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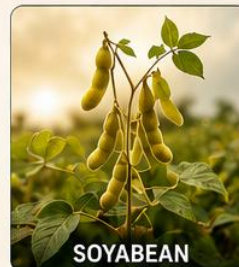
INDIAN COUNCIL OF
AGRICULTURAL RESEARCH

DISTRICT WISE CONTINGENCY PLAN TO DEAL WITH **EL NIÑO**

PREPAREDNESS | RESPONSE | RESILIENCE



BUILDING A
DROUGHT RESILIENT
MAHARASHTRA



SOYABEAN



PIGEONPEA
(TUR)



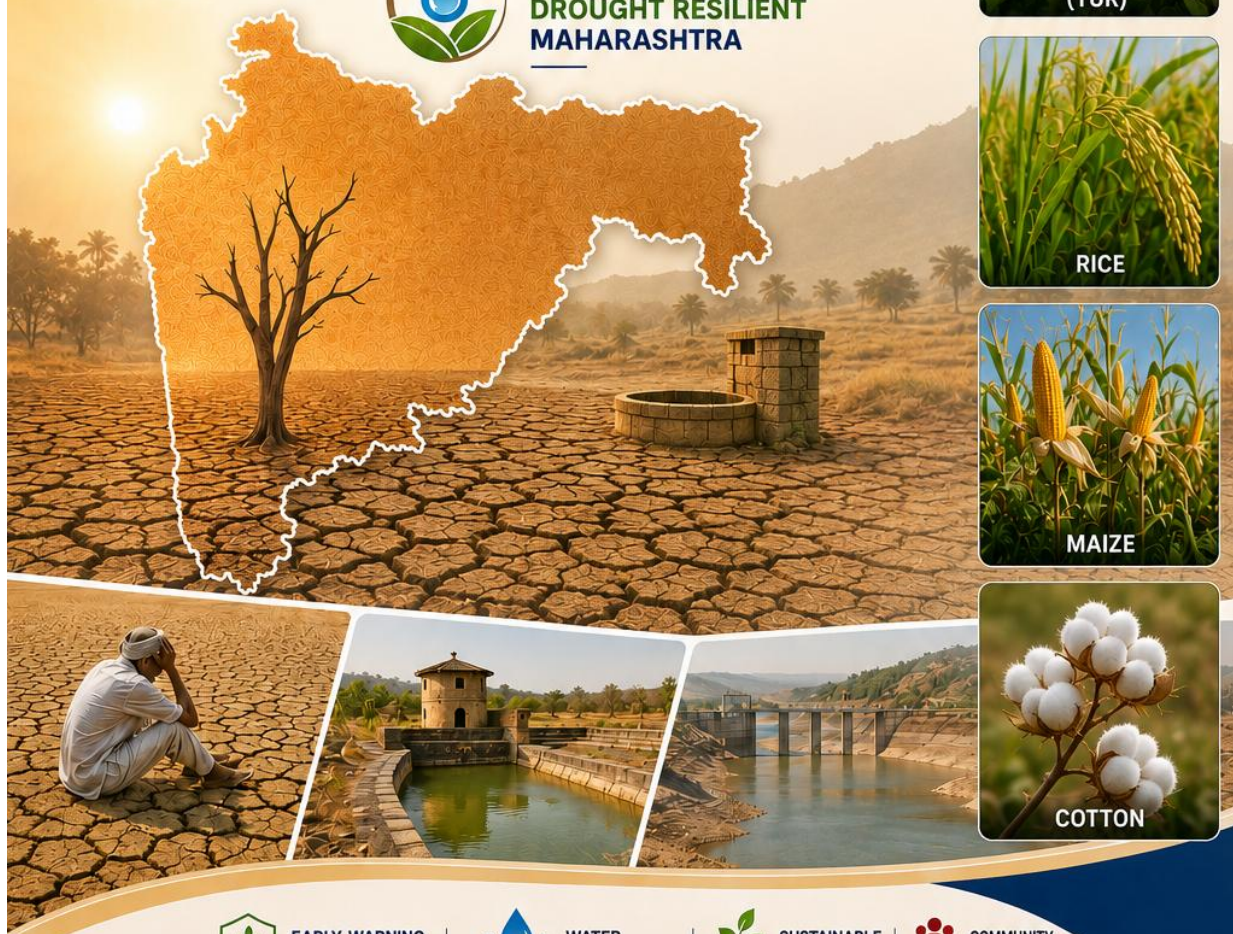
RICE



MAIZE



COTTON



EARLY WARNING
& MONITORING



WATER
MANAGEMENT



SUSTAINABLE
AGRICULTURE



COMMUNITY
PARTICIPATION

TOGETHER, LET'S BUILD A RESILIENT MAHARASHTRA

PREPARE TODAY • PROTECT TOMORROW • PROSPER TOGETHER

Maharashtra

Agriculture in Maharashtra Employs over 50% of Maharashtra's total workforce and Generates roughly 11% of the state's Gross Domestic Product (GDP). The serves as the primary source of income for 82% of the rural population and accounts for nearly 12% of There are about approximately 171.11 lakh operational farms exist across the state and it is high fragmented with an average landholding size of just 1.23 hectares. Over 80% of farmers fall into the small and marginal categories.

Major Crops of Maharashtra

Crop	Major Producing Regions
Cotton	Vidarbha, Marathwada, Khandesh
Soybean	Vidarbha, Marathwada
Sugarcane	Western Maharashtra (Pune, Kolhapur, Sangli, Satara, Solapur)
Rice	Konkan, Eastern Vidarbha
Jowar	Marathwada, Western Maharashtra, Vidarbha
Bajra	Marathwada, Nashik, Ahmednagar
Pigeon pea	Marathwada, Vidarbha
Groundnut	Western Maharashtra, Vidarbha

Agriculture in Maharashtra is highly vulnerable to climate change due to its dependence on the southwest monsoon, large areas under rainfed cultivation, and increasing frequency of extreme weather events. A significant proportion of the state's farmers rely on seasonal rainfall for irrigation, making agricultural production sensitive to changes in temperature and precipitation patterns. Climate change has led to delayed monsoon onset, erratic rainfall, prolonged dry spells, and intense downpours, all of which disrupt sowing, crop growth, and harvesting. While some regions experience drought, others face flooding, resulting in substantial crop losses and reduced agricultural productivity.

The drought-prone regions of Marathwada and Vidarbha are among the most affected by climate variability. Frequent droughts reduce soil moisture, deplete groundwater reserves, and increase dependence on limited irrigation sources. At the same time, rising temperatures intensify evapotranspiration, increasing crop water requirements and placing additional stress on already scarce water resources. Heat waves also affect livestock by reducing milk production, fertility, and overall health, thereby impacting farmers' incomes beyond crop cultivation.

Climate change has particularly affected major crops grown in Maharashtra. Cotton, soybean, sugarcane, pigeon pea (tur), grapes, pomegranate, and rice are all vulnerable to changing climatic conditions. Cotton and soybean suffer from irregular rainfall and pest infestations, while sugarcane, a water-intensive crop, faces severe challenges due to declining water availability. Horticultural crops such as grapes, pomegranate, mango, and cashew are highly sensitive to unseasonal rainfall, rising temperatures, and extreme weather events, which reduce both yield and quality. Along the Konkan Coast, cyclones and heavy rainfall increasingly threaten orchards and coastal agriculture, while intense rainfall in other parts of the state causes soil erosion, nutrient loss, and waterlogging.

The socio-economic consequences of climate change are equally significant. Declining crop yields, repeated crop failures, and increasing production costs have reduced farm incomes and heightened indebtedness, particularly among small and marginal farmers. These challenges have contributed to rural distress and increased migration from villages to urban areas in search of alternative livelihoods. Food security and nutritional security are also at risk as agricultural productivity becomes more uncertain.

To reduce climate vulnerability, Maharashtra has adopted several adaptation measures aimed at building resilience in the agricultural sector. These include expanding micro-irrigation systems such as drip and sprinkler irrigation to improve water-use efficiency, promoting climate-resilient crop varieties, encouraging crop diversification towards less water-intensive crops, and implementing watershed development and rainwater harvesting projects to improve groundwater recharge.

Actionable Comprehensive Plans for Contingency

State	MAHARASHTRA	District	AKOLA
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	694.2	More than 19%	Less than 562.302
June	143.6		
July	214.8		
August	193.7		
September	142.1		

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

Irrigation info:

Net irrigated area:	0	Gross irrigated area:	0
Net Rainfed area		Gross rainfed area	

Source wise irrigation area details (ha)

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

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	0	0	
2	Jowar	516	-	
3	Maize	1220		1220
4	Bajra	1		1
5	Ragi	-		

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	58553		58553
2	Groundnut	6656		6656
3	Sesamum	973		973
4	SOyabean	276803		276803
5	Sunflower	-		
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	140236		140236
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	-		

Crop Plan- Beginning of the season

Early season drought (delayed onset)	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures
Delay by 4 weeks 9th-15thJuly28thMW	Medium deep to deep black soils	Cotton	Replace the hybrids with improved early varieties in cotton. American:AKH-081,AKH-9916,PKV Rajat DeshiCotton:AKA-5, AKA-7, AKA-8 Soybean:JS-335, JS-93 - 05 Pigeonpea varieties: AKT 8811, Vipula, Rajeshwari, PKV TARA, BSMR-736/853, BDN716	Normal recommended Package of Practices by Dr.PDKV, Akola. Test GP%,use seedrate@ 75-80kg/ha,seed treatment with <i>Azotobacteria</i> +PSB (250geach/10kgseed), Thiram + Carboxin 3.5g, <i>Trichoderma</i> 4g/kg of seed. Use 20-25% more than recommended seed rate and reducefertilizerdoseby25% for Cotton.

				To reduce the risk of late sowing follow Cotton+ Sorghum+Pigeon · · Pea+Sorghum (3:1:1:1/6:1:2:1) intercropping system.
		Soybean	No change	Follow normal recommended package of practices. Intercrop one row of pigeonpea after every 4 or 6 rows of soybean as per convenience. Open furrow after six/three rows of soybean.
		Pigeonpea	No change	Use spacing 90 x 30 cm or 90 X20 cm.
		Sorghum (Kharif)	Replace sorghum by soybean varieties JS335, JS 93-05, JS9560, MAUS-71, MAUS-81 or pigeonpea variety AKT 8811, Vipula, Rajeshwari, PKV TARA, BSMR-736/853, BDN716	Use of early varieties (CSV 17)/ hybrids (CSH 14, CSH 23) Planting with 20% higher seed rate Seed treatment of Imidacloprid 70 WS 7g/kg seed. Follow normal recommended package of practices. Intercrop one row of pigeonpea after every 4 or 6 rows of soybean as per convenience. Open furrow after six/three rows of soybean. For pigeonpea use spacing 90 x 30 cm or 90 X20 cm.
	Shallow black soils	Soybean	No change	Normal recommended Package of Practices by Dr.PDKV, Akola. Test GP%, use seed rate @ 75-80kg/ha, seed treatment with Rhizobium (250g each /10kg seed), Thiram + Carboxin 3 g, Trichoderma 4g/kg of seed. Thiamethoxam 30 FS 10ml/kg of seed.

		Greengram	Replace green gram with soybean varieties- JS335, JS 93-05, JS 9560, MAUS-71, MAUS-81	Normal recommended Package of Practices by Dr. PDKV, Akola. Seed treatment with Rhizobium+PSB(250g each /10kg seed), Thiram +Carboxin 3 g, Trichoderma 4g/kg of seed. Thiamethoxam 30 FS 10ml/kg of seed.
		Blackgram	Replace Blackgram by Soybean Varieties- JS335, JS 93-05, JS9560, MAUS-71, MAUS-81	Normal recommended Package of Practices by Dr. PDKV, Akola Seed treatment with Rhizobium+PSB(250g each /10kg seed), Thiram +Carboxin 3 g, Trichoderma 4g/kg of seed. Thiamethoxam 30 FS 10ml/kg of seed.

Contingency measures- Mid season

Condition			Suggested Contingency measures	
Mid-season drought (long dry spell) Atflowering/ fruiting stage	Major Farming situation	Normal Crop/ cropping system	Crop management	Soil nutrient & moisture conservation measures
At vegetative stage	Medium deep to deep black soils	Cotton	Give protective irrigation if possible. Weeding, inter cultivation to create soil mulch to conserve moisture.	Opening of conservation furrows for moisture conservation. After release of moisture stress spraying of 2 % urea or DAP at flowering and 1% Urea + 1% MgSO ₄ at boll development stage
		Soybean	Give protective irrigation if possible.	After release of moisture stress spraying of 2 % urea at flowering and pod development.
		Pigeonpea	Give protective irrigation if possible.	Opening of conservation furrows for moisture conservation. After release of moisture stress spraying of 2% urea at flowering
		Sorghum (Kharif)	Give protective irrigation if possible.	After release of moisture stress spraying of 2 % urea
		Greengram	Give protective irrigation if possible.	After release of moisture stress spraying of 2 % urea at

				flowering and pod development.
		Blackgram	Give protective irrigation if possible.	After release of moisture stress spraying of 2 % urea at flowering and pod development.
	Shallow black soils	Soybean	Give protective irrigation if possible.	After release of moisture stress spraying of 2 % urea at flowering and pod development.
		Greengram	Give protective irrigation if possible.	After release of moisture stress spraying of 2 % urea at flowering and pod development.
		Blackgram	Give protective irrigation if possible.	After release of moisture stress spraying of 2 % urea at flowering and pod development.

Contingency measures- End of the season

Condition			Suggested Contingency measures	
Terminal drought (Early withdrawal of monsoon)	Major Farming situation	Normal Crop/cropping system	Crop management	Rabi Crop planning
	Medium deep to deep black soils	Cotton	Give protective irrigation if possible. Spraying of 1% K ₂ SO ₄ / KNO ₃	-
		Soybean	Give protective irrigation if possible.	Plan for <i>rabi</i> sowing.
		Pigeonpea	Give protective irrigation if possible.	Spraying of 2% urea or 1% KNO ₃ .
	Shallow black soil	Sorghum (<i>Kharif</i>)	Give protective irrigation if possible for mid-late to late varieties.	Harvest at physiological maturity. Plan for rabi sowing.
		Soybean	Give protective irrigation if possible.	Harvest at physiological maturity. Plan for rabi sowing.

Resource management technologies

- Broad bed and furrow
- Deep ploughing
- Farm pond
- Supplemental irrigation through micro irrigation

Actionable Comprehensive Plans for Contingency

State	MAHARASHTRA	District	AMRAVATI
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	822.9	More than 19%	Less than 666.549
June	149.6		
July	259.3		
August	237.2		
September	176.8		

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

Irrigation info:

Net irrigated area:	0	Gross irrigated area:	0
Net Rainfed area		Gross rainfed area	

Source wise irrigation area details (ha)

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

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	5530	0	
2	Jowar	10005	-	
3	Maize	23171		23171
4	Bajra	182		182
5	Ragi	-		

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	115685		115685
2	Groundnut	2340		2340
3	Sesamum	1476		1476
4	SOyabean	309344		309344
5	Sunflower	10		10
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	297653		297653
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	268		268
2	Tobacco	-		
3	Guar seed	-		
4	Other Fodder crops	-		

Crop Plan- Beginning of the season

Early season drought (delayed onset)	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures
Delay by 4 weeks 9th-15thJuly 28thMW	Medium deep to deep black soils	Cotton	Replace the hybrids with improved early varieties in cotton. American:AKH-081,AKH-9916,PKV Rajat DeshiCotton:AKA-5, AKA-7, AKA-8 Soybean:JS-335, JS-93 - 05 Pigeonpea varieties: AKT 8811, Vipula, Rajeshwari, PKV TARA, BSMR-736/853, BDN716	Normal recommended Package of Practices by Dr.PDKV, Akola. Test GP%,use seedrate@ 75-80kg/ha,seed treatment with <i>Azotobacteria</i> +PSB (250geach/10kgseed), Thiram + Carboxin 3.5g, <i>Trichoderma</i> 4g/kg of seed. Use 20-25% more than recommended seed rate and reducefertilizerdoseby25% for Cotton. To reduce the risk of late sowing follow Cotton+ Sorghum+Pigeon · · Pea+Sorghum (3:1:1/6:1:2:1) intercropping system.

		Soybean	No change	Follow normal recommended package of practices. Intercrop one row of pigeonpea after every 4 or 6 rows of soybean as per convenience. Open furrow after six/three rows of soybean.
		Pigeonpea	No change	Use spacing 90 x 30 cm or 90 X20 cm.
		Sorghum (Kharif)	Replace sorghum by soybean varieties JS335, JS 93-05, JS9560, MAUS-71, MAUS-81 or pigeonpea variety AKT 8811, Vipula, Rajeshwari, PKV TARA, BSMR-736/853, BDN716	Use of early varieties (CSV 17)/ hybrids (CSH 14, CSH 23) Planting with 20% higher seed rate Seed treatment of Imidacloprid 70 WS 7g/kg seed. Follow normal recommended package of practices. Intercrop one row of pigeonpea after every 4 or 6 rows of soybean as per convenience. Open furrow after six/three rows of soybean. For pigeonpea use spacing 90 x 30 cm or 90 X20 cm.
	Shallow black soils	Soybean	No change	Normal recommended Package of Practices by Dr. PDKV, Akola. Test GP%, use seed rate @ 75-80 kg/ha, seed treatment with Rhizobium (250 g each /10 kg seed), Thiram + Carboxin 3 g, Trichoderma 4g/kg of seed. Thiamethoxam 30 FS 10ml/kg of seed.
		Greengram	Replace green gram with soybean varieties- JS335, JS 93-05, JS 9560, MAUS-71, MAUS-81	Normal recommended Package of Practices by Dr. PDKV, Akola. Seed treatment with Rhizobium + PSB (250 g each /10 kg seed), Thiram + Carboxin 3 g, Trichoderma 4g/kg of seed. Thiamethoxam 30 FS 10ml/kg of seed.
		Blackgram	Replace Blackgram by Soybean Varieties- JS335, JS 93-05, JS9560, MAUS-71, MAUS-81	Normal recommended Package of Practices by Dr. PDKV, Akola. Seed treatment with Rhizobium + PSB (250 g each /10 kg seed), Thiram + Carboxin 3 g, Trichoderma 4g/kg of seed. Thiamethoxam 30 FS 10ml/kg of seed.

Contingency measures- Mid season

Condition			Suggested Contingency measures	
Mid-season drought (long dry spell)	Major Farming situation	Normal Crop/cropping system	Crop management	Soil nutrient & moisture conservation measure ^s
At vegetative stage	Medium deep to Deep black soils	Cotton	Give protective irrigation if possible. Weeding, inter cultivation to create soil mulch to conserve moisture.	Avoid top dressing of fertilizer during moisture stress period. Spraying of 1% KNO ₃ OR K ₂ SO ₄ . Opening of conservation Furrows for moisture conservation.
		Soybean	Give protective irrigation if possible. Weeding, inter-cultivation to create soil mulch to conserve moisture.	Spraying of 1% KNO ₃ . Opening of conservation furrows for moisture conservation.
		Pigeonpea	Give protective irrigation if possible. Weeding, inter cultivation to create soil mulch to conserve moisture.	Spraying of 1% KNO ₃ . Opening of conservation furrows for moisture conservation.
		Sorghum (Kharif)	Give protective irrigation if possible. Weeding, inter cultivation to create soil mulch to conserve moisture.	Avoid top dressing of fertilizer during moisture stress period. Opening of conservation furrows for moisture conservation.
	Shallow black soils	Soybean	Give protective irrigation if possible. Weeding, inter cultivation to create soil mulch to conserve moisture.	Spraying of 1% KNO ₃ . Opening of conservation furrows for moisture conservation.
		Greengram	Intercultivation to create soil mulch to conserve moisture. Protective irrigation if possible.	Spraying of 1% KNO ₃ . Opening of conservation furrows for moisture conservation.
		Blackgram	Give protective irrigation if possible. Weeding, inter cultivation to create soil mulch to conserve moisture.	Spraying of 2% urea or 1% KNO ₃ . Opening of conservation furrows for moisture conservation. Spraying of 2 % urea or DAP.

Contingency measures- End of the season

Condition			Suggested Contingency measures	
Terminal drought (Early withdrawal of monsoon)	Major Farming situation	Normal Crop/cropping system	Crop management	Rabi Crop planning
	Medium deep to deep black soils	Cotton	Give protective irrigation if possible. Spraying of 1% K ₂ SO ₄ / KNO ₃	-
		Soybean	Give protective irrigation if possible.	Plan for rabi sowing.
		Pigeonpea	Give protective irrigation if possible.	Spraying of 2% urea or 1% KNO ₃ .

Resource management technologies

- Conservation furrows in soybean, pearl millet and cotton
- Desilting of check dams for providing supplemental irrigation during kharif and rabi season
- Farm ponds for lifesaving irrigation
- Micro irrigation system in cotton and chickpea
- Short duration drought escaping Soybean variety JS -9305
- Intercropping of Soybean + Pigeonpea (8:2) and Cotton +Pigeonpea (8:2)
- Strip cropping **in soybean and pigeon pea**

Actionable Comprehensive Plans for Contingency

State	MAHARASHTRA	District	AURANGABAD
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	563.6	More than 19%	Less than 456.516
June	121.2		
July	140.3		
August	131.8		
September	170.3		

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

Irrigation info:

Net irrigated area:	0	Gross irrigated area:	0
Net Rainfed area		Gross rainfed area	

Source wise irrigation area details (ha)

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

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	0	0	
2	Jowar	1125	-	
3	Maize	14086		14086
4	Bajra	1243		1243
5	Ragi	-		

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	34818		34818
2	Groundnut	1488		1488
3	Sesamum	217		217
4	SOyabean	402740		402740
5	Sunflower	36		36
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	767		767
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	55075		55075
2	Tobacco	-		
3	Guar seed	-		
4	Other Fodder crops	-		

Crop Plan- Beginning of the season

Condition			Suggested Contingency measures		
Early season drought (Delayed onset)	Major Farming situation	Normal Crop / Cropping system	Change in crop / cropping system including variety	Agronomic measures	Remarks on Implementation
Delay by 4 weeks 2nd week of July	Medium deep to deep black soils with assured rainfall	Cotton	No change. Prefer short duration varieties / hybrids or Cotton + pigeonpea (BSMR 736, 853, BDN 708,711) in 6:1 row proportion or Cotton + soybean /mung/udid (1:1)	Normal package of practices recommended by VNMKV, Parbhani or adopt 10% more seed rate than recommended. Follow <i>in-situ</i> soil moisture conservation measures	- Linkage with VNMKV, MSSC and NSC for seed. - Linkage with MAIDC for implements.

