season

		Suggested Contingency measures		
Major Farming situation	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measues**	**Remarks on Implementation**
1) Upland	Rice-Fallow Vr. Local	1) Thinning (Lower the plant population per unit area) 2) Life saving irrigation 3) .Protection against diseases and pests	1)Inter cultivation (soil Mulching) Conservation furrow 2. Life saving Irrigation 3. Opening of conservation furrows construction of check dam/ culvert, perennial nalas bandhan for water harvesting. 4. Spray of 2% urea in paddy.	1)Supply of Inter cultural Implements through RKVY 2) Farm pond through IWSM programme 3) Seed supply through seed corporation
	Pegionpea -Fallow: variety - Mainpat local			
	Maize-Fallow: variety. hybrid & local			
	Fallow- Horse Gram/Niger/Toriya Vr. Local			
	Groundnut -Fallow Variety- local			
2) Midland	Rice-Fallow	1)Conserve water in crop field 2)Life saving irrigation if facility available		
3) Low land	Rice-Fallow			
	Rice-linseed/Lathyrus/pea/lentil			

Contingency measures- End of the season

Major Farming situation	**Normal Crop/cropping system**	**Crop management**	**Rabi Crop planning**	**Remarks on Implementation**
1) Upland shallow red soils	Rice-Fallow Vr. Local	For precautionary measures use early and medium variety	1)Make a plan for Early sowing of Niger ,Hourse gram, Toria	
	Pigeonpea -Fallow: variety - Mainpat local			
	Maize-Fallow: variety. hybrid & local			
	Fallow- Horse Gram/Niger/Toriya Vr. Local			
	Groundnut -Fallow Variety- local			
2) Midland Yellow Red soil	Rice-Fallow	1. Life saving Irrigation 2. Rainwater conserve during kharif for rabi	1)Make plan for Utera cultivation of linseed,Lathyrus, lentil, Toria	
	Rice-Wheat			
3) Low land Yellow soil	Rice-linseed/Lathyrus/pea/lentil			

2.1.4 Drought - Irrigated situation

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delayed release of water in canals due to low rainfall	low land tube well, canal irrigated red& yellow soil	Rice (low land Condition)	**Aerobic Rice** **Wheat**,- GW-366, GW-273, GW173,DL-788-2,C-306 **Mustard**-Varun,Pusa bold, varun,vardan,Pusa jai Kisan **Gram**-JG-74,JG-315,vaibhav **Pea-** Ambika, Subra, Paras, Rachna **Utera cultivation** – Linseed/lethyrus	1) limited Irrigation 2) Alternate Furrow irrigation 3)Sprinkler Irrigation 4) weed management	• intercultural by touchi, wheel hoe • Seed supply through seed corporation • Linkage with state agril. Engg. Dept. for supply of tractor and animal drawn seed drill for line sowing • Linkage with MNREGA for WC measures: Digging of shallow dug wells and renovation of existing WHSs • Utilize harvested rain water of WHS in crop production by adopting drip system or sprinklers that may be converged from micro irrigation scheme of Agriculture Department
Limited release of water in canals due to low rainfall	low land tube well, canal irrigated red& yellow soil	Rice-Rice	**Aerobic Rice** **Wheat,**- GW-366, GW-273,GW173,DL-788-2,C-306 **Mustard**- Varun,Pusa bold, varun,vardan,Pusa jai Kisan **Gram**-JG-74,JG-315,vaibhav **Pea-** Ambika, Subra, Paras, Rachna **Utera cultivation** – Linseed/lethyrus	1)Transplanting SRI system 2) limited irrigation at critical crop stage 3)Sprinkler Irrigation 4) weed management	
Non release of water in canals under delayed onset of monsoon in catchment	low land tube well, canal irrigated red& yellow soil	Rice-Rice	**Aerobic Rice** Wheat,- GW-366, GW-273,GW173,DL-788-2,C-306 **Mustard**- Varun,Pusa bold, varun,vardan,Pusa jai Kisan **Gram** -JG-74,JG-315,vaibhav **Pea-** Ambika, Subra, Paras, Rachna **Utera cultivation** – Linseed/lethyrus	1)limited irrigation 2) Alternate furrow Irrigation 3) Sprinkler Irrigation 4) weed management	
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	low land tube well, canal irrigated red& yellow soil	Rice-Rice	**Aerobic Rice** **Wheat**- GW-366, GW-273,GW173,DL-788-2,C-306 **Mustard** - Varun,Pusa bold, varun,vardan,Pusa jai Kisan **Gram**- JG-74,JG-315,vaibhav **Pea-** Ambika, Subra, Paras, Rachna **Utera cultivation** – Linseed/lethyrus	1)limited irrigation 2) Alternate furrow Irrigation 3) sprinkler Irrigation	• intercultural by touchi, wheel hoe • Seed supply through seed corporation • Linkage with state agril. Engg. Dept. for supply of tractor and animal drawn seed drill for line sowing • Linkage with MNREGA for WC measures: Digging of shallow dug wells and renovation of existing WHSs • Utilize harvested rain water of WHS in crop production by adopting drip system or sprinklers that may
Insufficient groundwater recharge due to low rainfall	low land tube well, canal irrigated red& yellow soil	Rice-Wheat	**Wheat**,- GW-273,GW173,DL-788-2,C-306 **Mustard**- Varun,Pusa bold, varun,vardan,Pusa jai Kisan **Gram**-JG-74,JG-315,vaibhav **Pea-** Ambika, Subra, Paras, Rachna **Utera cultivation** – Linseed/lethyrus	1) limited Irrigation 2) Alternate Furrow irrigation 3)irrigate crops at critical stages	