		Maize	No change	Normal package of practices recommended by VNMKV, Parbhani or adopt 10% more seed rate than recommended. Follow <i>in-situ</i> soil moisture conservation measures Sowing on Ridges and furrow or by BBF planter	Linkage with VNMKV, KVK for agro techniques.
		Pearl millet	No change Prefer varieties like ICTP-8203, GHB 558, AIMP-92901, Shardha Saburi	-do-	
		Pigeonpea	No change, prefer varieties BSMR 736, 853 BDN 708, 711	-do-	
		Soybean	No change or intercropping with pigeonpea in 4:2 or 2:1 row proportion or cotton + soybean (1:1 or 2:1) Use MAUS 71, MAUS 81, MAUS 158, MAUS 162 and for pigeonpea BSMR 736, 853 BDN 708, 711 for intercropping	-do-	
		Sorghum	Sorghum (CSH-9, 11,16, PVK-401, 809) + Pigeonpea, BSMR 736 / 853, BDN-711) in 4: 2 row proportion	-do- , + Seed treatment for stem borer and shoot fly	
		Green gram / Black gram - Chickpea / <i>Rabi</i> Sorghum / Safflower	Cotton / Maize/ Pigeonpea (BSMR 736, 853, BDN 708, BDN 711) / Pearl millet (Shradha, Saburi, AIMP-92901) or Sunflower (Morden, SS-56, LSFH-35, BSH-1)	-do-	
	Shallow black soils with assured rainfall	Cotton	No change or short duration varieties / hybrids or Cotton + pigeonpea (BSMR 736, 853, BDN 708,711) in 6:1 row proportion	Normal package of practices recommended by VNMKV, Parbhani or adopt 10% more seed rate than recommended. Follow <i>in-situ</i> soil moisture conservation measures	
		Maize	No change	Normal package of practices recommended by VNMKV, Parbhani or adopt 10% more seed rate than recommended. Follow <i>in-situ</i> soil moisture conservation measures Sowing on Ridges and furrow or by BBF planter	

		Pearl millet	No change. Prefer varieties like ICTP-8203, GSB 558, AIMP-92901 Shradha, Saburi	-do-	
		Pigeonpea	No change or intercropping with pigeonpea in 4:2 or 2:1 row proportion or cotton + soybean (1:1 or 2:1) Use MAUS 71, MAUS 81, MAUS 158, MAUS 162 and for pigeonpea BSMR 736, 853 BDN 708, 711 for intercropping	-do-	
		Soybean	No change or intercropping with pigeonpea in 4:2 or 2:1 row proportion or cotton + soybean (1:1 or 2:1) Use MAUS 71, MAUS 81, MAUS 158, MAUS 162 and for pigeonpea BSMR 736, 853 BDN 708, 711 for intercropping	-do-	
		Sorghum	Cotton / Maize / Pigeonpea (BSMR 736, 853, BDN 708, BDN 711) / Pearl millet (Shradha, Saburi, AIMP-92901) or Sunflower (Morden, SS-56, LSFH-35, BSH-1)	-do-	
		Green gram / Black gram - Chickpea / Rabi Sorghum / Safflower	Cotton / Maize / Pigeonpea (BSMR 736, 853, BDN 708, BDN 711) / Pearl millet (Shradha, Saburi, AIMP-92901) or Sunflower (Morden, SS-56, LSFH-35, BSH-1)	-do-	
	Medium deep to deep black soils with low rainfall (Vaijapur and Gangapur tehsils)	Cotton	No change. Prefer short duration varieties / hybrids or Cotton + pigeonpea (BSMR 736, 853, BDN 708, 711) in 6:1 row proportion	Normal package of practices recommended by VNMKV, Parbhani or adopt 10% more seed rate than recommended. Follow <i>in-situ</i> soil moisture conservation measures	
		Maize	No change	Normal package of practices recommended by VNMKV, Parbhani or adopt 10% more seed rate than recommended. Follow <i>in-situ</i> soil moisture conservation measures Sowing on Ridges and furrow or by BBF planter	
		Pearl millet	No change. Prefer varieties like ICTP-8203,	-do-	

			GHB- 558, AIMP-92901, Shardha, Saburi		
		Pigeonpea	Soybean (JS-335, MAUS-71) + Pigeon pea (BSMR 736, BSMR 853, BDN 708, BDN- 711) in 4 : 2 row proportion	-do-	
		Soybean	Soybean (JS-335, MAUS-71) + Pigeon pea (BSMR 736, BSMR 853, BDN 708, BDN- 711) in 4 : 2 row proportion		
		Green gram / Black gram - Chickpea / <i>Rabi</i> Sorghum / Safflower	Cotton / Maize/ Pigeonpea (BSMR 736, 853, BDN 708, BDN 711) / Pearl millet (Shradha, Saburi, AIMP-92901) or Sunflower (Morden, SS-56, LSFH-35, BSH-1)	-do-	
	Shallow black soils with low rainfall (Vaijapur and Gangapur tehsils)	Cotton	Pearl Millet+Pigeonpea, Prefer varieties like ICTP-8203, GHB- 558, AIMP-92901, Shardha, Saburi + Pigeon pea (BSMR 736, BSMR 853, BDN 708, BDN- 711) 2:1, 3:3		
		Pearl millet / Pearl millet + Pigeonpea	No change. Prefer varieties like ICTP-8203, GHB- 558, AIMP-92901, Shardha, Saburi + Pigeon pea (BSMR 736, BSMR 853, BDN 708, BDN- 711) 2:1, 3:3	Normal package of practices recommended by VNMKV, Parbhani	
		Maize	No change	-do-	
		Pigeonpea	No change. Prefer early varieties like BDN 711 or preferred intercropping with pearl millet	-do-	
		Soybean	Pearl Millet+Pigeonpea, Prefer varieties like ICTP-8203, GHB- 558, AIMP-92901, Shardha, Saburi + Pigeon pea (BSMR 736, BSMR 853, BDN 708, BDN- 711) 2:1, 3:3		

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	Normal Crop / Cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation

At vegetative stage	Medium deep to deep black soils with assured rainfall	Cotton	- Avoid top dressing of fertilizers till sufficient soil moisture is available. - Interculture with harrow for weeding and to create soil mulch. - Give protective irrigation if possible	- Mulching with crop residue @ 3-5 t/ha - Foliar spray of 1% KNO₃, or 2% urea or DAP, - Spraying of 0.2% MgSO₄, Zinc, Boron - Opening of furrow after every two row with Balaram plough. - Mulching with crop residue @ 3-5 t/ha	- Linkage with VNMKV, MSSC and NSC for seed. - Linkage with MAIDC for implements. - Linkage with VNMKV, KVK for agro techniques.
		Pearl millet	-do-	- Opening of furrow after every 4 or 6 row with Balaram plough - Mulching with crop residue @ 3-5 t/ha within the rows - Spraying of 1% KNO₃	
		Maize	-do-	- Opening of furrow after every 4 or 6 row with Balaram plough - Mulching with crop residue @ 3-5 t/ha	
		Pigeonpea	-do-	- Opening of furrow after every two row with Balaram plough - Spraying of 2% urea or DAP	
		Soybean	Interculture for weeding and to create soil mulch.	- Opening of furrow after every 4 or 6 row with Balaram plough - Spraying of 1% KNO₃	
		Sorghum	- Avoid top dressing of fertilizers till sufficient soil moisture is available. - Give protective irrigation wherever possible - Intra row thinning	- Opening of furrow after every two row with Balaram plough - Mulching with crop residue @ 3-5 t/ha	
		Green gram / Black gram - Chickpea / <i>Rabi</i> Sorghum / Safflower	- Interculture for weeding and to create soil mulch. - If possible give protective irrigation with sprinkler	- Spraying of 1% KNO₃ or 2% urea or DAP - Interculture with hoe	
	Shallow black soils with assured rainfall	Cotton	Avoid top dressing of fertilizers till sufficient soil	Mulching with crop residue @ 3-5 t/ha	

			moisture is available. • Interculture with harrow for weeding and to create soil mulch. • Give protective irrigation wherever possible	• Foliar spray of 2% KNO₃, urea, DAP, MgSO₄, Zinc, Boron • Opening of furrow after every two row with Balaram plough. • Mulching with crop residue @ 3-5 t/ha	
		Maize	-do-	• Opening of furrow after every 4 or 6 row with Balaram plough • Mulching with crop residue @ 3-5 t/ha	
		Pearl millet	• Gap filling or transplanting of seedlings either from the same field or from nursery or gap filling with pigeonpea	• Opening of furrow after every 4 or 6 row with Balaram plough	
		Soybean	• Gap filling within the rows with same or short duration cultivar to maintain at least 75% plant population	-do-	
		Pigeonpea	-do-	• Opening of furrow after every two row with Balaram plough • Spraying of 2% urea or DAP	
		Sorghum	• Avoid top dressing of fertilizers till sufficient soil moisture is available. • Give protective irrigation wherever possible	• Interculture for weeding and to create soil mulch to conserve moisture. • Opening of alternate furrows	
		Green gram / Black gram - Chickpea / <i>Rabi</i> Sorghum / Safflower	• Interculture for weeding and to create soil mulch. • If possible give protective irrigation with sprinkler	• Spraying of 2% urea or DAP	
	Medium deep to deep black soils with low rainfall (Vaijapur and Gangapur tehsils)	Cotton	• Avoid top dressing of fertilizers till sufficient soil moisture is available. • Interculture with harrow for weeding and to create soil mulch. • Give protective irrigation wherever possible	• Mulching with crop residue @ 3-5 t/ha • Foliar spray of 1% KNO₃ or 2% urea/ DAP, • Foliar spray of 0.2% MgSO₄, Zinc, Boron • Opening of furrow after every two row with Balaram plough. • Mulching with crop residue @ 3-5 t/ha	

		Pearl millet	-do-	- Opening of furrow after every 4 or 6 row with Balaram plough - Mulching with crop residue @ 3-5 t/ha	
		Maize	-do-	Opening of furrow after every 4 or 6 row with Balaram plough	
		Pigeonpea	Gap filling within the rows with same or short duration cultivar to maintain at least 75% plant population	- Opening of furrow after every two row with Balaram plough - Spraying of 2% urea or DAP	
		Soybean	-do-	-do-	
		Green gram / Black gram - Chickpea / Rabi Sorghum / Safflower	- Interculture for weeding and to create soil mulch. - If possible give protective irrigation with sprinkler	Spraying of 1% KNO₃ or 2% urea /DAP	
	Shallow black soils with low rainfall (Vaijapur and Gangapur tehsils)	Cotton	- Avoid top dressing of fertilizers till sufficient soil moisture is available. - Interculture with harrow for weeding and to create soil mulch. - Give protective irrigation wherever possible	- Mulching with crop residue @ 3-5 t/ha - Foliar spray of 1% KNO₃ or 2% urea/ DAP, - Foliar spray of 0.2% MgSO₄, Zinc, Boron - Opening of furrow after every two row with Balaram plough. - Mulching with crop residue @ 3-5 t/ha	
		Pearl millet / Pearl millet + Pigeonpea	-do-	- Opening of furrow after every 4 or 6 row with Balaram plough - Mulching with crop residue @ 3-5 t/ha	
		Maize	-do-	Opening of furrow after every 4 or 6 row with Balaram plough	
		Pigeonpea	Gap filling within the rows with same or short duration cultivar to maintain at least 75% plant population	- Opening of furrow after every two row with Balaram plough - Spraying of 2% urea or DAP	
		Soybean	-do-	Opening of furrow after every 4 or 6 row with Balaram plough	
At flowering / fruiting stage	Medium deep to deep black soils with assured rainfall	Cotton	Give protective irrigation with drip	- Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP. - Mulching with crop residue @ 3-5 t/ha within the rows - Spraying of 0.2% MgSO₄, Zinc, Boron.	Linkage with MAIDC / DSAO for intercultural implements (Harrow, hoe).

		Pearl millet	-do-	- Foliar spray of 2% urea and DAP - Mulching with crop residue @ 3-5 t/ha	Linkage with RKVY for farm ponds and micro irrigation system.
		Maize	-do-	-do-	
		Pigeonpea	Give protective irrigation	Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP.	
		Soybean	Give protective irrigation with sprinkler	-do-	
		Sorghum	Give protective irrigation	- Foliar spray of 2% urea and DAP - Mulching with crop residue @ 3-5 t/ha	
		Green gram / Black gram - Chickpea / <i>Rabi</i> Sorghum / Safflower	Give protective irrigation with sprinkler	Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP	
	Shallow black soils with assured rainfall	Cotton	Give protective irrigation	- Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP. - Mulching with crop residue @ 3-5 t /ha within the rows - Spraying of 0.2% MgSO₄, Zinc, Boron.	
		Pearl millet	-do-	- Foliar spray of 2% urea and DAP - Mulching with crop residue @ 3-5 t/ha	
		Maize	- Give protection irrigation - In case of severe stress harvest as green fodder	-do-	
		Pigeonpea	Give protective irrigation	Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP.	
		Soybean	Give protective irrigation with sprinkler	-do-	
		Sorghum	- Give protection irrigation - In case of severe stress harvest as green fodder	If feasible spray anti-transparent 6% kaolin	
		Green gram / Black gram - Chickpea / <i>Rabi</i> Sorghum / Safflower	- Give protection irrigation with sprinkler - In case of severe stress harvest as green fodder / green manuring	Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP	

	Medium deep to deep black soils with low rainfall (Vaijapur and Gangapur tehsils)	Cotton	Give protective irrigation with drip	- Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP. - Mulching with crop residue @ 3-5 t/ha within the rows - Spraying of 0.2% MgSO₄, Zinc, Boron.	
		Pearl millet	Give protective irrigation	- Foliar spray of 2% urea and DAP - Mulching with crop residue @ 3-5 t/ha	
		Maize	-do-	-do-	
		Pigeonpea	-do-	Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP.	
		Soybean	Give protective irrigation with sprinkler	-do-	
		Green gram / Black gram - Chickpea / <i>Rabi</i> Sorghum / Safflower	-do-	Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP	
	Shallow black soils with low rainfall (Vaijapur and Gangapur tehsils)	Cotton	- Give protective irrigation with drip	- Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP. - Mulching with crop residue @ 3-5 t/ha within the rows - Spraying of 0.2% MgSO₄, Zinc, Boron.	
		Pearl millet / Pearl millet + Pigeonpea	Give protective irrigation	- Foliar spray of 2% urea and DAP - Mulching with crop residue @ 3-5 t/ha	
		Maize	- Give protection irrigation - In case of severe stress harvest as green fodder	-do-	
		Pigeonpea	-do-	Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP.	
		Soybean	Give protective irrigation with sprinkler	-do-	

Contingency measures- End of the season

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures		
			Crop management	Rabi Crop planning	Remarks on Implementation
Terminal drought (Early withdrawal of monsoon)	Medium deep to deep black soils with assured rainfall	Cotton	Life saving irrigation with drip Picking	If possible, adopt relay cropping of chickpea, safflower, <i>rabi</i> sorghum	Linkage with MAIDC / DSAO for intercultural implements
		Pearl millet	Life saving irrigation or harvest at physiological maturity	Plan for <i>rabi</i> crops chickpea / safflower	

		Maize	-do-	-do-	(Harrow, hoe). • Linkage with RKVY for farm ponds and micro irrigation system.
		Pigeonpea	Life saving irrigation	-	
		Soybean	-do-	Plan for <i>rabi</i> crops chickpea / safflower	
		Sorghum	Life saving irrigation or harvest at physiological maturity	-do-	
	Shallow black soils with assured rainfall	Green gram / Black gram - Chickpea / <i>Rabi</i> Sorghum / Safflower	Harvest at physiological maturity	Plan for <i>rabi</i> crops chickpea / safflower / <i>rabi</i> sorghum / sunflower	
		Cotton	Life saving irrigation Picking	If possible, adopt relay cropping of chickpea, safflower, <i>rabi</i> sorghum	
		Pearl millet	Life saving irrigation or harvest at physiological maturity	Plan for <i>rabi</i> crops chickpea / safflower	
		Maize	Life saving irrigation In case of severe stress harvest as green fodder	-do-	
		Pigeonpea	Life saving irrigation	Foliar spray of 1% KNO ₃ , 2% urea/DAP	
		Soybean	Life saving irrigation with sprinkler	---	
		Sorghum	Life saving irrigation In case of severe stress harvest as green fodder	Plan for <i>rabi</i> crops chickpea / safflower	
		Green gram / Black gram - Chickpea / <i>Rabi</i> Sorghum / Safflower	Harvest at physiological maturity	Plan for <i>rabi</i> crops chickpea / safflower / <i>rabi</i> sorghum / sunflower	
	Medium deep to deep black soils with low rainfall (Vaijapur and Gangapur tehsils)	Cotton	Life saving irrigation with drip Picking	If possible, adopt relay cropping of chickpea, safflower, <i>rabi</i> sorghum	
		Pearl millet	Life saving irrigation or harvest at physiological maturity	Plan for <i>rabi</i> crops chickpea / safflower	
		Maize	-do-	-do-	
		Pigeonpea	Life saving irrigation	-	
		Soybean	Life saving irrigation with sprinkler	---	
		Green gram / Black gram - Chickpea / <i>Rabi</i> Sorghum / Safflower	Harvest at physiological maturity	Plan for <i>rabi</i> crops chickpea / safflower / <i>rabi</i> sorghum / sunflower	
	Shallow black soils with low rainfall (Vaijapur and Gangapur tehsils)	Cotton	Life saving irrigation with drip Picking	If possible, adopt relay cropping of chickpea, safflower, <i>rabi</i> sorghum	
		Pearl millet / Pearl millet + Pigeonpea	Life saving irrigation or harvest at physiological maturity	Plan for <i>rabi</i> crops chickpea / safflower after harvest of sole pearl millet	
		Maize	Life saving irrigation In case of severe stress harvest as green fodder	Plan for <i>rabi</i> crops chickpea / safflower	

		Pigeonpea	Life saving irrigation	Foliar spray of 1% KNO ₃ , 2% urea/DAP	
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2.1.2 Irrigated situation

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures		
			Change in crop / cropping system	Agronomic measures	Remarks on Implementation
Delayed release of water in canals due to low rainfall	Medium deep to deep black soils with assured rainfall	Sugarcane	No change or prefer irrigated cotton	Raising of nurseries with single budded setts to save the time and water for pre-seasonal planting Drip system for enhancing the water productivity Mulching with sugarcane trash between rows and frequent interculture to conserve moisture	- Linkage with VSI and Sugarcane Research Station, Padegeon for supply of foundation planting material of improved varieties Co-86012, Co-0265, Co-94012 - Linkage with MAU, Parbhani, MSSC, NSC and NFSM for supply of seed - Linkage with DSAO for micro irrigation system through RKVY and NHM.
		Wheat	No change. Depending upon time of release of water go for timely (HD-2496, HD-2189, Triambak) / late sown (HD-2189, Kailash) wheat varieties	Give irrigation at critical stages of crop growth	
		Chickpea	Use early maturing varieties ICCV-2 Use of desi type viz., Akash instead of Kabuli	Use drip irrigation / give irrigation at critical crop growth stages (branching and pod formation) Sowing on Ridges and Furrows or BBF	
		Safflower	Use improved varieties PBNS-12 / 40	Use drip irrigation / give irrigation at critical crop growth stages (branching and capsule formation)	
		Ginger	No change	Use drip irrigation	
		Turmeric	No change	-do-	
		Chilli	No change	-do-	
		<i>Rabi</i> onion	No change	-do-	
	Shallow black soils with assured rainfall	Ginger / turmeric	<i>Rabi</i> onion / summer pearl millet	-do-	

	Medium deep to deep black soils with low rainfall (Vaijapur and Gangapur tehsils)	Sugarcane	Irrigated cotton / wheat	Give irrigation at critical stages of crop growth	
		Wheat	No change. Depending upon time of release of water go for timely sown (HD-2496, HD-2189, Triambak) / late sown (HD-2189, Kailash) wheat varieties	Give irrigation at critical stages of crop growth	
		Chickpea	Use early maturing varieties ICCV-2 Use of desi type viz., Akash instead of Kabuli	Use drip irrigation / give irrigation at critical crop growth stages (branching and pod formation)	

				Sowing on Ridges and Furrows or BBF	
		Safflower	Use improved varieties i.e. PBNS-12 / 40	Use drip irrigation / give irrigation at critical crop growth stages (branching and capsule formation)	
		Ginger	No change	Use drip irrigation	
		Turmeric	No change	-do-	
		Chilli	No change	-do-	
		Rabi onion	No change	-do-	
	Shallow black soils with low rainfall (Vaijapur and Gangapur tehsils)	Wheat	Chickpea / safflower / summer pearl millet / fodder maize	Use drip irrigation and give irrigation at critical growth stages	
Limited release of water in canals due to low rainfall	Medium deep to deep black soils with assured rainfall	Sugarcane	No change or prefer irrigated cotton / wheat / safflower / chickpea / <i>rabi</i> onion	Water saving measures such as alternate furrow. Give irrigation at critical crop growth stages	Linkage with Irrigation Department for release of water at critical growth stages
		Wheat	Use low water requiring varieties Lok-1, PBN-1, Kailash	Give irrigation at critical crop growth stages	
		Chickpea	No change		
		Safflower	No change		
		Ginger	Wheat		
		Turmeric	Wheat		
		Chilli	Rabi onion		
		<i>Rabi</i> onion	No change		
	Shallow black soils with assured rainfall	Wheat	Chickpea / fodder maize / safflower		
		Safflower	No change		
		Ginger	Chickpea / safflower		
	Medium deep to deep black soils with low rainfall (Vaijapur and Gangapur tehsils)	Sugarcane	Irrigated cotton / wheat / <i>rabi</i> onion		
	Shallow black soils with low rainfall (Vaijapur and Gangapur tehsils)	Sunflower	No change or prefer fodder maize		
Non release of water in canals under delayed onset of monsoon in catchment	Medium deep to deep black soils with assured rainfall	Sugarcane	Cotton / soybean / pigeonpea / maize	Interculture operations and mulching to conserve soil moisture. Basal application of all the recommended fertilizers.	Liasion with Irrigation Department for release of water at critical growth stages
		Ginger	Chickpea / safflower / sunflower / <i>rabi</i> sorghum	-do-	
		Turmeric	-do-		
		Chilli	-do-		
	Shallow black soils with	Chickpea / safflower	No change		

	assured rainfall				
	Medium deep to deep black soils with low rainfall (Vaijapur and Gangapur tehsils)	Sugarcane	Cotton / soybean / pigeonpea / maize		
		Ginger	Chickpea / safflower / sunflower / maize		
		Turmeric	-do-		
		Chilli	-do-		
	Shallow black soils with low rainfall (Vaijapur and Gangapur tehsils)	Chickpea / safflower / maize fodder	No change		
Lack of inflows into tanks due to insufficient / delayed onset of monsoon	Medium deep to deep black soils with assured rainfall	Not applicable			
	Shallow black soils with assured rainfall	Not applicable			
	Medium deep to deep black soils with low rainfall (Vaijapur and Gangapur tehsils)	Not applicable			
	Shallow black soils with low rainfall (Vaijapur and Gangapur tehsils)	Not applicable			
Insufficient groundwater recharge due to low rainfall	Medium deep to deep black soils with assured rainfall	Sugarcane	No change. Prefer alternate crops like cotton, soybean, maize / wheat / cowpea / sunflower	Limited irrigation / Drip / Alternate furrow irrigation or harvest for fodder purpose	Supply of seed through MSSC, NFSM, VNMKV, Village seed production programme
		Wheat	<i>Rabi</i> sorghum	-do-	
		Chickpea	No change or prefer varieties like BDN-9-3, Akash, Vijay, Vikas	-do-	
		Safflower	No change or prefer varieties like PBNS-12/40, Sharada, Naari-6	-do-	
		Ginger	Sorghum (M-35-1, Parbhani Moti) / chickpea (BDN-9-3, Akash, Vijay) / safflower (PBNS-12/40, Sharada, Naari-6)	-do-	
		Turmeric	-do-	-do-	
		Chilli	-do-	-do-	
		<i>Rabi</i> onion	-do-	-do-	

	Shallow black soils with assured rainfall	Not applicable		
	Medium deep to deep black soils with low rainfall (Vaijapur and Gangapur tehsils)	Sugarcane	Prefer alternate crops like cotton, soybean, maize and pigeonpea	-do-
		Wheat	Rabi sorghum	-do-
		Chickpea	No change or prefer varieties like BDN-9-3, Akash, Vijay, Vikas	-do-
		Safflower	No change or prefer varieties like PBNS-12/40, Sharada, Naari-6	-do-
		Ginger	Sorghum (M-35-1, Parbhani Moti) / chickpea (BDN-9-3, Akash, Vijay) / safflower (PBNS-12/40, Sharada, Naari-6)	-do-
		Turmeric	-do-	-do-
		Chilli	-do-	-do-
		Rabi onion	-do-	-do-
	Shallow black soils with low rainfall (Vaijapur and Gangapur tehsils)	Not applicable		

Resource management technologies

- Open/Tube well recharge structures with silt trap
- Desilting of percolation tanks for providing supplemental irrigation
- Low cost Jalkunds and farm ponds to harvest excess rainfall and growing high value crops
- Farm bunding to reduce erosion and mitigate water stress during dry spell
- Micro irrigation with harvested water for enhancing water use efficiency and crop productivity
- Low-cost water harvesting structures like sandbag check dam, konkanvijaybandhara
- Crop residues as mulching in rabi crops for enhancing soil fertility and moisture holding capacity
- Polyethylene mulching to conserve moisture and reduce weed growth in high value crops
- Broad Bed Furrow to enhance water use efficiency in soybean
- Drought tolerant variety of Bajra (ICTP-8203)
- Wheat variety PDKV-Washim (WSM-1472) for limited water availability areas of Maharashtra
- Short duration and drought escaping Soybean variety JS -9305 for high yielding
- Non-shattering drought tolerant variety of soybean MAUS-162
- High yielding onion variety (Bhima Super) from harvested water with sprinkler irrigation
- Lodging resistant rice varieties (Karjat 2, Karjat 9, Ratnagiri 1, Ratnagiri 5, Ratnagiri 6 and Ratnagiri 73) finger millet (Dapoli-1) in high rainfall regions and flood prone areas of Konkan region of Maharashtra
- Short duration var.Konkan Sadabahar of cowpea during rabi in rice fallows
- Intercropping of soybean + pigeonpea (6:2) for risk minimisation
- Strip cropping in soybean and pigeon pea to minimize runoff and to enhance water use efficiency
- Crop diversification with low water requiring crops during rabi
- Backyard poultry with Kaveri, Giriraj, Kadaknath, Gramapriya chicks for minimising risk and sustainable livelihood
- Konkan Kanyal goat breed resistant to heavy rain on raised platform Year-round fodder production through improved fodder cultivars for sustainable dairy production
- Azolla as alternate protein supplement for dairy animals for enhancing productivity
- Silage making to reduce fodder scarcity in summer and enhance milk productivity

Actionable Comprehensive Plans for Contingency

State	MAHARASHTRA	District	BULDANA
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	647.6	More than 19%	Less than 524.556
June	135.9		
July	186.5		
August	179.6		
September	145.6		

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

Irrigation info:

Net irrigated area:	0	Gross irrigated area:	0
Net Rainfed area		Gross rainfed area	

Source wise irrigation area details (ha)

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

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	0	0	
2	Jowar	2029	-	
3	Maize	39561		39561
4	Bajra	1756		1756
5	Ragi	-		

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	83817		83817
2	Groundnut	5139		5139
3	Sesamum	668		668
4	SOyabean	372643		372643
5	Sunflower	193		193
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	187082		187082
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	535		535
2	Tobacco	-		
3	Guar seed	-		
4	Other Fodder crops	-		

Crop Plan- Beginning of the season

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming situation	Normal Crop /Cropping system	Change in crop/cropping system including variety	• Agronomic measures	Remarks on Implementation

Del ayb y4w eek s 9 th 15 th uly2 8 th M W	Medium deep to deep black soils	Cotton	• Replace the hybrids with improved early varieties in cotton. • American: AKH-081, AKH-9916, PKV Rajat • Deshi Cotton: AKA-5, AKA-7, AKA-8	• Normal recommended Package of Practices by Dr.PDKV, Akola. • Test GP%, use seed rate @ 75-80kg/ha, seed treatment with <i>Azotobacter</i>+PSB (250g each/10kg seed), Thiram + Carboxin 3.5g, <i>Trichoderma</i> 4g/kg of seed. • Use 20-25% more than recommended seed rate and reduce fertilizer dose by 25% for Cotton. • To reduce the risk of late sowing follow Cotton+Sorghum+PigeonPea+Sorghum (3:1:1:1/6:1:2:1) intercroppings	• Linkage with Dr.PDKV/MSSC/NSC for seed. • Linkage with MAIDC, custom hiring centres for implements. Linkage with Dr.PDKV/regional KV Ks for agro-techniques
		Soybean	• No change	• Follow normal recommended package of practices. • Intercrop one row of pigeonpea after every 4 or 6 rows of soybean as per convenience. • Open furrow after six/three rows of soybean.	
		Pigeonpea	• No change	• Use spacing 90 x 30 cm or 90 X 20 cm.	
		Sorghum (Kharif)	• Replace sorghum by soybean varieties JS335, JS93-05, JS9560, MAUS-71, MAUS-81 or pigeonpea variety • AKT 8811, Vipula, Rajeshwari, PKV • TARA, BSMR-736/853, BDN716	• Use of early varieties (CSV 17)/hybrids (CSH 14, CSH 23) • Planting with 20% higher seed rate • Seed treatment of Imidacloprid 70 WS 7g/kg seed. • Follow normal recommended package of practices. • Intercrop one row of pigeonpea after every 4 or 6 rows of soybean as per convenience. • Open furrow after six/three rows of soybean. • For pigeonpea use spacing 90 x 30 cm or 90 X 20 cm.	
Soybean	• No change	• Normal recommended Package of Practices by Dr.PDKV, Akola. Test GP%, use seed rate @ 75-80kg/ha, seed treatment with <i>Rhizobium</i>+PSB (250g each./10kg seed), Thiram + Carboxin 3g, <i>Trichoderma</i> 4g/kg of seed. <i>Thiamethoxam</i> 30		Linkage with Dr.PDKV/MSSC/NSC for seed. Linkage with MAIDC, custom hiring centres for implements. Linkage with Dr.PDKV/regional KV Ks for agro-techniques	

Greengram	• Replace greengram with soybean varieties • JS335, JS 93-05, JS 9560, MAUS-71, MAUS-81	• Normal recommended Package of Practices by Dr. PDKV, Akola. • Seed treatment with <i>Rhizobium</i>+PSB (250g each /10kg seed), Thiram +Carboxin 3 g, <i>Trichoderma</i> 4 g/kg of seed. <i>Thiamethoxam</i> 30 FS 10ml/kg of seed.	
Blackgram	• Replace Blackgram by • Soybean Varieties • JS335, JS 93-05, JS 9560, MAUS-71, MAUS-81	• Normal recommended Package of Practices by Dr. PDKV, Akola • Seed treatment with <i>Rhizobium</i>+PSB (250g each /10kg seed), Thiram +Carboxin 3 g, <i>Trichoderma</i> 4 g/kg of seed. • <i>Thiamethoxam</i> 30 FS 10ml/kg of seed.	

Contingency measures- Mid season

Condition			Suggested Contingency measures		
Mid season drought (long dry spell, consecutive 2 weeks rainless(<2.5 mm) At vegetative stage	Major Farming situation	Normal crop/cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
	Medium deep to Deep black soils	Cotton	Give protective irrigation if possible. Weeding, intercultivation to create soil mulch to conserve moisture.	• Avoid top dressing of fertilizer during moisture stress period. • Spraying of 1% KNO₃ OR K₂SO₄. • Opening of conservation furrows	With limited water availability prefer micro-irrigation system. Intercultivation implements/machineryes to be popularized through Govt. schemes.
		Soybean	Give protective irrigation if possible. Weeding, intercultivation to create soil mulch to conserve moisture.	• Spraying of 1% KNO₃. • Opening of conservation furrows for	
		Pigeonpea	Give protective irrigation if possible. Weeding, intercultivation to create soil mulch to conserve moisture.	• Spraying of 1% KNO₃. • Opening of conservation furrows for moisture	
		Sorghum (Kharif)	Give protective irrigation if possible. Weeding, intercultivation to create soil mulch to conserve moisture.	• Avoid top dressing of fertilizer during moisture stress period. • Opening of conservation furrows for	
	Shallow black soils	Soybean	Give protective irrigation if possible. Weeding, intercultivation to create soil mulch to conserve moisture.	• Spraying of 1% KNO₃. • Opening of conservation furrows for	With limited water availability prefer micro-irrigation system. Intercultural implements/machineryes to be popularized through Govt. schemes.
		Greengram	Intercultivation to create soil mulch to conserve moisture. Protective irrigation if possible.	• Spraying of 1% KNO₃. • Opening of conservation furrows	
		Blackgram	Give protective irrigation if possible. Weeding, intercultivation to create soil mulch to conserve moisture.	• Spraying of 2% urea or 1% KNO₃. • Opening of conservation furrows for	

Condition			Suggested Contingency measures		
Mid season drought (long dry spell) At flowering /fruiting stage	Major Farming situation	Normal Crop/cropping system	Crop management	Soil nutrient & moisture conservation	Remarks on Implementation
	Medium deep to deep black soils	Cotton	Give protective irrigation if possible. Weeding, inter cultivation to create soil mulch to conserve moisture.	• Opening of conservation furrows for moisture conservation. • After release of moisture stress spraying of 2 % urea or DAP at flowering and 1%Urea + 1% MgSO₄ at boll development	
		Soybean	Give protective irrigation if possible.	• After release of moisture stress spraying of 2 % urea at flowering and pod	
		Pigeonpea	Give protective irrigation if possible.	• Opening of conservation furrows for moisture conservation. • After release of moisture stress spraying of 2 % urea	
		Sorghum(<i>Khari</i>)	Give protective irrigation if possible.	• After release of moisture stress spraying of 2 % urea	
		Greengram	Give protective irrigation if possible.	• After release of moisture stress spraying of 2 % urea at flowering and pod development.	
		Blackgram	Give protective irrigation if possible.	• After release of moisture stress spraying of 2% urea at flowering and pod	
	Shallow black soils	Soybean	Give protective irrigation if possible.	• After release of moisture stress spraying of 2 % urea at flowering and pod	

		Greengram	Give protective irrigation if possible.	After release of moisture stress spraying of 2 % urea at flowering and pod	
		Blackgram	Give protective irrigation if possible.	After release of moisture stress spraying of 2 % urea at flowering and pod	

Contingency measures- End of the season

Condition			Suggested Contingency measures		
Terminal drought (Early withdrawal of monsoon)	Major Farming situation	Normal Crop/cropping system	Crop management	Rabi Crop planning	Remarks on Implementation
	Medium deep to deep black soils	Cotton	Give protective irrigation if possible. Spraying of 1% K ₂ SO ₄ / KNO ₃	-	
		Soybean	Give protective irrigation if possible.	Plan for <i>rabi</i> sowing.	
		Pigeonpea	Give protective irrigation if possible.	Spraying of 2% urea or 1% KNO₃.	
		Sorghum (<i>Kharif</i>)	Give protective irrigation if possible for mid late to late varieties.	- Harvest at physiological maturity. - Plan for <i>rabi</i> sowing.	
	Shallow black soil	Soybean	Give protective irrigation if possible.	- Harvest at physiological maturity. - Plan for <i>rabi</i> sowing.	

Resource management technologies

- Open/Tube well recharge structures with silt trap
- Desilting of percolation tanks for providing supplemental irrigation
- Low cost Jalkunds and farm ponds to harvest excess rainfall and growing high value crops
- Farm bunding to reduce erosion and mitigate water stress during dry spell
- Micro irrigation with harvested water for enhancing water use efficiency and crop productivity
- Low cost water harvesting structures like sandbag check dam, konkanvijaybandhara
- Crop residues as mulching in rabi crops for enhancing soil fertility and moisture holding capacity
- Polyethylene mulching to conserve moisture and reduce weed growth in high value crops
- Broad Bed Furrow to enhance water use efficiency in soybean
- Drought tolerant variety of Bajra (ICTP-8203)
- Wheat variety PDKV-Washim (WSM-1472) for limited water availability areas of Maharashtra
- Short duration and drought escaping Soybean variety JS -9305 for high yielding
- Non-shattering drought tolerant variety of soybean MAUS-162
- High yielding onion variety (Bhima Super) from harvested water with sprinkler irrigation
- Lodging resistant rice varieties (Karjat 2, Karjat 9, Ratnagiri 1, Ratnagiri 5, Ratnagiri 6 and Ratnagiri 73) finger millet (Dapoli-1) in high rainfall regions and flood prone areas of Konkan region of Maharashtra
- Short duration var. Konkan Sadabahar of cowpea during rabi in rice fallows
- Intercropping of soybean + pigeonpea (6:2) for risk minimisation
- Strip cropping in soybean and pigeon pea to minimize runoff and to enhance water use efficiency

- Crop diversification with low water requiring crops during rabi
- Backyard poultry with Kaveri, Giriraj, Kadaknath, Gramapriya chicks for minimising risk and sustainable livelihood
- Konkan Kanyal goat breed resistant to heavy rain on raised platform Year-round fodder production through improved fodder cultivars for sustainable dairy production
- Azolla as alternate protein supplement for dairy animals for enhancing productivity
- Silage making to reduce fodder scarcity in summer and enhance milk productivity

Actionable Comprehensive Plans for Contingency

State	MAHARASHTRA	District	CHANDRAPUR
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	1076.3	More than 19%	Less than 871.803
June	188.5		
July	352.3		
August	324.8		
September	210.7		

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

Irrigation info:

Net irrigated area:	0	Gross irrigated area:	0
Net Rainfed area		Gross rainfed area	

Source wise irrigation area details (ha)

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

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	161554	0	
2	Jowar	518	-	
3	Maize	924		924
4	Bajra	-		
5	Ragi	-		

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	33297		33297
2	Groundnut	265		265
3	Sesamum	226		226
4	SOyabean	88354		88354
5	Sunflower	-		
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	194390		194390
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	20		20
2	Tobacco	-		
3	Guar seed	-		
4	Other Fodder crops	-		

Crop Plan- Beginning of the season

Delay by 4 weeks 9-15July 28th MW	Medium deep to deep black soils	• Paddy - Summer Paddy/Sesame • Paddy-Fallow • Paddy-Chickpea • Paddy-Lathyrus	• No Change • Paddy: PKV-HMT,SYE-2001,PKVKisan, • SKL-6,SYE-1, PKV Makrand, MTU-1010 • Pigeonpeaon bunds: • PKVTARA,BSMR-736/853,AKT8811,Vipula, Rajeshwari, BDN 716 • Chickpea: JAKI9218,Vijay, ICCV 2 • Lathyrus: Ratan, Mahatora • Summer sesame: AKT-101, NT-11	• Community nursery to be raised where water is available and transplantation undertaken with the receipt of rains. • Use higher seedrate for paddy and pigeonpea.	• Linkage with Dr.PDKV/MSSC/ NSC for seed. • Linkage with MAIDC, custom hiring centresfor implements. Linkage with Dr.PDKV/regional KVKsforagro-techniques
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		• Soybean	• No Change	• Follow Normal Recommended Package of Practices
		• Cotton	• Instead of <i>Bt</i> Cotton use non <i>Bt</i> varieties: AmericanAKH-081, • Desi Cotton AKA-5, • AKA-7, AKA-8 • Soybean, • JS-335,JS-93 -05 • Pigeonpea varieties • AKT 8811, Vipula , Rajeshwari, • PKV TARA,BSMR- • 736/853, BDN 716	• Use 20-25% more than recommended see date and reduce fertilizerdose by25% for Cotton. • Replace the hybrids with improved varieties in cotton. • American Cotton:-AKH-9916,PKVRajat,AKH-081, • Desi Cotton:-AKA-5, AKA-7, AKA-8.
	Medium deep to shallow black soils	• Paddy - Summer Paddy/Sesame • Paddy-Fallow • Paddy-Chickpea • Paddy-Lathyrus	• No Change • Paddy: PKV-HMT,SYE-2001,PDVKVKisan, • SKL-6,SYE-1,PKVMakrand,MTU-1010 • Pigeonpeaon bunds: • PKV TARA,BSMR-736/853,AKT 8811, Vipula, Rajeshwari, BDN 716 • Chickpea:JAKI9218,Vijay,ICCV2 • Lathyrus: Ratan, Mahatora • Summersesame:AKT-101,NT-11	• Community nursery o be raised where water is available and transplantation undertaken with the receipt of rains. • Use higher seed rate for paddy and pigeonpea.

Contingency measures- Mid season

Condition			Suggested Contingency measures		
Mid season drought (long dry spell, consecutive 2 weeks rainless)	Major Farming situation	Normal Crop/crop pingsystem	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
At vegetative stage	Medium Deep to deep soils	• Paddy - Summer Paddy/Sesame • Paddy-Fallow • Paddy-Chickpea	• Provide effective plant protection measures for armyworm.	• Avoid top dressing of nitrogen.	
	Shallow to medium deep soils	• Soybean	• Give protective irrigation if possible. • Weeding, intercultivation to create soil mulch to conserve moisture.	• Spraying of 2% urea or 1% KNO₃. • Opening of conservation furrows for moisture conservation.	

	Medium to Deep soils	• Cotton	• Give protective irrigation if possible. • Weeding, intercultivation to create soil	• Spraying of 2% urea or 1% KNO₃. • Avoid applying fertilizer till sufficient soil moisture	
			Mulch to conserve moisture.	is available. Opening of conservation furrows for moisture conservation.	
		• Pigeonpea	• Give protective irrigation if possible. • Weeding, intercultivation to create soil mulch to conserve moisture.	• Spraying of 2% urea or 1% KNO₃. • Opening of conservation furrows for moisture conservation.	

Condition			Suggested Contingency measures		
Midseason drought (long dry spell)	Major Farming situation	Normal Crop/cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
At flowering/ fruiting stage	Medium Deep to deep soils	• Paddy - Summer Paddy/ Sesame • Paddy - Fallow • Paddy - Chickpea • Paddy - Lathyrus	• May adopt relay cropping by sowing or broadcasting lathyrus seed in standing paddy crop. • Provide effective plant protection measures for armyworm/ Brown plant hopper.	• Provide protective irrigation	
	Moderately to shallow	• Soybean	• Give protective • Irrigation if possible.	• Spraying of 2 % urea or DAP at flowering	
	Deep soils	• Pigeonpea	• Give protective • Irrigation if possible.	• Opening of conservation furrows for moisture conservation. • Spraying of 2 % urea or DAP at flowering	

contingency measures- End of the season

Condition			Suggested Contingency measures		
Terminal drought (Early with drawl of monsoon)	Major Farming situation	Normal Crop/croppingsystem	Crop management	Rabi Crop planning	Remarks on Implementation
	Medium Deep to deep soils	• Paddy - Summer Paddy/ Sesame • Paddy-Fallow • Paddy-Chickpea • Paddy-Lathyrus	• If crop at permanent wilting stage harvest paddy for fodder purpose. • Use crop residues in paddy bandies to save available moisture for rabi crop.	• Lathyrusissuitable for rabi season. • ChickpeavarietyJAKI-9218issuitableforrabisea sontogrowinzerotillagec ondition. • Sunflower crop is suitable for rabi season. • Maize as contingency crop plan for food and fodder Purpose. • Mustard and linseed crop perform very well in available soil-moisture residues in paddy bandies.	
	Moderately to shallow soils	• Soybean	• Give protective irrigation if possible	• Plan for <i>rabi</i> sowing.	
	Medium deep soils	• Castor	-	• Semi <i>rabi</i> Sesame • Castor • Sorghum	
	All soils	• Pigeonpea	• Give protective irrigation if possible.	• Sprayingof2% urea or 1%KNO₃.	

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	NA				

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	NA				

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop /cropping system	Change in crop /cropping system	Agronomic measures	Remarks on Implementation
Non release of water in canals under delayed onset of monsoon in catchment	NA				

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	NA				

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop /cropping system	Change in crop /cropping system	Agronomic measures	Remarks on Implementation
Insufficient ground water recharge due to low rainfall					

Resource management technologies

- Desilting of community pond for providing lifesaving irrigation to kharif crop and pre sowing irrigation to rabi crop
- Desilting of drainage channel to augment the ground water level for providing supplemental irrigation to kharif crops
- Water evaporation retardant in farm pond to minimize evaporation losses
- Conservation furrow in soybean for moisture conservation
- Ridge and furrow in cotton to enhance water use efficiency and crop productivity
- Opening of furrow in cotton and pigeonpea to conserve moisture
- Opening of dead furrows in cotton to harvest rain water and moisture availability during crop growth
- Crop residue mulching in Pomegranate
- Tank silt application to increase moisture holding capacity and fertility of the soil
- Crop residue mulching in pomegranate to conserve moisture
- Efficient use of water and fertilizers by fertigation in Pomegranate
- Stress tolerant safflower variety PBNS-12 for receding moisture conditions of Maharashtra
- Short duration and drought escaping soybean variety- Phule Sangam (KDS-726)
- Drought escaping variety of chickpea Digvijay Short duration and drought escaping Greengram variety Phule Vaibhav
- High yielding Rabi sorghum varieties Phule Suchitra, Phule Anuradha, Phule Vasudha for efficient use of moisture
- Short duration variety of maize (GM-6) for delayed onset of monsoon
- Drought tolerant Sunflower variety Phule Bhaskar in rainfed areas
- Castor variety (DCH-519) for delayed monsoon
- Drought tolerant variety of sorghum (CSV-27) for kharif season
- Intercropping of Soybean + Pigeonpea (8:2) and Cotton + Pigeonpea (8:2) to increase profitability
- Breed upgradation in goats with Osmanabadi and Sangamneri bucks in frequently drought prone districts of Maharashtra
- Enrichment of poor-quality dry roughages in frequently drought prone regions
- Integrated Farming System (IFS) for stabilizing income and to minimize risk
- Mitigation of fodder security by perennial fodder cultivation (BDN-711, DHN-6, African tall)
- Backyard poultry with Srinidhi, Gramapriya chicks for sustainable income
- Silage making of green fodder to feed during lean period and increase milk production

Actionable Comprehensive Plans for Contingency

State	MAHARASHTRA	District	DHULE
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	543.9	More than 19%	Less than 440.559
June	120.9		
July	164.8		
August	125.2		
September	133		

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

Irrigation info:

Net irrigated area:	0	Gross irrigated area:	0
Net Rainfed area		Gross rainfed area	

Source wise irrigation area details (ha)

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

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	4511	0	
2	Jowar	5283	-	
3	Maize	75269		75269
4	Bajra	38515		38515
5	Ragi	2207		2207

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	3078		3078
2	Groundnut	9004		9004
3	Sesamum	95		95
4	SOyabean	17966		17966
5	Sunflower	50		50
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	237572		237572
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	4928		4928
2	Tobacco	-		
3	Guar seed	-		
4	Other Fodder crops	-		

Crop Plan- Beginning of the season

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major farming situation	Normal crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delay by 4 weeks July 2nd week 28MW	Shallow black soils	Pearlmillet	Shraddha, Saburi, Shanti	- Application of 25 kg K ₂ O per ha as basal dose - One hoeing and weeding before 30 DAS	Seed source : • Central campus MPKV, Rahuri, College of Agril., Pune, Kolhapur and Dhule NSC, MSSC, Private co. Distributers
		Greengram/ Blackgram	Pearlmillet (Shraddha, Saburi, Shanti)	As above	
		Sorghum	As above	As above	
	Medium deep black soils	Upland Paddy	Phule Radha, Pavana	- Direct seeding with seed drill - Weed free condition upto 40 days - N split application(50 kg N at sowing & 50 kg N at 25 DAS)	

		Pigeonpea	Pigeonpea (Vipula / BDN-708) + Clusterbean (1:2)	Opening of one conservation furrow after harvest of clusterbean	
		Soybean	Sunflower (SS-56 / Bhanu / Phule Raviraj)	-Seed treatment with Imadachloprid 70 WS @ 5-7 g per kg of seed - Hoeing at 20 DAS - Weeding upto 30 DAS	
	Deep black soils	Cotton	Bt cotton	- Hoeing at 20, 60 DAS - Weeding at 30 DAS	
		Maize	Karveer, Phule Rajarshee	- Sowing on ridges - Weeding at 25 DAS	

Condition			Suggested Contingency measures		
Early season drought (Normal onset)	Major Farming situation	Normal Crop/cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	Shallow black soils	Pearlmillet	Protective Irrigation or resowing in case of failure	Hoeing and Weeding	Use of farm pond for life saving irrigation
		Greengram/Blackgram	Resowing	As above	
		Sorghum	--	As above	
	Medium deep black soils	Upland Paddy	--	Weeding and intercultivation	
		Pigeonpea	Gap Filling	- Spray 2% urea or DAP - Hoeing/weeding	
		Soybean	In case of less than 30 % germination take up resowing with wider spacing of 45 cm with sufficient soil moisture.	Hoeing/weeding	
	Deep black soils	Cotton	Gap filling	Weeding, Protective irrigation	
		Maize	As above	As above	

Condition			Suggested Contingency measures		
Early season drought (Normal onset)	Major Farming situation	Normal Crop/cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
Mid season drought (long dry spell, consecutive 2 weeks rainless)	Shallow black soils	Pearlmillet	Give protective Irrigation	- Hoeing/Weeding - Use of 8 % kaolin spray 2 % urea spray	Use of farm pond for life saving irrigation
		Greengram/Blackgram	--	--	

(>2.5 mm) period) At vegetative stage		Sorghum	Give protective Irrigation	• Hoeing/Weeding • Use of 8 % kaolin spray • 2 % urea spray	
	Medium deep black soils	Upland Paddy	Give protective Irrigation	Weeding and interculture	
		Pigeonpea	Protective irrigation and thinning	• Hoeing/Weeding • Use of 8 % kaolin spray • 2 % urea spray, • Opening of conservation furrows in between two rows of pigeonpea	
		Soybean	Protective irrigation	• Use of 8 % kaolin spray • 2 % urea spray, • Hoeing and weeding	
	Deep black soils	Cotton	As above	• Use of 8 % kaolin spray • Hoeing and weeding, • 2 % urea and or 2 % DAP spray	
		Maize	As above	• 2 % urea spray, • Hoeing and weeding	

Condition			Suggested Contingency measures		
Early season drought (Normal onset)	Major Farming situation	Normal Crop/cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period) At flowering/ fruiting stage	Shallow black soils	Pearlmillet	Give protective Irrigation	• Hoeing/Weeding • Use of 8 % kaolin spray • 2 % urea spray,	Use of farm pond for life saving irrigation
		Greengram/ Blackgram	--	--	
		Sorghum	Give protective Irrigation	• Hoeing/Weeding • Use of 8 % kaolin spray • 2 % urea spray	
	Medium deep black soils	Upland Paddy	Give protective Irrigation	Weeding and intercultivation	
		Pigeonpea	Protective irrigation and thinning	• Hoeing/Weeding • Use of 8 % kaolin spray • 2 % urea spray, • Opening of conservation furrows in between two rows of pigeonpea	
		Soybean	Protective irrigation	• Hoeing and weeding	
	Deep black soils	Cotton	As above	• Use of 8 % kaolin spray • Hoeing and weeding, • 2 % urea and or 2 % DAP spray	
		Maize	As above	--	

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Contingency measures- End of the season

Condition			Suggested Contingency measures		
Terminal drought (Early withdrawal of monsoon)	Major farming situation	Normal crop/cropping system	Crop management	Rabi crop planning	Remarks on Implementation
	Shallow black soils	Pearlmillet	Protective irrigation, In case of poor grain filling harvest for fodder	No rabi crop	Use of farm pond for life saving irrigation
		Greengram/ Blackgram	Harvest the crop at physiological maturity	Chickpea (Vijay /Digvijay) / Safflower (Bhima) / Sunflower (SS-56 / Bhanu)	
		Sorghum	Protective irrigation, In case of poor grain filling harvest for fodder	-do-	
	Medium deep black soils	Upland Paddy	Harvest the crop at physiological maturity	No <i>rabi</i> crop	
		Pigeonpea	Protective irrigation	No <i>rabi</i> crop	
		Soybean	Protective irrigation	Chickpea (Vijay /Digvijay) or Wheat (Trimbak, Panchavati, Godavari) under assured irrigation	
	Deep black soils	Cotton	As above	No <i>rabi</i> crop	
		Maize	As above	Chickpea (Vijay /Digvijay/ Virat)	

2.1.2 Irrigated situation

Condition	Suggested contingency measures				
	Major farming situation	Normal crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delayed release of water in canals due to low rainfall	Not applicable				

Condition	Suggested contingency measures				
	Major farming situation	Normal crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Limited release water in canals due to low rainfall	Not applicable				

Condition	Suggested contingency measures				
	Major farming situation	Normal crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Non release of water in canals under delayed onset of monsoon in catchment	Not applicable				

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	Uplands, light/red soils- or Medium, medium or deep black soils - tank fed	Cotton	Bt cotton	Skip row irrigation / Drip irrigation	
		Onion	Late <i>kharif</i> onion (Phule Samarth / Baswant 780)	Sprinkler irrigation	
		Chilli	Phule Jyoti / Local	Broad Bed Furrows, Drip irrigation	
		Tomato	Phule Raja	Drip irrigation	

Condition	Suggested Contingency measures				
	Major farming situation	Normal crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Insufficient groundwater recharge due to low rainfall	Uplands, light/red soils- or Medium, medium or deep black soils - Open well	Cotton	Bt cotton	Skip row irrigation / Drip irrigation	
		Wheat	Trimbak, Godavari, Tapovan	Irrigate at critical stages CRI and flowering stage	
		Chickpea	Vijay, Digvijay,	Sprinkler irrigation	
		Onion	Late <i>kharif</i> onion (Phule Samarth / Baswant 780)	Sprinkler irrigation	

Condition			Suggested Contingency measures		
	Major farming situation	Normal crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
		Chilli	Phule Jyoti / Local	Broad Bed Furrows, Drip irrigation	
		Tomato	Phule Raja	Drip irrigation	

Resource management technologies

- Sand bag check dams for rain water harvesting and enhance groundwater recharge
- Deep continuous contour trenching and bunding in slopy areas to reduce erosion and increase crop productivity
- Construction of Vanarai/Vijay bandhara for rain water harvesting and efficient use by cultivating vegetables
- Polyethylene mulching to conserve moisture and reduce weed growth
- Furrow Irrigated Raised Bed in Marigold to enhance water use efficiency
- Drought tolerant chickpea variety Raj Vijay 203 for higher yield
- Seed priming to ensure optimum plant stand under receding moisture conditions
- Rearing backyard poultry chicks Srinidhi, Kaveri etc., a potential livelihood option to enhance income of farm women and land less farmers

Actionable Comprehensive Plans for Contingency

State	MAHARASHTRA	District	GONDIA
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	1214.7	More than 19%	Less than 983.907
June	196.5		
July	417.4		
August	361.8		
September	239		

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

Irrigation info:

Net irrigated area:	0	Gross irrigated area:	0
Net Rainfed area		Gross rainfed area	

Source wise irrigation area details (ha)

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

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	191363	0	
2	Jowar	-	-	
3	Maize	2442		2442
4	Bajra	-		
5	Ragi	-		

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	5640		5640
2	Groundnut	-		
3	Sesamum	817		817
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	1736		1736
2	Tobacco	-		
3	Guar seed	-		
4	Other Fodder crops	-		

Crop Plan- Beginning of the season

Condi			Suggested Contingency measures		
Early season drought (delayed on set)	Major Farming situation	Normal Crop /Cropping system	Change in crop/cropping system including	Agronomic measures	Remarks on Implementation

Delay by 4 weeks 28 MW 9-15 July	Deep to very deep soil with high to moderate organic carbon content.	- Paddy - Summer Paddy/Sesame - Paddy-Fallow - Paddy - Chick pea - Paddy-Lathyrus	- No Change - Paddy:PKV-HMT,SYE-2001,PDKVKisan,SKL-6,SYE-1,PKVMakrand,MTU-1010 - Pigeonpeaon bunds: - PKV TARA,BSMR- 736/853, AKT 8811, Vipula,Rajeshwari,BDN716 - Chickpea:JAKI9218,Vijay, ICCV2 - Lathyrus: Ratan, Mahatora - Summer sesame:AKT-101,NT-11	- Community nursery to be raised where water is available and transplantation undertaken with the receipt of rains. - Use higher seed rate for paddy and pigeonpea.	- Linkage with Dr.PDKV/MSSC/ NSC for seed. - Linkage with MAIDC, custom hiring centresfor implements. Linkage with Dr.PDKV/regional KVKs for agro-techniques
	Moderate ly deep soils on very gently sloping plains with medium to low organic carbon content.	- Paddy - Summer Paddy/Sesame - Paddy-Fallow - Paddy - Chick pea - Paddy-Lathyrus	- No Change - Paddy:PKV-HMT,SYE-2001,PDKVKisan,SKL-6,SYE-1,PKVMakrand,MTU-1010 - Pigeonpeaon bunds: - PKV TARA,BSMR- 736/853, AKT 8811, Vipula,Rajeshwari,BDN716 - Chickpea:JAKI9218,Vijay, ICCV2 - Lathyrus: Ratan, Mahatora - Summer sesame: AKT-101,NT-11	- Community nursery to be raised where water is available and transplantation undertaken with the receipt of rains. - Use higher seed rate for paddy and pigeonpea. - Bund height to be increased in undulating areas.	
	Moderate ly deep soils on undulating topography with medium organic carbon.	- Paddy - Summer Paddy/Sesame - Paddy-Fallow - Paddy - Chick pea - Paddy-Lathyrus	- No Change - Paddy: PKV-HMT,SYE-2001,PDKVKisan,SKL-6,SYE-1,PKV Makrand,MTU-1010 - Pigeonpeaon bunds: - PKV TARA,BSMR- 736/853, AKT 8811, Vipula, Rajeshwari,BDN716 - Chickpea:JAKI9218,Vijay, ICCV2 - Lathyrus: Ratan, Mahatora - Summer sesame: AKT-101, NT-11	- Community nursery to be raised where water is available and transplantation undertaken with the receipt of rains. - Use higher seed rate for paddy and pigeonpea.	