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
					be converged from micro irrigation scheme of Agriculture Department

Resource management technologies

- Different methods of rice cultivation methods like direct seeded rice, System of Rice Intensification (SRI) - A tool to save water
- Ridge and furrow method in different vegetable crops like chilli (Pusa jwala), tomato
- Dhaincha green manuring in paddy
- Desilting and renovation of defuncted check dam
- Drip irrigation in turmeric
- Zero till wheat sowing using zero till seed cum fertilizer drill /Happy seeder
- Raised bed practices for seedling production in vegetables
- Line sowing of mustard through seed drill
- Mulching with organic residues in vegetables

Actionable Comprehensive Plans for Contingency

State	CHHATTISGARH	District	SURGUJA

Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	1164.6	More than 19%	Less than 943.326
June	223		
July	373.6		
August	316.7		
September	251.3		

Forecast probability for the season (as per IMD): Below Normal

Irrigation info:

Net irrigated area:	15938	Gross irrigated area:	16936
Net Rainfed area	128657	Gross rainfed area	150529

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	2712	2985
Wells	7059	7516
Tanks	678	716
Other sources	5489	5719

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	114765	1432	113333
2	Jowar	29	-	
3	Maize	11879	153	11726
4	Bajra	5		5
5	Ragi	1		1

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	2999		2999
2	Groundnut	1409	3	1406
3	Sesamum	178		178
4	SOyabean	-		
5	Sunflower	10	9	1
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	-		
2	Jute	-		
3	Mesta	76		76
4	Sunhemp	22		22

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	2194	2194	0
2	Tobacco	13		13
3	Guar seed	-		
4	Other Fodder crops	-		

Major Farming situation	**Crops to be sown**	**Agronomic measures**
1) Upland	**Rice-** anjali, purnima, annda, Indrabarani dhan-1	Deep summer ploughing, Direct Seeding of Sprouted rice seed under puddled condition Increase seed rate by 20 %, weed management by post emergence herbicide
	Pegionpea-UPAS-120, Rajivlochan, ICPL-151, ICPL-87	Proper Spacing with recommended dose of fertilizer & seed Inoculation with Rhizobium culture and weed management
	Urd- JU-2,JU-3,PDU-1TAU-2,TU-94-2	Proper Spacing with recommended dose of fertilizer & seed Inoculation with Rhizobium culture