Early season drought (Normal onset)	Major Farming situation	Normal Crop/croppingsystem	Crop management	Soil nutrient and moisture conservation measures	Remarks on Implementation
Normal onset followed by 15 to 20 days dry spell after sowing leading to poor germination/cropst and etc.	Deep to very deep soil with high to moderate organic carbon content	- Paddy -Summer Paddy/Sesame - Paddy-Fallow - Paddy-Chickpea - Paddy-Lathyrus	- Community nursery to be raised where water is available and transplantation to be undertaken with the onset of rains. - Drilling of paddy at 20cm row to row distance with 75kg/ha seed rate.	- Weeding to reduce transpiration losses competition for nutrient - Frequent intercultural operations to keep the weed under control and reduce evapotranspiration losses.	- Linkage with Dr.PDKV/MSSC/ NSC for seed. - Linkage with MAIDC, custom hiring centresfor implements. Linkage with Dr.PDKV/regional KVKs for agro-techniques

	Moderately deep soils on very gently sloping plains with medium to low organic carbon content.	• Paddy -Summer Paddy/Sesame • Paddy-Fallow • Paddy-Chickpea • Paddy-Lathyrus	• Community nursery to be raised where water is available and transplantation to be undertaken with the onset of rains. • Drilling of paddy at 20cm row to row distance with 75kg/ha seed rate.	• Weeding to reduce transpiration losses competition for nutrient • Frequent intercultural operations to keep the weed under control and reduce evapotranspiration losses.	
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Contingency measures- Mid season

Condition			Suggested Contingency		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5mm) period) At vegetative stage	Major Farming situation	Normal Crop/croppingsystem	Crop management	Soil nutrient and moisture conservation	Remarks on Implementation
	Deep to very deep soil with high to moderate organic carbon content	• Paddy -Summer Paddy/Sesame • Paddy-Fallow • Paddy-Chickpea • Paddy-Lathyrus	• Provide effective plant protection measures for armyworm.	• Avoid top dressing of nitrogen.	
	Moderately deep soils on very gently sloping plains with medium to low organic carbon content.	• Paddy -Summer Paddy/Sesame • Paddy-Fallow • Paddy-Chickpea • Paddy-Lathyrus	• Provide effective plant protection measures for	• Avoid top dressing of nitrogen.	

Condition			Suggested Contingency measures		
Mid season drought (long dry spell) At flowering/ fruiting stage	Major Farming situation	Normal Crop/cropping system	Crop management	Soil nutrient and moisture conservation	Remarks on Implementation
	Deep to very deep soil with high to moderate organic carbon content	• Paddy - Summer Paddy/Sesame • Paddy-Fallow • Paddy-Chickpea • Paddy-Lathyrus	• May adopt relay cropping by sowing or broadcasting lathyrus seed in standing paddy crop. • Provide effective plant protection measures for army worm/Brown plant hopper.	• Provide protective irrigation	

	Moderately deep soils on very gently sloping plains with medium to low organic carbon content	• Paddy - Summer Paddy/Sesame • Paddy-Fallow • Paddy-Chickpea • Paddy-Lathyrus	• May adopt relay cropping by sowing or broadcasting lathyrus seed in standing paddy crop. • Provide effective plant protection measures for armyworm/Brown plant hopper.	• Provide protective irrigation	
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Contingency measures- End of the season

Condition			Suggested Contingency		
Terminaldrought	Major Farming Situation	Normal cropping system	Crop management	Rabi Crop planning	Remarks
	Deep to very deep soil with high to moderate organic carbon content	• Paddy -Summer Paddy/Sesame • Paddy-Fallow • Paddy-Chickpea • Paddy-Lathyrus	• If crop at permanent wilting stage harvest paddy for fodder purpose. • Use crop residues in paddy bandies to save available moisture for rabi crop.	• Lathyrus (Ratan, PratikandMahatora) is suitable for rabi season. • Chickpea variety JAKI-9218 is suitable for rabi season to grow in zero tillage condition. • Sunflower crop (TAS 82, PDKV SH 952, LSFH171, DRS11) is suitable for rabi season. • Maize (varieties) as contingency crop plan for food and fodder Purpose.	• Analyze the soil for sulphur, boron and zinc
	Moderately deep soils on very gently sloping plains with medium to low organic carbon content.	• Paddy -Summer Paddy/Sesame • Paddy-Fallow • Paddy-Chickpea • Paddy-Lathyrus	• If crop at permanent wilting stage harvest paddy for fodder purpose. • Use crop residues in paddy bandies to save available moisture for rabi crop.	• Lathyrus (Ratan, Pratik and Mahatora) is suitable for rabi season. • Chick pea variety JAKI-9218 is suitable for rabi season to grow in zero tillage condition. • Sunflower crop is suitable for rabi season. • Maize as contingency crop plan for food and fodder purpose.	

2.1.1 Irrigated situation

Condition			Suggested Contingency measures		
	Major Farming situatio	Normal Crop/croppin g system	Change in crop/croppin g system	Agronomicmeasure s	Remarks on Implementatio n
Delaye d release of water	NA				

Condition			Suggested Contingency measures		
	Major Farming situatio	Normal Crop/croppin g system	Change in crop/croppin g system	Agronomicmeasure s	Remarks on Implementatio n
Limite d release of	NA				

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomicmeasures	Remarks on Implementation
Non release of water in canals under delayed	NA				

Condition			Suggested Contingency measures		
	Major Farmin g situatio n	Normal Crop/croppi ng system	Change in crop/croppi ng system	Agronomicmeasur es	Remarks on Implementatio n
Lack of inflows into tanks due to insufficient/delay ed onset of monsoon	NA				

Condition			Suggested Contingency measures		
	Major Farmin g situatio	Normal Crop/croppin g system	Change in crop/croppin g system	Agronomicmeasur es	Remarks on Implementatio n
Insufficient groundwat er recharge due to low rainfall	NA				

Resource management technologies

Open/Tube well recharge structures with silt trap

- Desilting of percolation tanks for providing supplemental irrigation
- Low cost Jalkunds and farm ponds to harvest excess rainfall and growing high value crops
- Farm bunding to reduce erosion and mitigate water stress during dry spell
- Micro irrigation with harvested water for enhancing water use efficiency and crop productivity
- Low cost water harvesting structures like sandbag check dam, konkanvijaybandhara
- Crop residues as mulching in rabi crops for enhancing soil fertility and moisture holding capacity
- Polyethylene mulching to conserve moisture and reduce weed growth in high value crops
- Broad Bed Furrow to enhance water use efficiency in soybean
- Drought tolerant variety of Bajra (ICTP-8203)
- Wheat variety PDKV-Washim (WSM-1472) for limited water availability areas of Maharashtra
- Short duration and drought escaping Soybean variety JS -9305 for high yielding
- Non-shattering drought tolerant variety of soybean MAUS-162
- High yielding onion variety (Bhima Super) from harvested water with sprinkler irrigation
- Lodging resistant rice varieties (Karjat 2, Karjat 9, Ratnagiri 1, Ratnagiri 5, Ratnagiri 6 and Ratnagiri 73) finger millet (Dapoli-1) in high rainfall regions and flood prone areas of Konkan region of Maharashtra
- Short duration var.KonkanSadabahar of cowpea during rabi in rice fallows
- Intercropping of soybean + pigeonpea (6:2) for risk minimisation
- Strip cropping in soybean and pigeon pea to minimize runoff and to enhance water use efficiency
- Crop diversification with low water requiring crops during rabi
- Backyard poultry with Kaveri, Giriraj, Kadaknath, Gramapriya chicks for minimising risk and sustainable livelihood
- Konkan Kanyal goat breed resistant to heavy rain on raised platform
- Year-round fodder production through improved fodder cultivars for sustainable dairy production
- Azolla as alternate protein supplement for dairy animals for enhancing productivity
- Silage making to reduce fodder scarcity in summer and enhance milk productivity

Actionable Comprehensive Plans for Contingency

State	MAHARASHTRA	District	JALNA
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	591.8	More than 19%	Less than 479.358
June	129.6		
July	156.3		
August	142		
September	163.9		

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

Irrigation info:

Net irrigated area:	0	Gross irrigated area:	0
Net Rainfed area		Gross rainfed area	

Source wise irrigation area details (ha)

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

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	0	0	
2	Jowar	252	-	
3	Maize	29609		29609
4	Bajra	8935		8935
5	Ragi	-		

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	48882		48882
2	Groundnut	2529		2529
3	Sesamum	166		166
4	SOyabean	217739		217739
5	Sunflower	56		56
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	301165		301165
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	48275		48275
2	Tobacco	-		
3	Guar seed	-		
4	Other Fodder crops	-		

Crop Plan- Beginning of the season

Condition					
Early season drought (delayed onset)	Major Farming situation	Normal Crop /Cropping system	Change in Crop/Cropping system including variety	Agronomic measures	Remarks on Implementation
Delay by 4 weeks 2 nd week of July	Medium deep to deep black soils with assured rainfall (Mantha, Ambad)	Cotton	No change. Prefer short duration varieties / hybrids or Cotton + pigeonpea (BSMR 736, 853, BDN 708, 711) in 6:1 row proportion or Cotton + soybean /mung/udid (1:1)	Normal package of practices recommended by VNMKV, Parbhani or adopt 10% more seed rate than recommended. Follow <i>in situ</i> soil moisture conservation measures	- Linkage with VNMKV, MSSC and NSC for seed. - Linkage with MAIDC for implements. - Linkage with VNMKV, KVK for agro techniques.
		Soybean	No change or intercropping with pigeonpea in 4:2 or 2:1	Normal package of practices recommended by	

			row proportion or cotton + soybean (1:1 or 2:1) Use MAUS 71, MAUS 81, MAUS 158, MAUS 162 and for pigeonpea BSMR 736, 853 BDN 708, 711 for intercropping	VNMKV, Parbhani or adopt 10% more seed rate than recommended. Follow <i>in situ</i> soil moisture conservation measures Sowing on Ridges and furrow or by BBF planter	
		Maize	No change	-do-	
		Pigeonpea	No change, prefer varieties BSMR 736, 853 BDN 708, 711	-do-	
		Pearl millet	No change Prefer varieties like ICTP-8203, GHB 558, AIMP-92901, Sharda Saburi	-do-	
		Sorghum	Sorghum (CSH-9, 11, 16, PVK-401, 809) + Pigeonpea, BSMR 736 / 853, BDN-711) in 4: 2 row proportion	-do- Seed treatment for stem borer and shoot fly	
		Green gram / Black gram - Chickpea / <i>Rabi</i> Sorghum / Safflower	Cotton / Maize/ Pigeonpea (BSMR 736, 853, BDN 708, BDN 711) / Pearl millet (Sharda, Saburi, AIMP-92901) or Sunflower (Morden, SS-56, LSFH-35, BSH-1)	-do-	
	Shallow black soils with assured rainfall (Mantha, Ambad)	Cotton	No change or short duration varieties / hybrids or Cotton + pigeonpea (BSMR 736, 853, BDN 708, 711) in 6:1 row proportion	Normal package of practices recommended by VNMKV, Parbhani or adopt 10% more seed rate than recommended. Follow <i>in situ</i> soil moisture conservation measures	
		Soybean	No change or intercropping with pigeonpea in 4:2 or 2:1 row proportion or cotton + soybean (1:1 or 2:1) Use MAUS 71, MAUS 81, MAUS 158, MAUS 162 and for pigeonpea BSMR 736, 853 BDN 708, 711 for intercropping	Normal package of practices recommended by VNMKV, Parbhani or adopt 10% more seed rate than recommended. Follow <i>in situ</i> soil moisture conservation measures Sowing on Ridges and furrow or by BBF planter	
		Maize	No change	-do-	
		Pigeonpea	No change or intercropping with pigeonpea in 4:2 or 2:1 row proportion or cotton + soybean (1:1 or 2:1) Use MAUS 71, MAUS 81, MAUS 158, MAUS 162 and for pigeonpea BSMR 736, 853 BDN 708, 711 for intercropping	-do-	

		Pearl millet	No change. Prefer varieties like ICTP-8203, GSB 558, AIMP-92901 Sharda, Saburi	-do-	
		Sorghum	Cotton / Maize/ Pigeonpea (BSMR 736, 853, BDN 708, BDN 711) / Pearl millet (Sharda, Saburi, AIMP-92901) orSunflower (Morden, SS-56, LSFH-35, BSH-1)	-do-	
		Green gram / Black gram - Chickpea / <i>Rabi</i> Sorghum / Safflower	Cotton / Maize/ Pigeonpea (BSMR 736, 853, BDN 708, BDN 711) / Pearl millet (Sharda, Saburi, AIMP-92901) orSunflower (Morden, SS-56, LSFH-35, BSH-1)	-do-	
	Medium deep to deep black soils with low rainfall (Ghansangvi, Partur, Bhokardan, Badnapur, Jafrabad)	Cotton	No change. Prefer short duration varieties / hybrids or Cotton + pigeonpea (BSMR 736, 853, BDN 708,711) in 6:1 row proportion	Normal package of practices recommended by VNMKV, Parbhani or adopt 10% more seed rate than recommended. Follow <i>in situ</i> soil moisture conservation measures	
		Soybean	Soybean (JS-335, MAUS-71)+ Pigeon pea (BSMR 736, BSMR 853, BDN 708, BDN- 711) in 4 : 2 row proportion	Normal package of practices recommended by VNMKV, Parbhani or adopt 10% more seed rate than recommended. Follow <i>in situ</i> soil moisture conservation measures Sowing on Ridges and furrow or by BBF planter	
		Maize	No change	-do-	
		Pigeonpea	Soybean (JS-335, MAUS-71)+ Pigeon pea (BSMR 736, BSMR 853, BDN 708, BDN- 711) in 4 : 2 row proportion	-do-	
		Pearl millet	No change. Prefer varieties like ICTP-8203, GHB- 558, AIMP-92901, Sharda, Saburi	-do-	
		Green gram / Black gram - Chickpea / <i>Rabi</i> Sorghum / Safflower	Cotton / Maize/ Pigeonpea (BSMR 736, 853, BDN 708, BDN 711) / Pearl millet (Sharda, Saburi, AIMP-92901) orSunflower (Morden, SS-56, LSFH-35, BSH-1)	-do-	
	Shallow black soils with low rainfall	Cotton	Pearl Millet+Pigeonpea, Prefer varieties like ICTP-8203, GHB-558, AIMP-92901, Sharda,	Normal package of practices recommended by	

	(Ghansangvi, Partur, Bhokardan, Badnapur, Jafrabad)		Saburi + Pigeon pea (BSMR 736, BSMR 853, BDN 708, BDN- 711) 2:1, 3:3	VNMKV, Parbhani or adopt 10% more seed rate than recommended. Follow <i>in situ</i> soil moisture conservation measures	
		Soybean	Pearl Millet+Pigonpea, Prefer varieties like ICTP-8203, GHB-558, AIMP-92901, Shardha, Saburi + Pigeon pea (BSMR 736, BSMR 853, BDN 708, BDN- 711) 2:1, 3:3	-do-	
		Maize	No change	-do-	
		Pigeonpea	No change. Prefer early varieties like BDN 711 or preferred intercropping with pearl millet	-do-	
		Pearl millet / Pearl millet + Pigeonpea	No change. Prefer varieties like ICTP-8203, GHB- 558, AIMP- 92901, Shardha, Saburi + Pigeon pea (BSMR 736, BSMR 853, BDN 708, BDN- 711) 2:1, 3:3	-do-	

Normal onset followed by 15-20 days dry spell after sowing leading to poor germination / crop stand etc.	Medium deep to deep black soils with assured rainfall (Mantha, Ambad)	Cotton	- Gap filling with same cultivar or pigeonpea to maintain at least 75% plant population. - Raise cotton or pigeonpea seedlings in polythene bags and transplant when sufficient soil moisture is available. - Give protective irrigation wherever possible	- Avoid applying fertilizers till sufficient soil moisture is available - Interculture or harrows or hoe - Dust mulching - Sowing on Ridges and furrow	- Linkage with VNKMV, MSSC and NSC for seed. - Linkage with MAIDC for implements. - Linkage with VNKMV, KVK for agro techniques.
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		Maize	Gap filling with same or short duration cultivar to maintain at least 75% plant population	-do-	•
		Pearl millet	Gap filling or transplanting of seedlings either from the same field or from nursery or gap filling with pigeonpea	-do-	
		Pigeonpea	Raise pigeonpea seedlings in polythene bags and transplant when sufficient soil moisture is available	-do-	

		Soybean	-do- or if the plant population is less than 50% go for re sowing of the crop	-do-	
		Sorghum	Gap filling with pearl millet / pigeonpea	-do-	
		Green gram / Black gram - Chickpea / <i>Rabi</i> Sorghum / Safflower	- If the plant population is less than 75% of optimum, go for re sowing of the alternate crops like pearl millet / sunflower / pigeonpea - If possible give protective irrigation with sprinkler	-do-	
	Shallow black soils with assured rainfall (Mantha, Ambad)	Cotton	- Gap filling within the rows with same cultivar or pigeonpea to maintain at least 75% plant population. - Raise cotton seedlings in polythene bags and transplant when sufficient soil moisture is available. - Give protective irrigation wherever possible	- Avoid applying fertilizers till sufficient soil moisture is available - Interculture with harrow or hoe - Dust mulching	
		Maize	Gap filling within the rows with same or short duration cultivar to maintain at least 75% plant population	-do-	
		Pearl millet	Gap filling or transplanting of seedlings either from the same field or from nursery or gap filling with pigeonpea	-do-	
		Pigeon pea	Raise pigeonpea seedlings in polythene bags and transplant when sufficient soil moisture is available	-do-	
		Soybean	If the plant population is less than 50% go for re sowing of the crop		
		Sorghum	Gap filling with pigeonpea	-do-	
		Green gram / Black gram - Chickpea / <i>Rabi</i>	If the plant population is less than 75% of optimum, go for re	-do-	

		Sorghum / Safflower	sowing of the alternate crops like pearl millet /sunflower / pigeonpea • If possible give protective irrigation with sprinkler.		
	Medium deep to deep black soils with low rainfall (Ghansangvi, Partur, Bhokardan, Badnapur, Jafrabad)	Cotton	• Gap filling within the rows with same cultivar or pigeonpea to maintain at least 75% plant population. • Raise cotton seedlings in polythene bags and transplant when sufficient soil moisture is available. • Give protective irrigation wherever possible	• Avoid applying fertilizers till sufficient soil. moisture is available • Making of conservation furrows for moisture conservation • Interculture with harrows	
		Pearl millet	Gap filling or transplanting of seedlings either from the same field or from nursery or gap filling with pigeonpea	Interculture with hoe.	
		Maize	Gap filling within the rows with same or short duration cultivar to maintain at least 75% plant population	-do-	
		Pigeonpea	-do-	-do-	
		Soybean	-do- or if the plant population is less than 50% go for re sowing of the crop		
		Green gram / Black gram - Chickpea / <i>Rabi</i> Sorghum / Safflower	• If the plant population is less than 75% of optimum, go for re sowing of the alternate crops like pearl millet / sunflower / pigeonpea. • If possible give protective irrigation with sprinkler	-do-	
	Shallow black soils with low rainfall (Ghansangvi, Partur, Bhokardan,	Cotton	• Gap filling within the rows with same cultivar or pigeonpea to maintain at least 75% plant population.	• Avoid applying fertilizers till sufficient soil. moisture is available • Making of conservation furrows for moisture conservation • Interculture with harrows	

	Badnapur, Jafrabad)		- Raise cotton seedlings in polythene bags and transplant when sufficient soil moisture is available. - Give protective irrigation wherever possible		
		Pearl millet / Pearl millet + Pigeonpea	Gap filling or transplanting of seedlings either from the same field or from nursery or gap filling with pigeonpea	Interculture with hoe.	
		Maize	Gap filling within the rows with same or short duration cultivar to maintain at least 75% plant population	-do-	
		Pigeonpea	-do-	-do-	

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	Normal Crop / Cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
At vegetative stage	Medium deep to deep black soils with assured rainfall (Mantha, Ambad)	Cotton	- Avoid top dressing of fertilizers till sufficient soil moisture is available. - Interculture with harrow for weeding and to create soil mulch. - Give protective irrigation if possible	- Mulching with crop residue @ 3-5 t/ha - Foliar spray of 1% KNO₃, or 2% urea or DAP, - Spraying of 0.2% MgSO₄, Zinc, Boron - Opening of furrow after every two row with Balaram plough. - Mulching with crop residue @ 3-5 t/ha	- Linkage with VNKMV, MSSC and NSC for seed. - Linkage with MAIDC for implements. - Linkage with VNKMV, KVK for agro techniques.
		Pearl millet	-do-	- Opening of furrow after every 4 or 6 row with Balaram plough - Mulching with crop residue @ 3-5 t /ha within the rows	

				Spraying of 1% KNO₃	
		Maize	-do-	- Opening of furrow after every 4 or 6 row with Balaram plough - Mulching with crop residue @ 3-5 t/ha	
		Pigeonpea	-do-	Opening of furrow after every two row with Balaram plough Spraying of 2% urea or DAP	
		Soybean	Interculture for weeding and to create soil mulch.	- Opening of furrow after every 4 or 6 row with Balaram plough - Spraying of 1% KNO₃	
		Sorghum	- Avoid top dressing of fertilizers till sufficient soil moisture is available. - Give protective irrigation wherever possible - Intra row thinning	- Opening of furrow after every two row with Balaram plough - Mulching with crop residue @ 3-5 t/ha	
		Green gram / Black gram - Chickpea / <i>Rabi</i> Sorghum / Safflower	- Interculture for weeding and to create soil mulch. - If possible give protective irrigation with sprinkler	- Spraying of 1% KNO₃ or 2% urea or DAP - Interculture with hoe	
	Shallow black soils with assured rainfall (Mantha, Ambad)	Cotton	- Avoid top dressing of fertilizers till sufficient soil moisture is available. - Interculture with harrow for weeding and to create soil mulch. - Give protective irrigation wherever possible	- Mulching with crop residue @ 3-5 t/ha - Foliar spray of 1% KNO₃ or 2% urea, DAP, MgSO₄, Zinc, Boron - Opening of furrow after every two row with Balaram plough. - Mulching with crop residue @ 3-5 t/ha	
		Maize	-do-	Opening of furrow after every 4 or 6 row with Balaram plough	

				Mulching with crop residue @ 3-5 t/ha	
		Pearl millet	Gap filling or transplanting of seedlings either from the same field or from nursery or gap filling with pigeonpea	Opening of furrow after every 4 or 6 row with Balaram plough	
		Soybean	Gap filling with same or short duration cultivar to maintain at least 75% plant population	-do-	
		Pigeonpea	-do-	Opening of furrow after every two row with Balaram plough Spraying of 2% urea or DAP	
		Sorghum	- Avoid top dressing of fertilizers till sufficient soil moisture is available. - Give protective irrigation wherever possible	- Interculture for weeding and to create soil mulch to conserve moisture. - Opening of alternate furrows	
		Green gram / Black gram - Chickpea / <i>Rabi</i> Sorghum / Safflower	- Interculture for weeding and to create soil mulch. - If possible give protective irrigation with sprinkler	Spraying of 2% urea or DAP	
	Medium deep to deep black soils with low rainfall (Ghansangvi, Partur, Bhokardan, Badnapur, Jafrabad)	Cotton	- Avoid top dressing of fertilizers till sufficient soil moisture is available. - Interculture with harrow for weeding and to create soil mulch. - Give protective irrigation wherever possible	- Mulching with crop residue @ 3-5 t/ha - Foliar spray of 1% KNO₃ or 2% urea/ DAP, - Foliar spray of 0.2% MgSO₄, Zinc, Boron - Opening of furrow after every two row with Balaram plough. - Mulching with crop residue @ 3-5 t/ha	
		Pearl millet	-do-	Opening of furrow after every 4 or 6 row with Balaram plough	

				Mulching with crop residue @ 3-5 t/ha	
		Maize	-do-	Opening of furrow after every 4 or 6 row with Balaram plough	
		Pigeonpea	Gap filling within the rows with same or short duration cultivar to maintain at least 75% plant population	Opening of furrow after every two row with Balaram plough Spraying of 2% urea or DAP	
		Soybean	-do-	-do-	
		Green gram / Black gram - Chickpea / <i>Rabi</i> Sorghum / Safflower	- Interculture for weeding and to create soil mulch. - If possible give protective irrigation with sprinkler	Spraying of 1% KNO ₃ or 2% urea /DAP	
	Shallow black soils with low rainfall (Ghansangvi, Partur, Bhokardan, Badnapur, Jafrabad)	Cotton	- Avoid top dressing of fertilizers till sufficient soil moisture is available. - Interculture with harrow for weeding and to create soil mulch. - Give protective irrigation wherever possible	- Mulching with crop residue @ 3-5 t / ha - Foliar spray of 1% KNO₃ or 2% urea/ DAP, - Foliar spray of 0.2% MgSo₄, Zinc, Boron - Opening of furrow after every two row with Balaram plough. - Mulching with crop residue @ 3-5 t / ha	
		Pearl millet / Pearl millet + Pigeonpea	-do-	- Opening of furrow after every 4 or 6 row with Balaram plough - Mulching with crop residue @ 3-5 t / ha	
		Maize	-do-	Opening of furrow after every 4 or 6 row with Balaram plough	
		Pigeonpea	Gap filling within the rows with same or short duration cultivar to maintain at least 75% plant population	Opening of furrow after every two row with Balaram plough Spraying of 2% urea or DAP	
		Soybean	-do-	Opening of furrow after every 4 or 6 row with Balaram plough	

Condition			Suggested Contingency measures
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Mid season drought (long dry spell)	Major Farming situation	Normal Crop / Cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
At flowering / fruiting stage	Medium deep to deep black soils with assured rainfall (Mantha, Ambad)	Cotton	Give protective irrigation with drip	- Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP. - Mulching with crop residue @ 3-5 t /ha within the rows - Spraying of 0.2%MgSO₄, Zinc, Boron.	- Linkage with MAIDC / DSAO for intercultural implements (Harrow, hoe). - Linkage with RKVY for farm ponds and micro irrigation system.
		Pearl millet	-do-	Foliar spray of 2% urea and DAP Mulching with crop residue @ 3-5 t/ha	
		Maize	-do-	-do-	
		Pigeonpea	Give protective irrigation	Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP.	
		Soybean	Give protective irrigation with sprinkler	-do-	
		Sorghum	Give protective irrigation	Foliar spray of 2% urea and DAP Mulching with crop residue @ 3-5 t/ha	
		Green gram /Black gram - Chickpea / Rabi Sorghum / Safflower	Give protective irrigation with sprinkler	Foliar spray of 1% KNO ₃ or 2 % urea or 2 % DAP	
	Shallow black soils with assured rainfall (Mantha, Ambad)	Cotton	Give protective irrigation	- Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP. - Mulching with crop residue @ 3-5 t /ha within the rows - Spraying of 0.2%MgSO₄, Zinc, and Boron.	
		Pearl millet	-do-	Foliar spray of 2% urea and DAP Mulching with crop residue @ 3-5 t / ha	
		Maize	- Give protection irrigation - In case of severe stress harvest as green fodder	-do-	
		Pigeonpea	Give protective irrigation	Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP.	

		Soybean	Give protective irrigation with sprinkler	-do-	
		Sorghum	- Give protection irrigation - In case of severe stress harvest as green fodder	If feasible spray anti-transparent 6% kaolin	
		Green gram / Black gram - Chickpea / <i>Rabi</i> Sorghum / Safflower	- Give protection irrigation with sprinkler - In case of severe stress harvest as green fodder / green manuring	Foliar spray of 1% KNO ₃ or 2 % urea or 2 % DAP	
	Medium deep to deep black soils with low rainfall (Ghansangvi, Partur, Bhokardan, Badnapur, Jafrabad)	Cotton	Give protective irrigation with drip	- Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP. - Mulching with crop residue @ 3-5 t /ha within the rows - Spraying of 0.2%MgSo₄, Zinc, Boron.	
		Pearl millet	Give protective irrigation	Foliar spray of 2% urea and DAP Mulching with crop residue @ 3-5 t / ha	
		Maize	-do-	-do-	
		Pigeonpea	-do-	Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP.	
		Soybean	Give protective irrigation with sprinkler	-do-	
		Green gram / Black gram - Chickpea / <i>Rabi</i> Sorghum / Safflower	-do-	Foliar spray of 1% KNO ₃ or 2 % urea or 2 % DAP	
	Shallow black soils with low rainfall (Ghansangvi, Partur, Bhokardan, Badnapur, Jafrabad)	Cotton	Give protective irrigation with drip	- Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP. - Mulching with crop residue @ 3-5 t /ha within the rows - Spraying of 0.2%MgSo₄, Zinc, Boron.	
		Pearl millet / Pearl millet + Pigeonpea	Give protective irrigation	Foliar spray of 2% urea and DAP	

				Mulching with crop residue @ 3-5 t / ha	
		Maize	- Give protection irrigation - In case of severe stress harvest as green fodder	-do-	
		Pigeonpea	-do-	Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP.	
		Soybean	Give protective irrigation with sprinkler	-do-	

Contingency measures- End of the season

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures		
			Crop management	Rabi Crop planning	Remarks on Implementation
Terminal drought (Early withdrawal of monsoon)	Medium deep to deep black soils with assured rainfall (Mantha, Ambad)	Cotton	- Life saving irrigation with drip - Picking	If possible, adopt relay cropping of chickpea, safflower, <i>Rabi</i> sorghum	- Linkage with MAIDC / DSAO for intercultural implements (Harrow, hoe). - Linkage with RKVY for farm ponds and micro irrigation system.
		Pearl millet	Life saving irrigation or harvest at physiological maturity	Plan for <i>Rabi</i> crops chickpea / safflower	
		Maize	-do-	-do-	
		Pigeonpea	Life saving irrigation, use of early duration varieties BDN 711	-	
		Soybean	-do-	Plan for <i>Rabi</i> crops chickpea / safflower	
		Sorghum	Life saving irrigation or harvest at physiological maturity	-do-	
		Green gram /Black gram - Chickpea / <i>Rabi</i> Sorghum / Safflower	Harvest at physiological maturity	Plan for <i>Rabi</i> crops chickpea / safflower / <i>Rabi</i> sorghum / sunflower	
	Shallow black soils with assured rainfall (Mantha, Ambad)	Cotton	- Life saving irrigation - Picking	If possible, adopt relay cropping of chickpea, safflower, <i>Rabi</i> sorghum	
		Pearl millet	Life saving irrigation or harvest at physiological maturity	Plan for <i>Rabi</i> crops chickpea / safflower	
		Maize	Life saving irrigation	-do-	

			In case of severe stress harvest as green fodder		
		Pigeonpea	Life saving irrigation	Foliar spray of 1% KNO ₃ or 2%urea/DAP	
		Soybean	Life saving irrigation with sprinkler	---	
		Sorghum	- Life saving irrigation - In case of severe stress harvest as green fodder	Plan for <i>Rabi</i> crops chickpea / safflower	
		Green gram / Black gram - Chickpea / <i>Rabi</i> Sorghum / Safflower	Harvest at physiological maturity	Plan for <i>Rabi</i> crops chickpea / safflower / <i>Rabi</i> sorghum / sunflower	
	Medium deep to deep black soils with low rainfall (Ghansangvi, Partur, Bhokardan, Badnapur, Jafrabad)	Cotton	- Life saving irrigation with drip - Picking	If possible, adopt relay cropping of chickpea, safflower, <i>Rabi</i> sorghum	
		Pearl millet	Life saving irrigation or harvest at physiological maturity	Plan for <i>Rabi</i> crops chickpea / safflower	
		Maize	-do-	-do-	
		Pigeonpea	Life saving irrigation	-	
		Soybean	Life saving irrigation with sprinkler	---	
		Green gram / Black gram - Chickpea / <i>Rabi</i> Sorghum / Safflower	Harvest at physiological maturity	Plan for <i>Rabi</i> crops chickpea / safflower / <i>Rabi</i> sorghum/sunflower	
	Shallow black soils with low rainfall (Ghansangvi, Partur, Bhokardan, Badnapur, Jafrabad)	Cotton	- Life saving irrigation with drip - Picking	If possible, adopt relay cropping of chickpea, safflower, <i>Rabi</i> sorghum	
		Pearl millet / Pearl millet + Pigeonpea	Life saving irrigation or harvest at physiological maturity	Plan for <i>Rabi</i> crops chickpea / safflower after harvest of sole pearl millet	
		Maize	- Life saving irrigation - In case of severe stress harvest as green fodder	Plan for <i>Rabi</i> crops chickpea / safflower	
		Pigeonpea	Life saving irrigation	Foliar spray of 1% KNO ₃ or 2%urea/DAP	

Irrigated situation

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures		
			Change in crop / cropping system	Agronomic measures	Remarks on Implementation

Delayed release of water in canals due to low rainfall	Medium deep to deep black soils with assured rainfall	Sugarcane	No change or prefer irrigated cotton	- Raising of nurseries with single budded setts to save the time and water for pre-seasonal planting - Drip system for enhancing the water productivity - Mulching with sugarcane trash between rows and frequent interculture to conserve moisture	- Linkage with VSI and Sugarcane Research Station, Padegeon for supply of foundation planting material of improved varieties Co-86032, Co-0265, Co-94012 - Linkage with VNKMV, Parbhani, MSSC, NSC and NFSM for supply of seed - Linkage with DSAO for micro irrigation system through RKVY and NHM.
		Wheat	No change. Depending upon time of release of water go for timely (HD-2496, HD-2189, Triambak) / late sown (HD-2189, Kailash) wheat varieties	Give irrigation at critical stages of crop growth	
		Chickpea	Use early maturing varieties ICCV-2 Use of desi type viz., Akash instead of Kabuli	Use drip irrigation / give irrigation at critical crop growth stages (branching and pod formation) Sowing on Ridges and Furrows or BBF	
		Safflower	Use improved varieties PBNS-12 / 40	Use drip irrigation / give irrigation at critical crop growth stages (branching and capsule formation)	
		Ginger	No change	Use drip irrigation	
		Turmeric	No change	-do-	
		Chilli	No change	-do-	
		Rabi onion	No change	-do-	
	Shallow black soils with assured rainfall	Ginger / turmeric	Rabi onion / Summer pearl millet	-do-	
	Medium deep to deep black soils with low rainfall	Sugarcane	Irrigated cotton / wheat	Give irrigation at critical stages of crop growth	
		Wheat	No change. Depending upon time of release of water go for timely sown (HD-2496, HD-2189, Triambak) / late sown (HD-2189, Kailash) wheat varieties	Give irrigation at critical stages of crop growth	

		Chickpea	Use early maturing varieties ICCV-2 Use of desi type viz., Akash instead of Kabuli	Use drip irrigation / give irrigation at critical crop growth stages (branching and pod formation) Sowing on Ridges and Furrows or BBF	
		Safflower	Use improved varieties i.e. PBNS-12 / 40	Use drip irrigation / give irrigation at critical crop growth stages (branching and capsule formation)	
		Ginger	No change	Use drip irrigation	
		Turmeric	No change	-do-	
		Chilli	No change	-do-	
		<i>Rabi</i> onion	No change	-do-	
	Shallow black soils with low rainfall	Wheat	Chickpea / safflower / <i>Summer</i> pearl millet / fodder maize	Use drip irrigation and give irrigation at critical growth stages	

Condition	Major Farming situation	Normal Crop/Cropping system	Suggested Contingency measures		
			Change in crop / cropping system	Agronomic measures	Remarks on Implementation
Limited release of water in canals due to low rainfall	Medium deep to deep black soils with assured rainfall	Sugarcane	No change or prefer irrigated cotton / wheat / safflower / chickpea / <i>Rabi</i> onion	- Water saving measures such as alternate furrow - Give irrigation at critical crop growth stages	Linkage with Irrigation Department for release of water at critical growth stages
		Wheat	Use low water requiring varieties Lok-1, PBN-1, Kailash	Give irrigation at critical crop growth stages	
		Chickpea	No change		
		Safflower	No change		
		Ginger	Wheat		
		Turmeric	Wheat		
		Chilli	<i>Rabi</i> onion		
		<i>Rabi</i> onion	No change		
			Shallow black soils with assured rainfall	Wheat	
Safflower	No change				
Ginger	Chickpea / safflower				
Medium deep to deep black soils with low rainfall	Sugarcane		Irrigated cotton / wheat / <i>Rabi</i> onion		
	Shallow black soils with low rainfall		Sunflower	No change or prefer fodder maize	

Condition	Major Farming situation	Normal Crop/Cropping system	Suggested Contingency measures		
			Change in crop / cropping system	Agronomic measures	Remarks on Implementation

Non release of water in canals under delayed onset of monsoon in catchment	Medium deep to deep black soils with assured rainfall	Sugarcane	Cotton / soybean / pigeonpea / maize	- Interculture operations and mulching to conserve soil moisture. - Basal application of all the recommended fertilizers.	Liaison with Irrigation Department for release of water at critical growth stages
		Ginger	Chickpea / safflower / sunflower / <i>Rabi</i> sorghum		
		Turmeric	-do-		
		Chilli	-do-		
	Shallow black soils with assured rainfall	Chickpea / safflower	No change		

	Medium deep to deep black soils with low rainfall	Sugarcane	Cotton / soybean / pigeonpea / maize		
		Ginger	Chickpea / safflower / sunflower / maize		
		Turmeric	-do-		
		Chilli	-do-		
	Shallow black soils with low rainfall	Chickpea / safflower / maize fodder	No change		
Lack of inflows into tanks due to insufficient / delayed onset of monsoon	Medium deep to deep black soils with assured rainfall	Not applicable			
	Shallow black soils with assured rainfall	Not applicable			
	Medium deep to deep black soils with low rainfall	Not applicable			
	Shallow black soils with low rainfall	Not applicable			

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures		
			Change in crop / cropping system	Agronomic measures	Remarks on Implementation
Insufficient groundwater recharge due to low rainfall	Medium deep to deep black soils with assured rainfall	Sugarcane	No change. Prefer alternate crops like cotton, soybean, maize / wheat / cowpea / sunflower	Limited irrigation / Drip irrigation/ Alternate furrow irrigation or harvest for fodder purpose	Supply of seed through MSSC, NFSM, VNKMV, Village seed production programme
		Wheat	<i>Rabi</i> sorghum	-do-	
		Chickpea	No change or prefer varieties like BDN-9-3, Akash, Vijay, Vikas	-do-	
		Safflower	No change or prefer varieties like PBNS-12/40, Sharada, NARI-6	-do-	
		Ginger	Sorghum (M-35-1, Parbhani Moti) / chickpea (BDN-9-3, Akash, Vijay) / safflower (PBNS-12/40, Sharada, NARI-6)	-do-	
		Turmeric	-do-	-do-	

		Chilli	-do-	-do-		
		<i>Rabi</i> onion	-do-	-do-		
	Shallow black soils with assured rainfall	Not applicable				
	Medium deep to deep black soils with low rainfall	Sugarcane	Prefer alternate crops like cotton, soybean, maize and pigeonpea	-do-		
		Wheat	<i>Rabi</i> sorghum	-do-		
		Chickpea	No change or prefer varieties like BDN-9-3, Akash, Vijay, Vikas	-do-		
		Safflower	No change or prefer varieties like PBNS-12/40, Sharada, NARI -6	-do-		
		Ginger	Sorghum (M-35-1, Parbhani Moti) / chickpea (BDN-9-3, Akash, Vijay) / safflower (PBNS-12/40, Sharada, NARI -6)	-do-		
		Turmeric	-do-	-do-		
		Chilli	-do-	-do-		
		<i>Rabi</i> onion	-do-	-do-		
	Shallow black soils with low rainfall	Not applicable				

Resource management technologies

- Desilting of community pond for providing lifesaving irrigation to kharif crop and pre sowing irrigation to rabi crop
- Desilting of drainage channel to augment the ground water level for providing supplemental irrigation to kharif crops
- Water evaporation retardant in farm pond to minimize evaporation losses
- Conservation furrow in soybean for moisture conservation
- Ridge and furrow in cotton to enhance water use efficiency and crop productivity
- Opening of furrow in cotton and pigeonpea to conserve moisture
- Opening of dead furrows in cotton to harvest rain water and moisture availability during crop growth
- Crop residue mulching in Pomegranate
- Tank silt application to increase moisture holding capacity and fertility of the soil
- Crop residue mulching in pomegranate to conserve moisture
- Efficient use of water and fertilizers by fertigation in Pomegranate
- Stress tolerant safflower variety PBNS-12 for receding moisture conditions of Maharashtra
- Short duration and drought escaping soybean variety- Phule Sangam (KDS-726)
- Drought escaping variety of chickpea Digvijay Short duration and drought escaping Greengram variety Phule Vaibhav
- High yielding Rabi sorghum varieties Phule Suchitra, Phule Anuradha, Phule Vasudha for efficient use of moisture
- Short duration variety of maize (GM-6) for delayed onset of monsoon
- Drought tolerant Sunflower variety Phule Bhaskar in rainfed areas
- Castor variety (DCH-519) for delayed monsoon
- Drought tolerant variety of sorghum (CSV-27) for kharif season
- Intercropping of Soybean + Pigeonpea (8:2) and Cotton + Pigeonpea (8:2) to increase profitability
- Breed upgradation in goats with Osmanabadi and Sangamneri bucks in frequently drought prone districts of Maharashtra
- Enrichment of poor-quality dry roughages in frequently drought prone regions
- Integrated Farming System (IFS) for stabilizing income and to minimize risk
- Mitigation of fodder security by perennial fodder cultivation (BDN-711, DHN-6, African tall)
- Backyard poultry with Srinidhi, Gramapriya chicks for sustainable income
- Silage making of green fodder to feed during lean period and increase milk production

Actionable Comprehensive Plans for Contingency

State	MAHARASHTRA	District	KOLHAPUR
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	1711.4	More than 19%	Less than 1386.234
June	380.8		
July	620.2		
August	457.1		
September	253.3		

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

Irrigation info:

Net irrigated area:	0	Gross irrigated area:	0
Net Rainfed area		Gross rainfed area	

Source wise irrigation area details (ha)

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

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	121318	0	
2	Jowar	766	-	
3	Maize	2514		2514
4	Bajra	-		
5	Ragi	27275		27275

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	488		488
2	Groundnut	37038		37038
3	Sesamum	-		

4	SOyabean	91460		91460
5	Sunflower	169		169
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	218093		218093
2	Tobacco	690		690
3	Guar seed	-		
4	Other Fodder crops	-		

Crop Plan- Beginning of the season

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming Situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delay by 4 weeks July 2nd week	Shallow laterite soils	Finger millet (GPU -28, Dapoli -1, RAU-8)	No change	Hoeing at 25 DAS, dust mulch by blade harrow	Linkage with MPKV, Rahuri, College of Agriculture Kolhapur NSC and MSSC.
	Medium deep black soils	Paddy- Rainfed, (Jaya Karjat 184, Karjat 4 Indrayani, R-24, Bhogawati, Phule Radha, R-1))	-do-	dry seeding/ Transplanting	
		Groundnut (JL-24, JL-501, JL-286, TMV-10)	No change	Hoeing at 25 DAS and Weeding	
		Finger Millet (GPU- 26, GPU 45),	No change	Prefer transplanting with the seedlings available from the existing nurseries	
		Sorghum (CSH-5, 9, 11)	No change	Hoeing at 25 DAS, protective irrigation	
		Soyabean (JS-335, DS-228)	No change	Hoeing at 25 DAS, protective irrigation	

	Deep brownish soils	Paddy- Rainfed (Indrayani, Bhogawati, R1, R 24, Samrudhi, Jaya)	No change	Prefer transplanting with the seedlings available from the existing nurseries	
		Groundnut (JL-24,JL-501,JL-286,TMV-10)	No change	Increase spacing 45x15 cm, hoeing by two tyned hoe at 30DAS)	
		Finger Millet (GPU- 26,GPU 45),	No change	Increase spacing (30x10 cm), hoeing/ soil mulch	
		Sorghum (CSH- 5,9,11)	No change	Hoeing at 25 DAS	
		Soybean (JS-335, DS-228)	No change	Hoeing at 25 DAS	

Condition			Suggested Contingency measures		
Early season drought (Normal onset)	Major Farming Situation	Crop/cropping system	Crop management	Soil nutrient and moisture conservation measures	Remarks on Implementation
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/ crop stand etc.	Shallow laterite soils	Finger millet	Resowing / Gap filling	Hoeing at 25 DAS, weeding	Linkage with MPKV, Rahuri, College of AgricultureKolhapur NSC and MSSC..
	Medium deep black soils	Paddy -Rainfed	Gap filling / Resowing	Hoeing	
		Groundnut	Gap filling / Resowing	Hoeing/earthing up	
		sorghum	Resowing with early hybrids (CSH1,CSH5, CSH18)	Delay top dressing of N hoeing at 25 DAS weeding	
		Finger millet	Resowing / Gap filling	Hoeing at 25 DAS, weeding	
		Soybean	As above	Hoeing at 25 DAS, weeding	
	Deep brownish soils	Paddy- Rainfed	As above	Hoeing	
		Groundnut	Gap filling/ Resowing	Hoeing / earthing up at 40 DAs	
		sorghum	Resowing with early hybrids (CSH1,CSH5, CSH18)	Delay top dressing of N hoeing at 25 DAS weeding	
		Finger Millet	Resowing / Gap filling	Hoeing at 25 DAS, weeding	
		Soyabean	As above	Hoeing at 25 DAS, weeding	

Contingency measures- Mid season

Condition			Suggested Contingency measures		
Mid season drought (long dry spell,	Major Farming Situation	Crop/cropping system	Crop management	Soil nutrient and moisture conservation measures	Remarks on Implementation
At vegetative stage	Shallow laterite soils	Finger millet	Reduce plant population	Reduce 2 nd N Dose by 25% hoeing/weeding/	
	Medium deep black soils	Paddy- Rainfed	Protective irrigation	Hoeing/weeding	
		Groundnut	As above	As above	
		Sorghum	Protective irrigation,	Hoeing/weeding	
		Fingermillet	--	Hoeing/weeding	
		Soyabean	Protective irrigation,	-do-	
		Paddy- Rainfed	As above	-do-	

	Deep brownish soils	Groundnut	As above	-do-	
		Sorghum	As above	-do-	
		Finger Millet	--	-do-	
		Soybean	Protective Irrigation	-do-	

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	Major Farming Situation	Crop/cropping system	Crop management	Soil nutrient and moisture conservation measures	Remarks on Implementation
At reproductive stage	Shallow laterite soils	Fingermillet	—	--	
	Medium deep black soils	Paddy- Rainfed	Protective irrigation,	--	
		Fingermillet	--	--	
		Kharif sorghum	Spray 8% Kaoline, Protective irrigation	--	
		Groundnut	As above	--	
		Soybean	As above	--	
	Deep brownish soils	Paddy- Rainfed	--	--	
		Fingermillet	--	--	
		sorghum	Spray 8% Kaoline, Protective irrigation	--	
		Groundnut	As above	--	
		Soybean	As above	--	

Contingency measures- End of the season

Condition			Suggested Contingency measures		
Terminal drought	Major Farming Situation	Crop/cropping system	Crop management	Rabi crop planning	Remarks on Implementation
Early withdrawal of monsoon	Medium deep black soils	Paddy-Rainfed	Protective irrigation, harvest at physiological maturity	Chickpea short duration cultivar (Vishal, Vikas, Vijay, Digvijay , local)	--
		Finger Millet	harvest at physiological maturity, in case of poor grain filling harvest for fodder	No rabi crop	
		sorghum	As above	Chickpea (Vishal Vikas, Vijay, Digvijay,local)/ wheat, early variety (Panchawati, NIDW 15, HD 2189,Local)	
		Groundnut	harvest at physiological maturity	As above	
		Soybean	As above	Sorghum (Phule Mauli, M35-1), Chickpea (Vishal Vikas, Vijay, Digvijay,local)/ wheat (Panchawati, NIDW- 15, HD 2189,Local)	
	Deep brownish soils	Paddy -Rainfed	Protective irrigation, harvest at physiological maturity	Chickpea early variety (Vishal Vikas, Vijay, Digvijay,local)	
		Finger Millet	Harvest at physiological maturity, in case of poor	--	

			grain filling harvest for fodder		
		sorghum	Protective irrigation, harvest at physiological maturity, in case of poor grain filling harvest for fodder	Chickpea (Vishal Vikas, Vijay, Digvijay,local) / Wheat (Panchawati, NIDW 15, HD 2189,Local)	--
		Groundnut	Harvest at physiological maturity	As above	
		Soybean	As above	As above	--

2.1.2 Irrigated situation

Condition	Major Farming Situation	Crop/cropping system	Suggested Contingency measures		
			Change in crop/ cropping system	Agronomic measures	Remarks on Implementation
Delayed/limited release of water in canals due to low rainfall			NA		

Condition	Major Farming Situation	Crop/cropping system	Suggested Contingency measures		
			Change in crop/ cropping system	Agronomic measures	Remarks on Implementation
Non release of water in canals under delayed onset of monsoon in catchment			NA		

Condition	Major Farming Situation	Crop/cropping system	Suggested Contingency measures		
			Change in crop/ cropping system	Agronomic measures	Remarks on Implementation
Lack of inflows into tanks due to Insufficient/delayed onset of monsoon			NA		

Condition	Major Farming Situation	Crop/cropping system	Suggested Contingency measures		
			Change in crop/ cropping system	Agronomic measures	Remarks on Implementation
Lift Irrigation	Medium deep black soils	Paddy-Rainfed (Indrayani,Bhogawati, Phule Radha, R-24)	No change	Weeding,Hoeing, Irrigation at critical growth stages	
		Soybean (JS 335,DS 228)	No change	Weeding,Hoeing, Irrigation at critical growth stages	
		Sunflower (SS 56, Morden, Bhanu, Phule Raviraj,	Chickpea(Vishal, Vikas, Vijay,Digvijay , local) / <i>rabi</i> sorghum (Phule Mauli, M35-1)	Skip row irrigation	

		<i>Rabi</i> sorghum	Chickpea (Vishal, Vikas, Vijay, Digvijay , local)/ wheat (Panchawati, Tapovan, Trimbak, Godavari)	Sprinkler irrigation	
		Wheat	Chickpea/(Vishal, Vikas, Vijay, Digvijay , local) <i>rabi</i> sorghum /sunflower	Sprinkler irrigation,	
		Sugarcane	--	Alternate row irrigation/ drip irrigation / Trash mulching, paired row planting	
	Deep brownish soil	Paddy-Rainfed (Indrayani, Bhogawati, Phule Radha, R-24)	No change	Weeding, Hoeing, Irrigation at critical growth stages	
		Soybean (JS 335, DS 228)	No change	Weeding, Hoeing, Irrigation at critical growth stages	
		Sunflower (SS 56, Morden, Bhanu, Phule Raviraj,	--	--	
		<i>Rabi</i> sorghum	(Phule Vasudha, M35-1, Phule Yashoda)	--	
		Chickpea	(Vishal, Vikas, Vijay, Digvijay , local)	Sprinkler irrigation,	
		Sugarcane	--	Alternate row irrigation/ drip irrigation/ trash mulching, paired row planting.	