	Moong-Pusa Vishal,BM-4,HUN-12,Pragya,Pairi Moong	Proper Spacing with recommended dose of fertilizer & seed Inoculation with Rhizobium culture
	Niger- GA-10, JNC-6, JNC-1, IGP-76	Broadcasting with recommended dose of fertilizer, seed treatment
	Horse gram – BK-1, NK-21, JND-2	Line sowing with recommended dose of fertilizer, Seed treatment, weed management by pre emergence herbicide
	Sesame-selection-5,TC-25,JT-21	Line sowing & seed Inoculation with Rhizobium culture, weed management by pre emergence herbicide
2) Midland	**Rice**-Sawarna, MTU-1010, Samleswari, Danteswari, Purnima, Indra Barani dhan -1, Chandrahasni, Karma Masuri, PA-6444, PHB-71, KRH-1, Indira sona	Deep summer ploughing, Grow short and medium duration variety Direct Seeding of Sprouted rice seed under puddled condition Weed management by post emergence herbicide
3) Low land	**Rice**-Sawarna Bambleshwari, Danteswari, Karma masuri, Mahamaya, IGKV R-1, IGKV R-2	Deep summer ploughing, Grow short and medium duration variety Direct Seeding of Sprouted rice seed under puddled condition, seed treatment by fungicide, Weed management by post emergence herbicide

Condition: Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period) at vegetative stage

		Suggested Contingency measures		
Major Farming situation	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**
1) Upland	Rice-Fallow Vr. Local Pigeonpea -Fallow: variety - Mainpat local Maize-Fallow: variety. hybrid & local Fallow- Horse Gram/Niger/Toriya Vr. Local Groundnut -Fallow Variety- local	1) Thinning (Lower the plant population per unit area) 2) Life saving irrigation 3) .Protection against diseases and pests	1)Inter cultivation (soil Mulching) Conservation furrow 2. Life saving Irrigation 3. Opening of conservation furrows construction of check dam/ culvert, perennial nalas bandhan for water harvesting. 4. Spray of 2% urea in	1)Supply of Inter cultural Implements through RKVY 2) Farm pond through IWSM programme 3) Seed supply through seed corporation
2) Midland	Rice-Fallow 	1)Conserve water in crop field		
3) Low land	Rice-Fallow Rice-linseed/Lathyrus/pea/lentil			

		2)Life saving irrigation if facility available	paddy.	

Condition: Mid season drought (long dry spell at flowering/ fruiting stage)

		Suggested Contingency measures		
Major Farming situation	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**
1) Upland	Rice-Fallow Vr. Local	1) Weeding and Weed mulching 2) Life saving irrigation 3) Could be harvested for fodder purpose 4) Protection against diseases and pests 5) Earthing and inter cultural operation	1. Life saving Irrigation 2. Rainwater conserve during kharif by construction of check dam/ culvert, perennial nalas bandhan for water harvesting.	1) Farm pond through IWSM programme
	Pegionpea -Fallow: variety - Mainpat local			
	Maize-Fallow: Variety. hybrid & local			
	Fallow- Horse Gram/Niger/Toria Vr. Local			
	Groundnut -Fallow Variety- local			
2) Midland	Rice-Fallow	1) Life saving irrigation &weeding and weed mulching 2)Could be harvested for fodder purpose		
3) Low land	Rice-Fallow			
	Rice-linseed/Lathyrus/pea/lentil			

Condition: Terminal drought (Early withdrawal of monsoon)

Major Farming situation	**Normal Crop/cropping system**	**Crop management**	**Rabi Crop planning**	**Remarks on Implementation**
1) Upland shallow red soils	Rice-Fallow Vr. Local	For precautionary measures use early and medium variety	1)Make a plan for Early sowing of Niger ,Hourse gram, Toria	
	Pegionpea -Fallow: variety - Mainpat local			
	Maize-Fallow: variety. hybrid & local			
	Fallow- Horse Gram/Niger/Toriya Vr. Local			
	Groundnut -Fallow Variety- local			
2) Midland Yellow Red soil	Rice-Fallow	1. Life saving Irrigation 2. Rainwater conserve during kharif for rabi	1)Make plan for Utera cultivation of linseed,Lathyrus, lentil, Toria	
	Rice-Wheat			
3) Low land Yellow soil	Rice-linseed/Lathyrus/pea/lentil			