Condition	Suggested Contingency measures				
	Major Farming Situation	Crop/cropping system	Change in crop/ cropping system	Agronomic measures	Remarks on Implementation
Insufficient groundwater recharge due to low rainfall	Medium deep black soils –Open well irrigated	Sunflower (SS 56, Morden, Bhanu, Phule Raviraj,	Chickpea(Vishal, Vikas, Vijay, Digvijay , local) / <i>rabi</i> sorghum (Phule Mauli, M35-1)	Skip row irrigation	
		<i>Rabi</i> sorghum	Chickpea (Vishal, Vikas, Vijay, Digvijay , local), wheat (Panchawati, Tapovan , Trimbak, Godavari)	Sprinkler irrigation	
		Wheat	Chickpea/(Vishal, Vikas, Vijay, Digvijay , local) <i>rabi</i> sorghum /sunflower	Sprinkler irrigation,	
		Sugarcane	--	Alternate row irrigation/ drip irrigation / Trash mulching, paired row planting	
	Deep brownish soil- Open well irrigated	Sunflower (SS 56, Morden, Bhanu, Phule Raviraj,	--	--	
		<i>Rabi</i> sorghum	(Phule Vasudha, M35-1, Phule Yashoda)	--	
		Chickpea	(Vishal, Vikas, Vijay, Digvijay , local)	Sprinkler irrigation,	

		Sugarcane	--	Alternate row irrigation/ drip irrigation/ trash mulching, paired row planting.	
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Resource management technologies

- Construction of low cost Jalkund for harvesting runoff water and efficient use by cultivating vegetables
- Construction of Vijay bandhara for rain water harvesting and providing supplemental irrigation to Paddy, Soybean etc.,
- Micro irrigation system for efficient use of harvested water by cultivating Sugarcane, Mango and Cashew
- Polyethylene mulching to conserve moisture and reduce weed growth in crops like Cauliflower, Tomato, Garlic etc.,
- Water saving rice cultivation methods like DSR, SRI to increase productivity
- Broad Bed Furrow in Soybean to remove excess water and improve water use efficiency
- Lodging resistant rice varieties (Karjat 2, Ratnagiri 1, Ratnagiri 5, Ratnagiri 6 and Ratnagiri 73) finger millet (Dapoli-1) in high rainfall regions and flood prone areas of Konkan region of Maharashtra
- Short duration var. Dapoli-1 of Horse Gram, Konkan Sadabahar of cowpea during rabi in rice fallows
- Rearing Konkan Kanyal goat breed on raised platform to reduce the impact of floods
- Improved perennial fodder (DHN-6) to increase fodder availability for milch animals during lean season

Actionable Comprehensive Plans for Contingency

State	MAHARASHTRA	District	NANDURBAR
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	841.6	More than 19%	Less than 681.696
June	155.6		
July	273.2		
August	234.2		
September	178.6		

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

Irrigation info:

Net irrigated area:	0	Gross irrigated area:	0
Net Rainfed area		Gross rainfed area	

Source wise irrigation area details (ha)

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

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	23936	0	
2	Jowar	20869	-	
3	Maize	39128		39128
4	Bajra	3309		3309
5	Ragi	7		7

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	10238		10238
2	Groundnut	2560		2560
3	Sesamum	746		746
4	SOyabean	30250		30250
5	Sunflower	162		162
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	131470		131470
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	21548		21548
2	Tobacco	-		
3	Guar seed	-		
4	Other Fodder crops	-		

Crop Plan- Beginning of the season

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major farming situation	Normal crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delay by 4 weeks July 2nd week 28MW	Shallow black soils	Pearlmillet	Shraddha, Saburi, Shanti	- Application of 25 kg K ₂ O per ha as basal dose - One hoeing and weeding before 30 DAS	Seed source : • Central campus MPKV, Rahuri, College of Agril., Pune, Kolhapur and Dhule NSC, MSSC, Private co. Distributers
		Greengram/ Blackgram	Pearlmillet (Shraddha, Saburi, Shanti)	As above	
		Sorghum	As above	As above	
	Medium deep black soils	Upland Paddy	Phule Radha, Pavana	- Direct seeding with seed drill - Weed free condition upto 40 days - N split application(50 kg N at sowing & 50 kg N at 25 DAS)	

		Pigeonpea	Pigeonpea (Vipula / BDN-708) + Clusterbean (1:2)	- Opening of one conservation furrow after harvest of clusterbean	
		Soybean	Sunflower (SS-56 / Bhanu / Phule Raviraj)	-Seed treatment with Imadachlopid 70 WS @ 5-7 g per kg of seed - Hoeing at 20 DAS - Weeding upto 30 DAS	
	Deep black soils	Cotton	Bt cotton	- Hoeing at 20, 60 DAS - Weeding at 30 DAS	
		Maize	Karveer, Phule Rajarshee	- Sowing on ridges - Weeding at 25 DAS	

Condition			Suggested Contingency measures		
Early season drought (Normal onset)	Major Farming situation	Normal Crop/cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	Shallow black soils	Pearlmillet	Protective Irrigation or resowing in case of failure	Hoeing and Weeding	Use of farm pond for life saving irrigation
		Greengram/ Blackgram	Resowing	As above	
		Sorghum	--	As above	
	Medium deep black soils	Upland Paddy	--	Weeding and intercultivation	
		Pigeonpea	- Gap Filling	- Spray 2% urea or DAP - Hoeing/weeding	
		Soybean	In case of less than 30 % germination take up resowing with wider spacing of 45 cm with sufficient soil moisture.	Hoeing/weeding	
	Deep black soils	Cotton	Gap filling	Weeding, Protective irrigation	
		Maize	As above	As above	

Contingency measures- Mid season

Condition			Suggested Contingency measures		
Early season drought (Normal onset)	Major Farming situation	Normal Crop/cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period) At vegetative stage	Shallow black soils	Pearlmillet	Give protective Irrigation	- Hoeing/Weeding - Use of 8 % kaolin spray 2 % urea spray	Use of farm pond for life saving irrigation
		Greengram/ Blackgram	--	--	
		Sorghum	Give protective Irrigation	- Hoeing/Weeding - Use of 8 % kaolin spray 2 % urea spray	

	Medium deep black soils	Upland Paddy	Give protective Irrigation	Weeding and interculture	
		Pigeonpea	Protective irrigation and thinning	- Hoeing/Weeding - Use of 8 % kaolin spray 2 % urea spray, - Opening of conservation furrows in between two rows of pigeonpea	
		Soybean	Protective irrigation	- Use of 8 % kaolin spray 2 % urea spray, - Hoeing and weeding	
	Deep black soils	Cotton	As above	- Use of 8 % kaolin spray - Hoeing and weeding, 2 % urea and or 2 % DAP spray	
		Maize	As above	2 % urea spray, - Hoeing and weeding	

Condition			Suggested Contingency measures		
Early season drought (Normal onset)	Major Farming situation	Normal Crop/cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period) At flowering/ fruiting stage	Shallow black soils	Pearlmillet	Give protective Irrigation	- Hoeing/Weeding - Use of 8 % kaolin spray 2 % urea spray,	Use of farm pond for life saving irrigation
		Greengram/ Blackgram	--	--	
		Sorghum	Give protective Irrigation	- Hoeing/Weeding - Use of 8 % kaolin spray 2 % urea spray	
	Medium deep black soils	Upland Paddy	Give protective Irrigation	Weeding and interculture	
		Pigeonpea	Protective irrigation and thinning	- Hoeing/Weeding - Use of 8 % kaolin spray 2 % urea spray, - Opening of conservation furrows in between two rows of pigeonpea	
		Soybean	Protective irrigation	Hoeing and weeding	
	Deep black soils	Cotton	As above	- Use of 8 % kaolin spray - Hoeing and weeding, 2 % urea and or 2 % DAP spray	
		Maize	As above	--	

Contingency measures- End of the season

Condition			Suggested Contingency measures		
Terminal drought (Early withdrawal of monsoon)	Major farming situation	Normal crop/cropping system	Crop management	Rabi crop planning	Remarks on Implementation
	Shallow black soils	Pearlmillet	Protective irrigation, In case of poor grain filling harvest for fodder	No rabi crop	Use of farm pond for life saving irrigation
		Greengram/ Blackgram	Harvest the crop at physiological maturity	Chickpea (Vijay /Digvijay) / Safflower (Bhima) / Sunflower (SS-56 / Bhanu)	
		Sorghum	Protective irrigation, In case of poor grain filling harvest for fodder	Chickpea (Vijay /Digvijay) / Safflower (Bhima) / Sunflower (SS-56 / Bhanu)	
	Medium deep black soils	Upland Paddy	Harvest the crop at physiological maturity	No <i>rabi</i> crop	
		Pigeonpea	Protective irrigation	No <i>rabi</i> crop	
		Soybean	Protective irrigation	Chickpea (Vijay /Digvijay) or Wheat (Trimbak, Panchavati, Godavari) under assured irrigation	
	Deep black soils	Cotton	As above	No <i>rabi</i> crop	
		Maize	As above	Chickpea (Vijay /Digvijay/ Virat)	

2.1.2 Irrigated situation

Condition	Suggested contingency measures				
	Major farming situation	Normal crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delayed release of water in canals due to low rainfall	Not applicable				

Condition	Suggested contingency measures				
	Major farming situation	Normal crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Limited release water in canals due to low rainfall	Not applicable				

Condition	Suggested contingency measures				
	Major farming situation	Normal crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Limited release water in canals due to low rainfall	Not applicable				

Condition			Suggested contingency measures		
	Major farming situation	Normal crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Non release of water in canals under delayed onset of monsoon in catchment	Not applicable				

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	Uplands, light/red soils- or Medium, medium or deep black soils - tank fed	Cotton	Bt cotton	Skip row irrigation / Drip irrigation	-
		Onion	Late <i>kharif</i> onion (Phule Samarth / Baswant 780)	Sprinkler irrigation	
		Chilli	Phule Jyoti / Local	Broad Bed Furrows, Drip irrigation	
		Tomato	Phule Raja	Drip irrigation	

Condition			Suggested Contingency measures		
	Major farming situation	Normal crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Insufficient groundwater recharge due to low rainfall	Uplands, light/red soils- or Medium, medium or deep black soils - Open well	Cotton	Bt cotton	Skip row irrigation / Drip irrigation	-
		Wheat	Trimbak, Godavari, Tapovan	Irrigate at critical stages CRI and flowering stage	
		Chickpea	Vijay, Digvijay,	Sprinkler irrigation	
		Onion	Late <i>kharif</i> onion (Phule Samarth / Baswant 780)	Sprinkler irrigation	
		Chilli	Phule Jyoti / Local	Broad Bed Furrows, Drip irrigation	-
		Tomato	Phule Raja	Drip irrigation	

Resource management technologies

Desilting of community pond for providing lifesaving irrigation to kharif crop and pre sowing irrigation to rabi crop

- Desilting of drainage channel to augment the ground water level for providing supplemental irrigation to kharif crops
- Water evaporation retardant in farm pond to minimize evaporation losses
- Conservation furrow in soybean for moisture conservation
- Ridge and furrow in cotton to enhance water use efficiency and crop productivity
- Opening of furrow in cotton and pigeonpea to conserve moisture
- Opening of dead furrows in cotton to harvest rain water and moisture availability during crop growth
- Crop residue mulching in Pomegranate
- Tank silt application to increase moisture holding capacity and fertility of the soil
- Crop residue mulching in pomegranate to conserve moisture
- Efficient use of water and fertilizers by fertigation in Pomegranate
- Stress tolerant safflower variety PBNS-12 for receding moisture conditions of Maharashtra
- Short duration and drought escaping soybean variety- Phule Sangam (KDS-726)
- Drought escaping variety of chickpea Digvijay Short duration and drought escaping Greengram variety Phule Vaibhav
- High yielding Rabi sorghum varieties Phule Suchitra, Phule Anuradha, Phule Vasudha for efficient use of moisture

- Short duration variety of maize (GM-6) for delayed onset of monsoon
- Drought tolerant Sunflower variety Phule Bhaskar in rainfed areas
- Castor variety (DCH-519) for delayed monsoon
- Drought tolerant variety of sorghum (CSV-27) for kharif season
- Intercropping of Soybean + Pigeonpea (8:2) and Cotton + Pigeonpea (8:2) to increase profitability
- Breed upgradation in goats with Osmanabadi and Sangamneri bucks in frequently drought prone districts of Maharashtra
- Enrichment of poor-quality dry roughages in frequently drought prone regions
- Integrated Farming System (IFS) for stabilizing income and to minimize risk
- Mitigation of fodder security by perennial fodder cultivation (BDN-711, DHN-6, African tall)
- Backyard poultry with Srinidhi, Gramapriya chicks for sustainable income
- Silage making of green fodder to feed during lean period and increase milk production

Actionable Comprehensive Plans for Contingency

State	MAHARASHTRA	District	NASHIK
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	893.9	More than 19%	Less than 724.059
June	166		
July	282.2		
August	240.5		
September	205.2		

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

Irrigation info:

Net irrigated area:	0	Gross irrigated area:	0
Net Rainfed area		Gross rainfed area	

Source wise irrigation area details (ha)

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

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	93233	0	
2	Jowar	576	-	
3	Maize	240812		240812
4	Bajra	56143		56143
5	Ragi	10013		10013

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	4658		4658
2	Groundnut	19753		19753
3	Sesamum	5		5
4	SOyabean	120470		120470
5	Sunflower	14		14
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	40755		40755
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	12823		12823
2	Tobacco	-		
3	Guar seed	-		
4	Other Fodder crops	-		

Crop Plan- Beginning of the season

Condition	Suggested Contingency measures				
	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Early season drought (delayed onset) Delay by 4 Week July 3 rd week	Shallow red soils	Pearl millet	Shanti, Shraddha, Saburi	Hoeing at 15 and 30 DAS	Linkages with MPKV, Rahuri, College of Agriculture Pune, Dhule, Kolhapur, NSC, MSSC, Private co. distributors
		Groundnut	JL-24 , JL-286, JL-501	As above	
		Finger millet	Dapoli-1, HR-374, RAU-8, PR-202	Line transplanting	
	Medium red / black soils	Low land Paddy (Rainfed)	Indrayani, LK-248, Phule Radha, Phule Samrudhi	--	

		Maize	Karveer, Rajarshee,	Sowing on ridges and furrows	
		Niger	Sahyadri, Phule Karala	Hoeing and weeding	
	Deep black soils	Maize	Karveer, Rajarshee,	Sowing on ridges and furrows	
		Onion	Basavant -780, N-2-4-1, Phule Samarth	Raise seedling under irrigation	

Condition			Suggested Contingency measures		
Early season drought (Normal onset)	Major Farming situation	Normal Crop /Cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	Shallow red soils	Pearl millet	Hoeing Protective irrigation	Opening of conservation furrows, Weed mulch	Linkages with MPKV, Rahuri, College of Agriculture Pune, Dhule, Kolhapur, NSC, MSSC, Private co. distributors
		Groundnut	As above	As above	
		Finger millet	As above	As above	
	Medium red / black soils	Low land Paddy (Rainfed)	--	--	
		Maize	--	--	
		Niger	Thinning and gap filling	Weeding, Hoeing	
	Deep black soils	Maize	Protective irrigation in alternate rows,	Hoeing, Moisture conservation by opening of furrows	
		Onion	--	Weeding , Sprinkler irrigation	

Contingency measures- Mid season

Condition			Suggested Contingency measures		
Mid season drought (long dry spell, consecutive 2 weeks rainless (2.5 mm))	Major Farming situation	Normal Crop /Cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
At vegetative stage	Shallow red soils	Pearl millet	Hoeing Protective irrigation	Opening of conservation furrows, Weed mulch	Linkages with MPKV, Rahuri, College of Agriculture Pune, Dhule, Kolhapur, NSC, MSSC, Private co. distributors
		Groundnut	As above	As above	
		Finger millet	As above	As above	
	Medium red / black soils	Low land Paddy (Rainfed)	--	--	
		Maize	--	--	
		Niger	--	Weeding, Hoeing	
	Deep black soils	Maize	Protective irrigation in alternate rows,	Hoeing, Moisture conservation by opening of furrows	

		Onion	--	Weeding , Sprinkler irrigation	
--	--	-------	----	--------------------------------	--

Condition			Suggested Contingency measures		
Mid season drought (long dry spell, consecutive 2 weeks rainless (2.5 mm))	Major Farming situation	Normal Crop /Cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
At reproductive stage	Shallow red soils	Pearl millet	Protective irrigation	--	Linkages with MPKV, Rahuri, College of Agriculture Pune, Dhule, Kolhapur, NSC, MSSC, Private co. distributors
		Groundnut	As above	--	
		Finger millet	As above	--	
	Medium red / black soils	Low land Paddy (Rainfed)	--	--	
		Maize	Protective irrigation in alternate rows	--	
		Niger	--	--	
	Deep black soils	Maize	Protective irrigation in alternate rows,	--	
		Onion	--	Sprinkler irrigation	

Contingency measures- End of the season

Condition			Suggested Contingency measures		
Terminal drought (early withdrawal of monsoon)	Major Farming situation	Normal Crop/cropping system	Crop management	Rabi Crop planning	Remarks on Implementation
	Shallow red soils	Pearl millet	In case of poor grain filling harvest for fodder	No rabi crop	Linkages with MPKV, Rahuri, College of Agriculture Pune, Dhule, Kolhapur, NSC, MSSC, Private co. distributors
		Groundnut	Protective irrigation or harvest at physiological maturity	As above	
		Finger millet	In case of poor grain filling harvest for fodder	As above	
	Medium red / black soils	Low land Paddy (Rainfed)	--	Ricebean, Lentil	
		Maize	Protective irrigation in alternate rows	Chickpea (Vijay, Digvijay)	
		Niger	--	--	
	Deep black soils	Maize	Protective irrigation in alternate rows,	Onion (N-2-4-1)	
		Onion	--	No rabi crop	

2.1.2

Irrigated situation

Condition	Suggested Contingency measures
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Delayed release of water in canals due to low rainfall	Major Farming situation	Normal Crop /Cropping system	Change in crop/Cropping system	Agronomic measures	Remarks on Implementation
	Medium deep black / red soils	Sugarcane	No Change	Alternate furrow / drip irrigation, Sugarcane trash mulching	Linkages with MPKV, Rahuri, College of Agriculture Pune, Dhule, Kolhapur, NSC, MSSC, Private co. distributors
		Onion	Late <i>kharif</i> onion	Sprinkler irrigation	
		Vegetables	No Change	Sprinkler irrigation	
		Wheat	Trimbak, Godavari, Tapovan or Chickpea (Vijay, Digvijay, Vishal)	Irrigate at critical growth stages through Sprinkler irrigation	

Condition	Suggested Contingency measures				
Limited release of water in canals due to low rainfall	Major Farming situation	Normal Crop /Cropping system	Change in crop/Cropping system	Agronomic measures	Remarks on Implementation
	Medium deep black / red soils	Sugarcane	No Change	Alternate furrow / drip irrigation, Sugarcane trash mulching	Linkages with MPKV, Rahuri, College of Agriculture Pune, Dhule, Kolhapur, NSC, MSSC, Private co. distributors
		Onion	Late <i>kharif</i> onion	Sprinkler irrigation	
		Vegetables	No Change	Sprinkler irrigation	
		Wheat	Trimbak, Godavari, Tapovan or Chickpea (Vijay, Digvijay, Vishal)	Irrigate at critical growth stages through Sprinkler irrigation	

Condition	Suggested Contingency measures				
Non release of water in canals under delayed onset of monsoon in catchment	Major Farming situation	Normal Crop /Cropping system	Change in crop/Cropping system	Agronomic measures	Remarks on Implementation
	Medium deep black / red soils	Sugarcane	No Change	Alternate furrow / drip irrigation, Sugarcane trash mulching	Linkages with MPKV, Rahuri, College of Agriculture Pune, Dhule, Kolhapur, NSC, MSSC, Private co. distributors
		Onion	Late <i>kharif</i> onion	Sprinkler irrigation	
		Vegetables	No Change	Sprinkler irrigation	
		Wheat	Trimbak, Godavari, Tapovan or Chickpea (Vijay, Digvijay, Vishal)	Irrigate at critical growth stages through Sprinkler irrigation	

Condition			Suggested Contingency measures		
Lack of inflows into tanks due to	Major Farming situation	Normal Crop /Cropping system	Change in crop /Cropping system	Agronomic measures	Remarks on Implementation

Insufficient /delayed onset of monsoon	Medium deep black / red soils	Sugarcane	No crops can be taken under such situation and for grape and pomegranate, give life saving irrigation from other sources.	
		Grape		
		Pomegranate		
		Onion		
		Wheat		
		Chickpea		
		Vegetable		

Condition			Suggested Contingency measures		
Insufficient groundwater recharge due to low rainfall	Major Farming situation	Normal Crop /Cropping system	Change in crop /Cropping system	Agronomic measures	Remarks on Implementation
	Medium deep black / red soils – Open well irrigated	Sugarcane	--	Alternate furrow / drip irrigation, Sugarcane trash mulching	Linkages with MPKV, Rahuri, College of Agriculture Pune, Dhule, Kolhapur, NSC, MSSC, Private co. distributors
		Grape	--	Drip irrigation, mulching with residues / grasses	
		Pomegranate	--	As above	
		Onion	Pearl millet	Protective irrigation	
		Wheat	Chickpea (Vijay, Digvijay, Vishal)	Sprinkler irrigation	
		Chickpea	As above	As above	

Resource management technologies

- Open/Tube well recharge structures with silt trap
- Desilting of percolation tanks for providing supplemental irrigation
- Low cost Jalkunds and farm ponds to harvest excess rainfall and growing high value crops
- Farm bunding to reduce erosion and mitigate water stress during dry spell
- Micro irrigation with harvested water for enhancing water use efficiency and crop productivity
- Low cost water harvesting structures like sandbag check dam, konkanvijaybandhara
- Crop residues as mulching in rabi crops for enhancing soil fertility and moisture holding capacity
- Polyethylene mulching to conserve moisture and reduce weed growth in high value crops
- Broad Bed Furrow to enhance water use efficiency in soybean
- Drought tolerant variety of Bajra (ICTP-8203)
- Wheat variety PDKV-Washim (WSM-1472) for limited water availability areas of Maharashtra
- Short duration and drought escaping Soybean variety JS -9305 for high yielding
- Non-shattering drought tolerant variety of soybean MAUS-162
- High yielding onion variety (Bhima Super) from harvested water with sprinkler irrigation
- Lodging resistant rice varieties (Karjat 2, Karjat 9, Ratnagiri 1, Ratnagiri 5, Ratnagiri 6 and Ratnagiri 73) finger millet (Dapoli-1) in high rainfall regions and flood prone areas of Konkan region of Maharashtra
- Short duration var.KonkanSadabahar of cowpea during rabi in rice fallows
- Intercropping of soybean + pigeonpea (6:2) for risk minimisation
- Strip cropping in soybean and pigeon pea to minimize runoff and to enhance water use efficiency
- Crop diversification with low water requiring crops during rabi
- Backyard poultry with Kaveri, Giriraj, Kadaknath, Gramapriya chicks for minimising risk and sustainable livelihood
- Konkan Kanyal goat breed resistant to heavy rain on raised platform Year-round fodder production through improved fodder cultivars for sustainable dairy production
- Azolla as alternate protein supplement for dairy animals for enhancing productivity
- Silage making to reduce fodder scarcity in summer and enhance milk productivity