2.1.5 Drought - Irrigated situation

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delayed release of water in canals due to low rainfall	low land tube well, canal irrigated red& yellow soil	Rice (low land Condition)	**Aerobic Rice Wheat**,- GW-366, GW-273, GW173,DL-788-2,C-306 **Mustard**- Varun,Pusa bold, varun,vardan,Pusa jai Kisan **Gram**-JG-74,JG-315,vaibhav **Pea-** Ambika, Subra, Paras, Rachna **Utera cultivation** – Linseed/lethyrus	1) limited Irrigation 2) Alternate Furrow irrigation 3)Sprinkler Irrigation 4) weed management	• intercultural by touchi, wheel hoe • Seed supply through seed corporation • Linkage with state agril. Engg. Dept. for supply of tractor and animal drawn seed drill for line sowing • Linkage with MNREGA for WC measures: Digging of shallow dug wells and renovation of existing WHSs • Utilize harvested rain water of WHS in crop production by adopting drip system or sprinklers that may be converged from micro irrigation scheme of Agriculture Department
Limited release of water in canals due to low rainfall	low land tube well, canal irrigated red& yellow soil	Rice-Rice	**Aerobic Rice Wheat,**- GW-366, GW-273,GW173,DL-788-2,C-306 **Mustard**- Varun,Pusa bold, varun,vardan,Pusa jai Kisan **Gram**-JG-74,JG-315,vaibhav **Pea-** Ambika, Subra, Paras, Rachna **Utera cultivation** – Linseed/lethyrus	1)Transplanting SRI system 2) limited irrigation at critical crop stage 3)Sprinkler Irrigation 4) weed management	
Non release of water in canals under delayed onset of monsoon in catchment	low land tube well, canal irrigated red& yellow soil	Rice-Rice	**Aerobic Rice** Wheat,- GW-366, GW-273,GW173,DL-788-2,C-306 **Mustard**- Varun,Pusa bold, varun,vardan,Pusa jai Kisan **Gram** -JG-74,JG-315,vaibhav **Pea-** Ambika, Subra, Paras, Rachna **Utera cultivation** – Linseed/lethyrus	1)limited irrigation 2) Alternate furrow Irrigation 3) Sprinkler Irrigation 4) weed management	

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	low land tube well, canal irrigated red& yellow soil	Rice-Rice	**Aerobic Rice** **Wheat**- GW-366, GW-273,GW173,DL-788-2,C-306 **Mustard** - Varun,Pusa bold, varun,vardan,Pusa jai Kisan **Gram**- JG-74,JG-315,vaibhav **Pea-** Ambika, Subra, Paras, Rachna **Utera cultivation** – Linseed/lethyrus	1)limited irrigation 2) Alternate furrow Irrigation 3) sprinkler Irrigation	• intercultural by touchi, wheel hoe • Seed supply through seed corporation • Linkage with state agril. Engg. Dept. for supply of tractor and animal drawn seed drill for line sowing • Linkage with MNREGA for WC measures: Digging of shallow dug wells and renovation of existing WHSs • Utilize harvested rain water of WHS in crop production by adopting drip system or sprinklers that may be converged from micro irrigation scheme of Agriculture Department
Insufficient groundwater recharge due to low rainfall	low land tube well, canal irrigated red& yellow soil	Rice-Wheat	**Wheat**,- GW-273,GW173,DL-788-2,C-306 **Mustard**- Varun,Pusa bold, varun,vardan,Pusa jai Kisan **Gram**-JG-74,JG-315,vaibhav **Pea-** Ambika, Subra, Paras, Rachna **Utera cultivation** – Linseed/lethyrus	1) limited Irrigation 2) Alternate Furrow irrigation 3)irrigate crops at critical stages	

Resource management technologies

- Different methods of rice cultivation methods like direct seeded rice, System of Rice Intensification (SRI) - A tool to save water
- Ridge and furrow method in different vegetable crops like chilli (Pusa jwala), tomato
- Dhaincha green manuring in paddy
- Desilting and renovation of defuncted check dam
- Drip irrigation in turmeric
- Zero till wheat sowing using zero till seed cum fertilizer drill /Happy seeder
- Raised bed practices for seedling production in vegetables
- Line sowing of mustard through seed drill
- Mulching with organic residues in vegetables