Actionable Comprehensive Plans for Contingency

State	MAHARASHTRA	District	OSMANABAD
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	579.6	More than 19%	Less than 469.476
June	120.7		
July	127		
August	136		
September	195.9		

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

Irrigation info:

Net irrigated area:	0	Gross irrigated area:	0
Net Rainfed area		Gross rainfed area	

Source wise irrigation area details (ha)

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

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	0	0	
2	Jowar	499	-	
3	Maize	205999		205999
4	Bajra	22439		22439
5	Ragi	-		

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	28542		28542
2	Groundnut	5924		5924
3	Sesamum	30		30
4	SOyabean	50936		50936
5	Sunflower	987		987
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	390915		390915
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	38516		38516
2	Tobacco	-		
3	Guar seed	-		
4	Other Fodder crops	-		

Crop Plan- Beginning of the season

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming situation	Normal Crop / Cropping system including variety	Change in Crop/Cropping system	Agronomic measures	Remarks on Implementation
Delay by 4 weeks 2 nd week of July	Medium deep to deep black soils with assured rainfall	Soybean	Soybean (JS 335, MAUS-71, 158) + Pigeonpea (BSMR 736, 853, BDN 708, 711) intercropping in 4:2 or 6:3 row proportion	Normal package of practices recommended by VNMKV, Parbhani	Linkage with VNMKV, Parbhani, MSSC, NSC for supply of foundation / certified / truthful seed • Supply of seed cum fertilizer drill under RKVY, ZILLA
		Pigeonpea	No change. Prefer varieties like BSMR 736, 853 BDN 708, 711	-do-	
		Sorghum	Maize / Pigeonpea (BSMR 736, 853, BDN 708, BDN 711) / Pearl millet (Shradha,	-do-	

			Saburi, AIMP-92901) / ABPC 4-3 Sunflower (Morden, SS-56, LSFH-35, BSH-1)		PARISHAD, MAIDC
		Blackgram	Soybean (JS 335, MAUS-71, 158) + Pigeonpea (BSMR 736, 853, BDN 708, 711) intercropping in 4:2 or 6:3 row proportion	-do-	
		Cotton	Cotton + Pigeonpea in 6:1 row proportion (Bt cotton hybrids like Bunny Ajit 155, Dr Brent)	- Use 10% higher seed rate - Follow <i>in-situ</i> soil moisture conservation measures like alternate furrow opening with Balram plough	
		Sunflower	No change. Prefer varieties like Modern, SS-56, LSFH-35, BSH-1	Normal package of practices recommended by VNMKV, Parbhani	
	Shallow soils with assured rainfall	Soybean	Soybean (JS 335, MAUS-71) + Pigeonpea (BSMR 736, 853, BDN 708, BDN 711) intercropping in 4:2 or 6:3 row proportion	-do-	
		Pigeonpea	No change. Prefer varieties like BSMR 736, 853 BDN 708, 711	-do-	
		Sorghum	Maize/ Pigeonpea (BSMR 736, 853, BDN 708, 711) / Pearl millet (Sradha, Saburi, AIMP-92901) / Sunflower (Morden, SS-56, LSFH-35, BSH-1)	-do-	
		Blackgram	Soybean (JS 335, MAUS-71) + Pigeonpea (BSMR 736, 853, BDN 708, BDN 711) intercropping in 4:2 or 6:3 row proportion	-do-	
		Pearl millet	No change. Prefer varieties like Shradha, Saburi, AIMP-92901	-do-	
	Medium deep to deep black soils with low rainfall (Bhoom, Paranda, Kalamb and Washi tehsils)	Soybean	Soybean (JS 335, MAUS-71, 81) + Pigeon pea (BSMR 736, 853, BDN 708, 711) in 4:2 row proportion or cotton (Bt cotton hybrids like Bunny, Mahyco, Ankur, Ajit-51) + pigeonpea in 6:2 ratio	-do-	
		Pigeonpea	No change. Prefer varieties like BSMR 736, 853 BDN 708, 711	-do-	
		Sorghum	Sorghum (CSH-9, 11, 16, PBK-401, 809) + Pigeonpea	-do-	

			(BSMR 736, 853 BDN 708, 711) in 4:2 row proportion		
		Blackgram	Soybean (JS 335, MAUS-71, 81) + Pigeon pea (BSMR 736, 853, BDN 708, 711) in 4:2 row proportion or cotton (Bt cotton hybrids like Bunny, Mahyco, Ankur, Ajit-51) + pigeonpea in 6:2 ratio	-do-	
	Shallow soils with low rainfall (Bhoom, Paranda, Kalamb and Washi tehsils)	Pigeonpea	No change. Prefer varieties like BDN- 711	-do-	
		Sorghum	Pearl millet (Shradha, Saburi, Shanti, ABPC 4-3) + Pigeonpea(BSMR 736, 853, BDN 708, 711) in 4:2 row proportion	-do-	
		Blackgram	Soybean (JS 335, MAUS-71, 81) + Pigeon pea (BSMR 736, 853, BDN 708, 711) in 4:2 row proportion	-do-	
		Pearl millet	No change. Prefer varieties like Sradha, Saburi, AIMP-92901	-do-	

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	Normal Crop / Cropping system	Crop management	Agronomic measures	Remarks on Implementation
At vegetative stage	Medium deep to deep black soils with assured rainfall	Soybean	Interculture for weeding and to create soil mulch.	- Opening of furrows every after 4 rows. - Spraying of 1% KNO₃	Linkage with - - VNMKV, MSSC and NSC for seed. - MAIDC for implements. - VNMKV, KVK for agro techniques
		Pigeonpea	- Interculture with harrow / hoe for weeding and to create soil mulch. - Give Protective irrigation if possible - Intrarow thinning	- Opening of alternate furrows after every 6-8 rows with Baliram plough. - Mulching with crop residue @ 3-5 t / ha within the rows - Spraying of 1% KNO₃	
		Sorghum	- Give Protective irrigation if possible - Intrarow thinning - Intercultivation with harrow / hoe w for weeding	- Avoid top dressing of Urea till sufficient soil moisture is available. - Opening of alternate furrows after every 6-8 rows with Baliram plough. - Spraying of 1% KNO₃	
		Blackgram	- Interculture for weeding and to create soil mulch. - Give Protective irrigation if possible	- Spraying of 1% KNO₃ - Interculture with hoe - Opening of furrows every after 4 rows.	

	Shallow soils with assured rainfall	Cotton	- Intrarow thinning - Avoid top dressing of fertilizers till sufficient soil moisture is available. - Interculture with harrow for weeding and to create soil mulch. - Give protective irrigation if possible	- Opening of alternate furrows with Baliram plough. - Mulching with crop residue @ 3-5 t /ha within the rows - Spraying of 1% KNO₃	
		Soybean	Prepare shallow furrow while hoeing by tying ropes to prongs, which will provide soil support to crop plant and conserve soil moisture	- Opening of furrows every after 4 rows. - Spraying of 1% KNO₃	
		Pigeonpea	- Interculture for weeding and to create soil mulch - Give Protective irrigation if possible	- Spraying of 1% KNO₃ - Opening of alternate furrows	
		Sorghum	- Give Protective irrigation if possible - Intra row thinning - Intercultivation with hoe for weeding	- Avoid top dressing of Urea till sufficient soil moisture is available. - Opening of alternate furrows with Baliram plough - Spraying of 1% KNO₃	
		Blackgram	- Interculture for weeding and to create soil mulch. - Give Protective irrigation if possible	- Opening of furrows every after 4 rows. - Spraying of 1% KNO₃	
		Pearl millet	- Avoid top dressing of fertilizers till sufficient soil moisture is available - Interculture with harrow for weeding and to create soil mulch. - Give Protective irrigation if possible	- Opening of furrows every after 4 rows with Balaram plough. - Spraying of 1% KNO₃	
	Medium deep to deep black soils with low rainfall (Bhoom, Paranda, Kalamb and Washi tehsils)	Soybean	Interculture with hoe for weeding and to create soil mulch.	- Spraying of 1% KNO₃ - Opening of furrows every after 4 rows.	
		Pigeonpea	- Interculture with harrow for weeding and to create soil mulch. - Give Protective irrigation if possible	- Opening of alternate furrows with Baliram plough. - Mulching with crop residue - Spraying of 1% KNO₃	
		Sorghum	- Give Protective irrigation if possible - Intrarow thinning - Interculture with hoe for weeding and to create soil mulch to conserve moisture.	- Avoid top dressing of Urea till sufficient soil moisture is available. - Opening of alternate furrows with Baliram plough - Spraying of 1% KNO₃	

		Blackgram	• Interculture for weeding and to create soil mulch. • Give Protective irrigation if possible	• Opening of furrows every after 4 rows. • Spraying of 1% KNO₃	
	Shallow soils with low rainfall (Bhoom, Paranda, Kalamb and Washi tehsils)	Soybean	Interculture with harrow /hoe for weeding and to create soil mulch.	• Spraying of 1% KNO₃ • Opening of furrows every after 4 rows.	
		Pigeonpea	• Interculture with harrow for weeding and to create soil mulch. • Give Protective irrigation if possible	• Opening of alternate furrows with Baliram plough. • Mulching with crop residue • Spraying of 1% KNO₃	
		Sorghum	• Give Protective irrigation if possible • Intrarow thinning	• Avoid top dressing of Urea till sufficient soil moisture is available • Interculture for weeding and to create soil mulch to conserve moisture. • Opening of alternate furrows • Spraying of 1% KNO₃	
		Blackgram	• Interculture for weeding and to create soil mulch. • Give Protective irrigation if possible	• Opening of furrows every after 4 rows. • Spraying of 1% KNO₃	
		Pearlmillet	• Interculture with harrow for weeding and to create soil mulch. • Give Protective irrigation if possible	• Avoid top dressing of fertilizers till sufficient soil moisture is available. • Opening of alternate furrows with Baliram plough. • Mulching with crop residue • Spraying of 1% KNO₃	

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	Major Farming situation	Normal Crop / Cropping system	Crop management	Agronomic measures	Remarks on Implementation
At flowering / fruiting stage	Medium deep to deep black soils with assured rainfall	Soybean	Life saving irrigation if possible	• Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP.	• Farm ponds through watershed development • Supply of seed through MSSC, NFSM, VNMKV, Village seed production programme
		Pigeonpea	Life saving irrigation if possible	• Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP.	
		Sorghum	• Life saving irrigation if possible • In case of severe stress, harvest as green fodder	Foliar spray of 1% KNO ₃ or If feasible spray anti-transparent 6% kaolin	
		Blackgram	Life saving irrigation if possible	• Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP.	

		Cotton	Life saving irrigation if possible	- Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP. - Mulching with crop residue @ 3-5 t /ha within the rows.	Implements through MAIDC, Zilla Parishad
	Shallow soils with assured rainfall	Soybean	Life saving irrigation if possible	Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP.	
		Pigeonpea	Life saving irrigation if possible	Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP.	
		Sorghum	- Life saving irrigation if possible - In case of severe stress, harvest as green fodder	Foliar spray of 1% KNO ₃ or If feasible spray anti-transparent 6% kaolin	
		Blackgram	Life saving irrigation if possible	Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP.	
		Pearl millet	Life saving irrigation if possible	Foliar spray of 1% KNO ₃ or 2 % urea or 2 % DAP.	
	Medium deep to deep black soils with low rainfall (Bhoom, Paranda, Kalamb and Washi tehsils)	Soybean	Life saving irrigation if possible	Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP.	
		Pigeonpea	-do-	Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP.	
		Sorghum	-do-	Foliar spray of 1% KNO ₃ or If feasible spray anti-transparent 6% kaolin	
		Blackgram	-do-	Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP.	
	Shallow soils with low rainfall (Bhoom, Paranda, Kalam and Washi tehsils)	Pigeonpea	Life saving irrigation if possible	Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP.	
		Sorghum	- Life saving irrigation if possible - In case of severe stress, harvest as green fodder	Foliar spray of 1% KNO ₃ or If feasible spray anti-transparent 6% kaolin	
		Blackgram	Life saving irrigation if possible	Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP.	
		Pearl millet	-do-	-do-	

Contingency measures- End of the season

Condition	Suggested Contingency measures				
Terminal drought (Early withdrawal of monsoon)	Major Farming situation	Normal Crop / Cropping system	Crop management	Rabi Crop planning	Remarks on Implementation
	Medium deep to deep black soils with assured rainfall	Soybean	Life saving irrigation	Plan for <i>Rabi</i> crops chickpea / safflower / <i>Rabi</i> sorghum / sunflower	Farm ponds through watershed development

		Pigeonpea	Life saving irrigation	Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP.	- Supply of seed through MSSC, NFSM, VNMKV, Village seed production programme - Implements through MAIDC, Zilla Parishad
		Sorghum	Life saving irrigation or harvest at physiological maturity	Plan for <i>Rabi</i> crops chickpea	
		Blackgram	Harvest at physiological maturity	Plan for <i>Rabi</i> crops chickpea / safflower / <i>Rabi</i> sorghum / sunflower	
		Cotton	- Life saving irrigation with drip - Picking	--	
	Shallow soils with assured rainfall	Soybean	Life saving irrigation	Plan for <i>Rabi</i> crops chickpea / safflower / <i>Rabi</i> sorghum / sunflower	
		Pigeonpea	Life saving irrigation	Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP.	
		Sorghum	Life saving irrigation or harvest at physiological maturity	Plan for <i>Rabi</i> crops chickpea	
		Blackgram	Harvest at physiological maturity	Plan for <i>Rabi</i> crops chickpea / safflower / <i>Rabi</i> sorghum / sunflower	
		Pearl millet	Life saving irrigation or harvest at physiological maturity	-do-	
	Medium deep to deep black soils with low rainfall (Bhoom, Paranda, Kalamb and Washi tehsils)	Soybean	Life saving irrigation	Plan for <i>Rabi</i> crops chickpea / safflower	
		Pigeonpea	Life saving irrigation	Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP.	
		Sorghum	Life saving irrigation or harvest at physiological maturity	Plan for <i>Rabi</i> crops chickpea	
		Blackgram	Harvest at physiological maturity	Plan for <i>Rabi</i> crops chickpea / safflower / <i>Rabi</i> sorghum / sunflower	
	Shallow soils with low rainfall (Bhoom, Paranda, Kalamb and Washi tehsils)	Pigeonpea	Life saving irrigation	Foliar spray of 1% KNO₃ or 2 % urea or 2 % DAP.	
		Sorghum	- Life saving irrigation - In case of severe stress harvest as green fodder	Plan for <i>Rabi</i> crops chickpea / safflower	
		Blackgram	Harvest at physiological maturity	Plan for <i>Rabi</i> crops chickpea / safflower / <i>Rabi</i> sorghum / sunflower	
		Pearl millet	Life saving irrigation or harvest at physiological maturity	Plan for <i>Rabi</i> crops chickpea / safflower	

				after harvest of sole pearl millet	
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2.1.2 Irrigated situation

Condition	Major Farming situation	Normal Crop/Cropping system	Suggested Contingency measures		
			Change in crop / cropping system	Agronomic measures	Remarks on Implementation
Delayed release of water in canals due to low rainfall	Medium deep to deep black cotton soil with assured rainfall	Sugarcane	No change or irrigated cotton	- Raising of nurseries with single budded setts to save the time and water for pre-seasonal planting - Drip system for enhancing the water productivity - Mulching with sugarcane trash between rows and frequent interculture to conserve moisture	Linkage with DSAO for micro-irrigation
		Turmeric	No change	Use drip irrigation	
		Vegetable crops	Cotton / Maize	-do-	
		Mango	No change	- Drip irrigation - Basin mulch	
	Shallow soils with assured rainfall	Grape	No change	-do-	
		Kagzilime	No change	-do-	
		Vegetables	No change	-do-	
	Medium deep to deep black cotton soil with low rainfall (Bhoom, Paranda, Kalamb and Washi tehsils)	Wheat / Onion	No change	- Drip irrigation - Irrigation at critical crop growth stages	
		Vegetables	No change	Drip irrigation	
	Shallow soils with low rainfall (Bhoom, Paranda, Kalamb and Washi tehsils)	Wheat	Rabi sorghum / chickpea	Irrigation at critical crop growth stages	

Condition	Major Farming situation	Normal Crop/Cropping system	Suggested Contingency measures		
			Change in crop / cropping system	Agronomic measures	Remarks on Implementation
Limited release of water in canals due to low rainfall	Medium deep to deep black soil with assured rainfall	Sugarcane	No change or irrigated cotton	- Raising of nurseries with single budded setts to save the time and water for pre-seasonal planting - Drip system for enhancing the water productivity - Mulching with sugarcane trash between rows and frequent interculture to conserve moisture	Linkage with DSAO for micro-irrigation

		Turmeric	No change	Use drip irrigation	
		Vegetable crops	Cotton / Maize	-do-	
		Mango	No change	- Drip irrigation - Basin mulch	
	Shallow soils with assured rainfall	Grape	No change	-do-	
		Kagzilime	No change	-do-	
	Medium deep to deep black soil with low rainfall (Bhoom, Paranda, Kalamb and Washi tehsils)	Wheat / Onion	No change	- Drip irrigation - Irrigation at critical crop growth stages	
	Shallow soils with low rainfall (Bhoom, Paranda, Kalamb and Washi tehsils)	Wheat	<i>Rabi</i> sorghum / chickpea	Irrigation at critical crop growth stages	

Condition	Major Farming situation	Normal Crop/Cropping system	Suggested Contingency measures		
			Change in crop / cropping system	Agronomic measures	Remarks on Implementation
Non release of water in canals under delayed onset of monsoon in catchment	Medium deep to deep black soil with assured rainfall	Sugarcane	Cotton	- Mulching - Interculture	Linkage with VNMKV, Parbhani, MSSC, NSC for seed
		Turmeric	<i>Rabi</i> sorghum, Chickpea and safflower	-do-	
		Vegetable crops	Pigeonpea	-do-	
		Mango	No change	-do-	
	Shallow soils with assured rainfall	Grape	No change	Arrange for water from some other source	
		Kagzi lime	No change	-do-	
	Medium deep to deep black soil with low rainfall (Bhoom, Paranda, Kalamb and Washi tehsils)	Sugarcane	Cotton	- Mulching - Interculture	
		Turmeric	<i>Rabi</i> sorghum, Chickpea and safflower	-do-	
		Vegetable crops	Pigeonpea	-do-	
		Mango	No change	-do-	
	Shallow soils with low rainfall (Bhoom, Paranda, Kalamb and washi tehsils)	Not applicable			

Condition	Major Farming situation	Crop/Cropping system	Suggested Contingency measures		
			Change in crop / cropping system	Agronomic measures	Remarks on Implementation

Lack of inflows into tanks due to insufficient / delayed onset of monsoon		Not applicable			
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Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/ Cropping system	Change in crop / cropping system	Agronomic measures	Remarks on Implementation
Insufficient groundwater recharge due to low rainfall	Medium deep to deep black soil with assured rainfall	Sugarcane	Cotton	- Mulching - Interculture	Linkage with VNMKV, Parbhani, MSSC, NSC for seed
		Turmeric	<i>Rabi</i> sorghum, Chickpea and safflower	-do-	
		Vegetable crops	Pigeonpea	-do-	
		Mango	No change	-do-	
	Shallow soils with assured rainfall	Grape	No change	Arrange for water from some other source	
		Kagzi lime	No change	-do-	
	Medium deep to deep black soil with low rainfall (Bhoom, Paranda, Kalamb and Washi tehsils)	Sugarcane	Cotton	- Mulching - Interculture	
		Turmeric	<i>Rabi</i> sorghum, Chickpea and safflower	-do-	
		Vegetable crops	Pigeonpea	-do-	
		Mango	No change	-do-	
	Shallow soils with low rainfall (Bhoom, Paranda, Kalamb and Washi tehsils)	Not applicable			
Any other condition (specify)		Not Applicable			

Resource management technologies

- Desilting of community pond to increase water storage capacity for providing lifesaving irrigation during kharif and enhancing cropping intensity during rabi season
- Conservation furrows in soybean, pearl millet and cotton for in-situ moisture conservation and enhancing crop productivity
- Crop residue mulching in pomegranate to conserve moisture and reduce weed growth
- Water evaporation retardant in farm pond to minimize evaporation losses
- Fertigation in Pomegranate increases fertilizer use efficiency and yield in Semi-arid areas of Maharashtra
- Desilting of check dams to enhance water storage capacity for providing supplemental irrigation during kharif and rabi season
- Farm ponds for lifesaving irrigation for growing high value crops and for cropping intensification during rabi season
- Farm bunding in soybean, cotton and chickpea for erosion control and foe in-situ conservation
- Ridge and furrow in soybean for enhancing water use efficiency and crop productivity
- Micro irrigation system in cotton and chickpea with harvested water for enhancing water use efficiency and crop productivity
- Recharge structures for open/tube wells with silt trap
- Opening of furrow in Bt. cotton and pigeon pea for enhancing water use efficiency and crop productivity

- Desilting of percolation tanks to increase the water storage capacity for providing supplemental irrigation
- Shredding of soybean crop residue as mulching in rabi bengal gram for enhancing soil fertility and moisture holding capacity
- Desilting of drainage channel to enhance water storage capacity for providing supplemental irrigation to kharif and rabi crops
- Opening of dead furrows in cotton for enhancing the water use efficiency and crop productivity
- Deep continuous contour trenching and bunding in soybean, cotton and jowar for in-situ conservation and minimising stress
- Sand bag check dams for water harvesting and enhancing groundwater recharge
- Trench cum bund in soybean, sorghum and maize plantation for erosion control and to overcome the water stress during dry spells
- Application of tank silt to increase the moisture holding capacity of the soil and to improve the fertility of the soil
- Compartmental bunding in sorghum to conserve moisture and improve productivity
- Polyethylene mulching in watermelon to conserve moisture and reduce weed growth
- Low-cost Konkan Jalkunds to enhance water storage capacity for providing supplemental irrigation during kharif and rabi season
- Furrow Irrigated Raised Bed in high value crops for enhancing water use efficiency and crop productivity
- Construction of Vanarai/Vijay bandhara for critical irrigation during dry spells

Actionable Comprehensive Plans for Contingency

State	MAHARASHTRA	District	PALGHAR
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	2262.7	More than 19%	Less than 1832.787
June	415.1		
July	850.8		
August	603.4		
September	393.4		

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

Irrigation info:

Net irrigated area:	0	Gross irrigated area:	0
Net Rainfed area		Gross rainfed area	

Source wise irrigation area details (ha)

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

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	87249	0	
2	Jowar	-	-	
3	Maize	14		14
4	Bajra	1		1
5	Ragi	6339		6339

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	2628		2628
2	Groundnut	46		46
3	Sesamum	676		676
4	SOyabean	-		
5	Sunflower	5		5
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	-		

Crop Plan- Beginning of the season

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming situation	Normal Crop/Cropping system	Change in crop/cropping system Including variety	Agronomic measures	Remarks on Implementation
**Delay by 4 weeks (1 st week of July)	Upland farming Medium deep to shallow soils	Rice	Prefer early varieties (Ratnagiri-73, Karjat-184, Karjat-3)	Sowing of sprouted seeds	Source of Seed: Maharashtra State Seed corporation
		Finger millet	Short duration variety (H.P. 374)	--	
		Sesamum	No Change	-	

		Vegetable crops (Chilli, okra, bitter gourd, snake gourd)	-	--
	Mid- land farmin g mediu	Rice	Prefer early varieties (Ratnagiri-73,Karjat- 184, Karjat-3)	Sowing of sprouted seeds.
	Low land farming deep soils	Rice	Mid-late duration variety (Palghar- 1,Palghar-2, Karjat-5etc)	Sowing of sprouted seeds/Gr ow nursery
	Soils on hill slope shallow soils	Fingermillet	Cowpea (Variety- Konkan Sadabahar),Blackgra m (Variety-TPU-4)	--

**Generally such type of situation has not occurred during past years

Contingency measures- Mid season

Condition			Suggested Contingency measures			
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5mm) period)	Major Farming situation	Normal Crop/cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation	
At vegetative stage	Upland Medium deep to shallow soils	Rice	Apply split dose of Nitrogen after restart of rains	Protective irrigation	-	
		Finger millet				
		Vegetable	Apply split dose of Nitrogen after restart of	- Protective irrigation - Mulching with leaf lopping		
	Mid-land Medium deep soils	Rice	- Apply split dose of Nitrogen after restart of rains - Adopt weed management	Maintain the existing water level in the field. Protective irrigation		
		Low land deep soils				Rice
	Hill slope shallow soils	Finger millet	- Postpone the split dose of Nitrogen application - Adopt	Give protective irrigation if possible		

Condition			Suggested Contingency measures		
Mid-seasondrought (long dry spell)	Major Farming situation	Normal Crop/croppin g system	Crop managemen t	Soil nutrient& moisture conservatio	Remarks on Implementatio n
At flowering/fruitin g stage	Upland Medium deep to shallow soils	Rice	-	● Protective irrigation ● Green leaf mulching	-
		Fingermillet			
		Vegetables	-	Protective irrigation Mulching with leaf lopping	
	Mid-land Medium deep soils	Rice	-	Maintain the existing water level in the field. Protective irrigation	
	Low land deep	Rice			
Hill slope shallo	Fingermillet	-	Protective irrigation		

Contingency measures- End of the season

Condition			Suggested Contingency measures		
Terminal drought	Major Farming situation	Normal Crop/cropping	Crop management	Rabi crop planning	Remarks on Implementation
(Early withdrawal of)	Upland farming Medium deep to shallow soils	Rice	Harvest crops at physiologic	Wal (Lab lab bean), Blackgram,	
		Finger millet			
				Cowpea, Mustard Sunflower, Groundnut, Sesame Vegetables like Okra, Brinjal, Knolkhol, Chilli, Capsicum, Tomato, Leafy vegetables, Melons and Cucurbitaceous crops, Seasonal flowers in irrigated area	
		Vegetables	Protective		

	Mid-land farming medium deep soils	Rice	- Protective irrigation - Harvest crop at physiological maturity	Wal (Lab lab bean), Blackgram, Bengalgram, Cowpea, Mustard Sunflower, Groundnut, Sesame, Vegetables like Okra, Brinjal, Knolkhol, Chilli, Capsicum, Tomato, Leafy vegetables, Melons and Cucurbitaceous crops, Seasonal flowers in irrigated area	Use water from the outside sources like farm ponds, nalas, streams, rivers, etc.
	Low land farming deep soils	Rice			
	Soils on hill slope	Finger millet	Harvest crop at physiological maturity	-	

2.1.1 Irrigated situation

Condition	Major	Normal Crop/Cro	Suggested Contingency measures		
			Change in crop/cropping	Agronomic measures	Remarks on
Delayed release of water in canals due to low rainfall	Mid and lowland Medium deep to deep soils	Rice (<i>Rabi</i> -hot weather season)	- Prefer short duration variety (Karjat-3, Karjat184, Karjat7) - Grow oil seed like groundnut (Konkan Gaurav, SBXI, Phulepragati).	Mattechniqueofnurseryraising/Directseeding/Sowingofsproutedseeds(<i>Rahu</i>)	-
		Groundnut	No change		
		Seasamum	No change		
		Pulses (Wal,	No change		
		Vegetables (Cucurbitaceous and Solanaceous crops, Okra etc.)	No change		
		Watermelon	No change		

Condition			Suggested Contingency measures		
	Major Farming	Normal Crop/cropping	Change in crop/cropping	Agronomic	Remarks on Implementation

Limited release of water in canals due to low rainfall	Mid and low land Medium deep to deep soils	Rice (<i>Rabi</i> season)	• Grow short duration pulses,	Protective irrigation	-
		Groundnut	No change	Protective irrigation, Mulching should be followed	
		Sesame	No change	Protective irrigation	

Condition			Suggested Contingency measures		
	Major Farm	Normal Crop/cropp	Change in crop/croppi	Agronomic measures	Remarks on Implementa
		Pulses (Wal, cowpea, horsegram, greengram, Bengal	No change	-do-	
		Vegetables (Capsicum, Cucurbitaceous and	No change	-do-	
		Watermelon	No change	--	

Condition			Suggested Contingency measures		
	Major Farming	Normal Crop/Cropping	Change in crop/cropping	Agronomic measures	Remarks on Implementation
Non release of water in canals under delayed onset of monsoon in catchment	Mid and low land Medium deep to deep soils	Rice (<i>Rabi</i> season)	Wal (lab lab bean), horsegram, blackgram, greengram, bengal gram, cowpea, sesame and mustard on residual moisture.	Minimum tillage and sowing of seed by dibbling, relay cropping	-
		Groundnut			
		Sesame			
		Pulses (Cowpea, Horsegram,			
		Vegetables (Cucurbitaceous and Solanaceous			
		Watermelon	Wal (Lab lab bean), Horsegram, Greengram		
Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping	Change in crop/cropping	Agronomic measures	Remarks on Implementation
Lack of inflows into tanks due to insufficient /delayed onset of	Mid and lowland Medium deep to deep soils	Rice (<i>Rabi</i> season)	Wal (lab lab bean), horsegram, black gram, greengram, Bengal gram, cowpea, sesame and mustard on residual	Minimum tillage and sowing of seed by dibbling, relay cropping	-
		Groundnut			
		Sesame			

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/Cropping system	Change in crop/Cropping system	Agronomic measures	Remarks on Implementation
monsoon		Pulses (Cowpea, Horsegram, Greengram)	moisture.		
		Vegetables (Cucurbitaceous and solanaceous crop okra etc.)			
		Watermelon			

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Insufficient ground water recharge due to low rainfall	Mid and low land Medium deep to deep soils	Rice (<i>Rabi</i> season)	Not applicable		
		Groundnut			
		Sesame			
		Pulses (Cowpea, Horsegram)			
		Vegetables (cucurbitaceous and solanaceous crop okra etc.)			
		Watermelon			
Any other condition (Specify)		----	----	----	

Resource management technologies

- Desilting of community pond to increase water storage capacity for providing lifesaving irrigation during kharif and enhancing cropping intensity during rabi season
- Conservation furrows in soybean, pearl millet and cotton for in-situ moisture conservation and enhancing crop productivity
- Crop residue mulching in pomegranate to conserve moisture and reduce weed growth
- Water evaporation retardant in farm pond to minimize evaporation losses
- Fertigation in Pomegranate increases fertilizer use efficiency and yield in Semi-arid areas of Maharashtra
- Desilting of check dams to enhance water storage capacity for providing supplemental irrigation during kharif and rabi season
- Farm ponds for lifesaving irrigation for growing high value crops and for cropping intensification during rabi season
- Farm bunding in soybean, cotton and chickpea for erosion control and for in-situ conservation
- Ridge and furrow in soybean for enhancing water use efficiency and crop productivity
- Micro irrigation system in cotton and chickpea with harvested water for enhancing water use efficiency and crop productivity
- Recharge structures for open/tube wells with silt trap
- Opening of furrow in Bt. cotton and pigeon pea for enhancing water use efficiency and crop productivity
- Desilting of percolation tanks to increase the water storage capacity for providing supplemental irrigation

- Shredding of soybean crop residue as mulching in rabi bengal gram for enhancing soil fertility and moisture holding capacity
- Desilting of drainage channel to enhance water storage capacity for providing supplemental irrigation to kharif and rabi crops
- Opening of dead furrows in cotton for enhancing the water use efficiency and crop productivity
- Deep continuous contour trenching and bunding in soybean, cotton and jowar for in-situ conservation and minimising stress
- Sand bag check dams for water harvesting and enhancing groundwater recharge
- Trench cum bund in soybean, sorghum and maize plantation for erosion control and to overcome the water stress during dry spells
- Application of tank silt to increase the moisture holding capacity of the soil and to improve the fertility of the soil
- Compartmental bunding in sorghum to conserve moisture and improve productivity
- Polyethylene mulching in watermelon to conserve moisture and reduce weed growth
- Low-cost Konkan Jalkunds to enhance water storage capacity for providing supplemental irrigation during kharif and rabi season
- Furrow Irrigated Raised Bed in high value crops for enhancing water use efficiency and crop productivity
- Construction of Vanarai/Vijay bandhara for critical irrigation during dry spells

Actionable Comprehensive Plans for Contingency

State	MAHARASHTRA	District	RATNAGIRI
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	3194.4	More than 19%	Less than 2587.464
June	840.2		
July	1106.8		
August	740.8		
September	506.6		

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

Irrigation info:

Net irrigated area:	0	Gross irrigated area:	0
Net Rainfed area		Gross rainfed area	

Source wise irrigation area details (ha)

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

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	49583	0	
2	Jowar	-	-	
3	Maize	30		30
4	Bajra	-		
5	Ragi	9749		9749

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	24		24
2	Groundnut	16		16
3	Sesamum	13		13
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	-		

Crop Plan- Beginning of the season

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming situation	Normal Crop / Cropping system	Change in crop / cropping system including variety	Agronomic measures	Remarks on Implementation
** Delay by 4 weeks 1st week of July	Upland medium deep to shallow soils	Rice	Use very early duration variety (Ratnagiri – 73, Karjat-184)	Raise the crop by direct seeding method (dry or sprouted seeds)	Procure the seed from reliable source
		Finger millet	Cowpea (Var. Konkan Sadabahar), Black gram (TPU- 4)	-	
		Proso millet	Oil Seed like Niger (Var. IGP 76)	-	
		Groundnut	Use early duration variety (Phule pragati, SB- XI)	-	
		Niger	No change	--	
		Black gram	No change	--	

	Mid-land medium deep soils	Rice	Use very early duration variety (Ratnagiri – 73, Karjat-184)	Raise the crop by direct seeding method (dry or sprouted seeds)	Procure the seed from reliable source
	Low land deep soils	Rice	Use early duration variety (Ratnagiri-1, Ratnagiri-5, Ratnagiri-24, Ratnagiri-711, Karjat- 3, Karjat-4, Karjat-7.)		
	Hill slope shallow soils	Finger millet Prosomillet	Grow pulses like cowpea (Var. Konkan Sadabahar), black gram (TPU- 4) Oil Seed like Niger (Var. IGP 76)	--	

Note :- ** Generally such type of situation has not occurred during past years

Contingency measures- Mid season

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	Normal Crop/cropping system	Crop management	Soilnutrient&moisture conservation measures	Remarks on Implementation
At vegetative stage	Upland medium deep to shallow soils	Rice	• Protective irrigation. • Postpone the split dose of Nitrogen application till receipts of rain/protective irrigation • Take three spray Copper oxy chloride 2.5 g/lit water + Streptocycline sulphate 0.5 g/lit of water to control Bacterial leaf blight at 15 days interval. • Take three sprays of Tricyclazole 1g/lit of water for control of rice blast.	• Adopt weed management practices. • Apply split dose of Nitrogen after restart of rains • Spray 1 % potassium nitrate	Use water from the outside sources like farm ponds, nalas, streams, rivers for puddling operation
		Finger millet	• Protective irrigation		
		Prosomillet			
		Groundnut	• Protective irrigation	• Adopt weed management	
		Niger			

		Black gram		practices with dry land weeder. • Mulching with tree lopping or glyricidia leaves. • Spray 1 % potassium nitrate	
	Mid-land medium deep soils	Rice	• Postpone the split dose of Nitrogen application till receipts of rain/protective irrigation • Protective irrigation • Take three spray Copper oxy chloride 2.5 g/lit water + Streptocycline sulphate 0.5 g/lit of water to control Bacterial leaf blight at 15 days interval. • Take three sprays of Tricyclazole 1g/lit of water for control of rice blast	• Adopt weed management practices. • Maintain the existing water level in the field. • Apply split dose of Nitrogen after restart of rains • Spray 1 % potassium nitrate	
	Low land deep soils	Rice			
	Hill slope shallow soils	Finger millet	• Give protective irrigation if possible.	• Adopt weed management practices • Apply split dose of Nitrogen after restart of rains	
		Prosomillet			

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	Major Farming situation	Normal Crop/cropping system	Crop management	Soilnutrient&moisture conservation measures	Remarks on Implementation
At flowering/fruiting stage	Upland medium deep to shallow soils	Rice	• Protective irrigation • Take three spray Copper oxy chloride 2.5 g/lit water + Streptocycline sulphate 0.5 g/lit of water to control Bacterial leaf blight at 15 days interval. • Take three sprays of Tricyclazole 1g/lit of water for control of rice blast.	• Adopt weed management practices. • Maintain the existing water level in the field. • Spray 1% potassium nitrate	Use water from the outside sources like farm ponds, nalas, streams, rivers
		Finger millet	• Protective irrigation.		
		Prosomillet			

		Groundnut		• Adopt weed management practices with dry land weeder. • Mulching with tree lopping or glyricidia leaves • Spray 1% potassium nitrate	
		Niger			
		Black gram			
	Mid-land medium deep soils	Rice	• Protective irrigation. • Take three spray Copper oxy chloride 2.5 g/lit water + Streptocycline sulphate 0.5 g/lit of water to control Bacterial leaf blight at 15 days interval. • Take three sprays of Tricyclazole 1g/lit of water for control of rice blast.	• Adopt weed management practices. • Maintain the existing water level in the field. • Spray 1 % potassium nitrate	
	Low land deep soils	Rice			
	Hill slope shallow soils	Finger millet	• Give protective irrigation if possible.	• Adopt weed management practices	
Prosomillet					

Contingency measures- End of the season

Condition			Suggested Contingency measures		
Terminal drought	Major Farming situation	Normal Crop/cropping system	Crop management	Rabi crop planning	Remarks on Implementation
(Early withdrawal of monsoon)	Upland medium deep to shallow soils	Rice	Harvest crop at physiological maturity	- Carry out sowing of Rabi crops as early as possible (Cowpea, groundnut, water melon, leafy vegetables) - Raise the seedlings of chilli, brinjal, cabbage, knolkhol)if irrigation facility available	Need based Water conservation measuresviz. Konkan jalkund farm pond, nala bunding, vijaybhandhara.
		Finger millet			
		Prosomillet			
		Groundnut			
		Niger			
		Black gram			
	Mid-land medium deep soils	Rice	- Protective irrigation - Harvest crop at physiological maturity	- Carry out sowing of Rabi crops as early as possible (Cowpea, Horse gram, mustard, sweet corn, groundnut, water melon, leafy vegetables) - Raise the seedlings of chilli, brinjal, cabbage, knolkhol) if irrigation facility available	
	Low land deep soils	Rice		- Carry out sowing of Rabi crops as early as possible (Cowpea, Horse gram, mustard, lab lab bean, sweet corn, groundnut, water melon, leafy vegetables)if irrigation facility available - Raise the seedlings of chilli, brinjal, cabbage, knolkhol) if irrigation facility available	
Hill slope shallow soils	Finger millet	Harvest crop at physiological maturity	----		
	Prosomillet				

Irrigated situation

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delayed release of water in canals due to low rainfall	Mid and low land Medium deep to deep soils	Rice (Rabi season)	Use early duration variety (Ratnagiri 73, Ratnagiri-1, Karjat-184) or Grow short duration pulses viz. cowpea (Var. Konkan Sadabahar), under control irrigation and tail end area	- Dapog/mat technique of nursery raising. - Young seedling transplanting. - SRI Technique.	Procure the seed from reliable source
		Groundnut	Use early duration variety (Phule pragati) or grow short duration pulses viz. Cowpea (Var. Konkan Sadabahar), Horsegram (Var. Dapoli-1), Lablab bean (Var. Konkan wal-1 and 2)	- If other source of irrigation is available sow the crop as per schedule. - If irrigation facility available use micro irrigation (drip)	Procure the seed from reliable source
		Pulses (Cowpea, Horsegram, Green gram)	No change		--
		Vegetables	Use early duration vegetables like leafy vegetables varieties Coriander: Dapoli-1 Radish: Japanies white long, Pusa ketaki Amaranthus: Konkan durangi, Co-1	- If other source of irrigation is available sow the crop as per schedule. - If irrigation facility available use micro irrigation (drip) - Prepare the seedlings of vegetables in portrays (cucurbitaceous crops, brinjal, chilli) to avoid delay in transplanting.	Procure the seed from reliable source

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Limited release of water in canals due to low rainfall	Mid and low land Medium deep to deep soils	Rice (Rabi season)	Prefer early duration variety in low land situation (Ratnagiri 73, Ratnagiri -1) Grow short duration pulses (cow pea, lab lab bean, horse gram), oilseed (groundnut (Phule Pragati)) and vegetables (Coriander: Dapoli-1, Radish: Japanies white long, Pusa ketaki, Amaranthus: Konkan durangi, Co-1) in midland situation	- Use SRI Technique for rice cultivation. - Adopt Weed management practices - Protective irrigation	Procure the seed from reliable source

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
		Groundnut	Prefer short duration variety (Phule Pragati,)	• Adopt Weed management practices with dry land weeder • If irrigation facility available use micro irrigation (drip) • Adopt mulching	Procure the seed from reliable source
		Pulses (Cowpea, Horsegram, Green gram)	No change		--
		Vegetables	Grow Dolichous bean or short duration leafy vegetables	• Adopt Weed management practices. • If irrigation facility available use micro irrigation (drip) • Use mulch	Procure the seed from reliable source
		Water melon	Either follow the water conservation measures like plastic mulch for water melon or grow short duration pulses		Training is essential on drip irrigation and mulching

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Non release of water in canals under delayed onset of monsoon in catchment	Mid and low land Medium deep to deep soils	Rice (Rabi season)	Lab lab bean (Var. Konkan wal-1 and 2), horse gram (Var.Dapoli-1), black gram, cowpea (var. Konkan sadbahar and Konkan safed), mustard (vare. Varuan) on residual moisture under low land situation	• Minimum tillage and sowing of seed by dibbling. •	Procure the seed from reliable source
		Groundnut	If irrigation water is available raise,short duration pulses like cowpea (Konkan Sadabahar) and leafy vegetables	• Adopt recommended weed management practices • Use micro irrigation (drip) • Use mulch	
		Pulses (Cowpea, Horsegram, Green gram)			
		Vegetables			
		Water melon			
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	Mid and low land Medium deep to deep soils	Not applicable			

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Insufficient groundwater recharge due to low rainfall	Mid and low land Medium deep to deep soils	Rice (Rabi season)	If irrigation water is available raise, short duration pulses like Wal (lablab bean) - Var. Konkan Wal No. 1, Horse gram - Var. Dapoli – 1.	• Minimum tillage and sowing of seed by dibbling • Relay cropping if residual moisture is available	Procure the seed from reliable source
		Groundnut	If farm pond water is available go for short duration pulses like cowpea (Konkan Sadabahar) and leafy vegetables	• Adopt recommended weed management practices • Use micro irrigation (drip) • Use mulch	
		Pulses (Cowpea, Horsegram, Green gram)			
		Vegetables			
		Water melon			

Resource management technologies

- Desilting of community pond to increase water storage capacity for providing lifesaving irrigation during kharif and enhancing cropping intensity during rabi season
- Conservation furrows in soybean, pearl millet and cotton for in-situ moisture conservation and enhancing crop productivity
- Crop residue mulching in pomegranate to conserve moisture and reduce weed growth
- Water evaporation retardant in farm pond to minimize evaporation losses
- Fertigation in Pomegranate increases fertilizer use efficiency and yield in Semi-arid areas of Maharashtra
- Desilting of check dams to enhance water storage capacity for providing supplemental irrigation during kharif and rabi season
- Farm ponds for lifesaving irrigation for growing high value crops and for cropping intensification during rabi season
- Farm bunding in soybean, cotton and chickpea for erosion control and foe in-situ conservation
- Ridge and furrow in soybean for enhancing water use efficiency and crop productivity
- Micro irrigation system in cotton and chickpea with harvested water for enhancing water use efficiency and crop productivity
- Recharge structures for open/tube wells with silt trap
- Opening of furrow in Bt. cotton and pigeon pea for enhancing water use efficiency and crop productivity
- Desilting of percolation tanks to increase the water storage capacity for providing supplemental irrigation
- Shredding of soybean crop residue as mulching in rabi bengal gram for enhancing soil fertility and moisture holding capacity
- Desilting of drainage channel to enhance water storage capacity for providing supplemental irrigation to kharif and rabi crops
- Opening of dead furrows in cotton for enhancing the water use efficiency and crop productivity
- Deep continuous contour trenching and bunding in soybean, cotton and jowar for in-situ conservation and minimising stress
- Sand bag check dams for water harvesting and enhancing groundwater recharge
- Trench cum bund in soybean, sorghum and maize plantation for erosion control and to overcome the water stress during dry spells
- Application of tank silt to increase the moisture holding capacity of the soil and to improve the fertility of the soil
- Compartmental bunding in sorghum to conserve moisture and improve productivity
- Polyethylene mulching in watermelon to conserve moisture and reduce weed growth
- Low-cost Konkan Jalkunds to enhance water storage capacity for providing supplemental irrigation during kharif and rabi season
- Furrow Irrigated Raised Bed in high value crops for enhancing water use efficiency and crop productivity
- Construction of Vanarai/Vijay bandhara for critical irrigation during dry spells

Actionable Comprehensive Plans for Contingency

State	MAHARASHTRA	District	RAYGAD
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	3127.4	More than 19%	Less than 2533.194
June	657.9		
July	1136.3		
August	792.2		
September	541		

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

Irrigation info:

Net irrigated area:	0	Gross irrigated area:	0
Net Rainfed area		Gross rainfed area	

Source wise irrigation area details (ha)

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

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	100080	0	
2	Jowar	-	-	
3	Maize	0		
4	Bajra	-		
5	Ragi	2148		2148

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	1022		1022
2	Groundnut	23		23
3	Sesamum	-		
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	-		

Crop Plan- Beginning of the season

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming situation	Normal Crop / Cropping system	Change in crop / cropping system including variety	Agronomic measures	Remarks on Implementation
**Delay by 4 weeks (1 st week of July)	Upland medium deep to shallow soils	Rice	Use very early duration variety (Karjat-184, Ratnagiri – 73)	Raise the crop by direct seeding method (dry or sprouted seeds)	Source of Seed : Maharashtra State seed corporation and other seed agency
		Finger millet	Cowpea (Var. Konkan Sadabahar), Black gram (TPU- 4) Oil Seed like niger (Var. IGP 76)	--	

	Mid-land medium deep soils	Rice	Use very early duration variety (Karjat-184, Ratnagiri – 73)	Raise the crop by direct seeding method (dry or sprouted seeds)
	Low land deep soils	Rice	Use early duration variety (Karjat- 3, Karjat-4, Karjat- 7, Ratnagiri-1, Ratnagiri-5, Ratnagiri-24, Ratnagiri- 711.)	Raise the crop by direct seeding method (dry or sprouted seeds)
	Hill slope shallow soils	Finger millet	Grow pulses like cowpea (Var. Konkan Sadabahar), black gram (TPU- 4) Oil Seed like Niger (Var. IGP 76)	-
		Prosomillet		
	Khar land	Rice	Short duration variety suitable for Kharland (Panvel - 2)	Sowing of sprouted seeds

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	Normal Crop/cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
At vegetative stage	Upland medium deep to shallow soils	Rice	- Postpone the split dose of Nitrogen application till receipts of rain/protective irrigation - Protective irrigation. - Take three spray Copper oxy chloride 2.5 g/lit water + Streptocycline sulphate 0.5 g/lit of water to control Bacterial leaf blight at 15 days interval. - Take three sprays of Tricyclazole 1g/lit of water for control of rice blast.	- Adopt weed management practices. - Apply split dose of Nitrogen after restart of rains - Spray % potassium	Use water from the outside sources like farm ponds, nalas, streams, rivers for protective irrigation
		Finger millet	Protective irrigation	- Adopt weed management practices. - Apply split dose of Nitrogen after restart of rains - Spray % potassium	-
		Prosomillet			-
	Mid-land medium deep soils	Rice	- Postpone the split dose of Nitrogen application till receipts of rain/protective irrigation - Protective irrigation - Take three spray Copper oxy chloride 2.5 g/lit water + Streptocycline sulphate 0.5 g/lit of water to control Bacterial leaf blight at 15 days interval. - Take three sprays of Tricyclazole 1g/lit of water for control of rice blast	- Adopt weed management practices. - Maintain the existing water level in the field. - Apply split dose of Nitrogen after restart of rains - Spray % potassium	Use water from the outside sources like farm ponds, nalas, streams, rivers for protective irrigation
	Low land deep soils	Rice			
		Finger millet			

	Hill slope shallow soils	Prosomillet	Give protective irrigation if possible.	- Adopt weed management practices. - Apply split dose of Nitrogen after restart of rains	
	Kharland	Rice	- Postpone the split dose of Nitrogen application till receipts of rain/protective irrigation - Protective irrigation - Take three spray Copper oxy chloride 2.5 g/lit water + Streptocycline sulphate 0.5 g/lit of water to control Bacterial leaf blight at 15 days interval. - Take three sprays of Tricyclazole 1g/lit of water for control of rice blast	- Adopt weed management practices. - Maintain the existing water level in the field. - Apply split dose of Nitrogen after restart of rains - Spray % potassium	Use water from the outside sources like farm ponds, nalas, streams, rivers for protective irrigation

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	Major Farming situation	Normal Crop/cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
At flowering/ fruiting stage	Upland medium deep to shallow soils	Rice	• Protective irrigation • Take three spray Copper oxy chloride 2.5 g/lit water + Streptocycline sulphate 0.5 g/lit of water to control Bacterial leaf blight at 15 days interval. • Take three sprays of Tricyclazole 1g/lit of water for control of rice blast.	• Adopt weed management practices. • Maintain the existing water level in the field. • Spray % potassium	Use water from the outside sources like farm ponds, nalas, streams, rivers for protective irrigation
		Finger millet	Protective irrigation.	• Adopt weed management practices. • Spray % potassium	
		Prosomillet			

	Mid-land medium deep soils	Rice	• Protective irrigation. • Take three spray Copper oxy chloride 2.5 g/lit water + Streptocycline sulphate 0.5 g/lit of water to control Bacterial leaf blight at 15 days interval. • Take three sprays of Tricyclazole 1g/lit of water for control of rice blast.	• Adopt weed management practices. • Maintain the existing water level in the field. • Spray % potassium	
	Low land deep soils	Rice			
	Hill slope shallow soils	Finger millet	Give protective irrigation if possible.	Adopt weed management practices	
		Prosomillet			
	Kharland	Rice	Apply protective irrigation • Take three spray Copper oxy chloride 2.5 g/lit water + Streptocycline sulphate 0.5 g/lit of water to control Bacterial leaf blight at 15 days interval. • Take three sprays of Tricyclazole 1g/lit of water for control of rice blast.	• Adopt weed management practices. • Maintain the existing water level in the field. • Spray % potassium	

Contingency measures- End of the season

Condition			Suggested Contingency measures		
Terminal drought (Early withdrawal of monsoon)	Major Farming situation	Normal Crop/cropping system	Crop management	Rabi crop planning	Remarks on Implementation
	Upland medium deep to shallow soils	Rice	Harvest crop at physiological maturity	- Carry out sowing of Rabi crops as early as possible (Cowpea, groundnut, water melon, leafy vegetables) - Raise the seedlings of chilli, brinjal, cabbage, knolkhol)	Source of Seed : Maharashtra State seed corporation and other seed agency
		Finger millet			
		Prosomillet			
	Mid-land medium deep soils	Rice	Protective irrigation	Carry out sowing of Rabi crops as early as possible	

	Low land deep soils	Rice	Harvest crop at physiological maturity	(Cowpea, Horse gram, mustard, sweet corn, groundnut, water melon, leafy vegetables) - Raise the seedlings of chilli, brinjal, cabbage, knolkol) - Under flood (field to field) irrigation go for rice cultivation	
	Hill slope shallow soils	Finger millet	Harvest crop at physiological maturity	----	
		Prosomillet			
	Kharland	Rice	Harvest crop at physiological maturity	Suitable vegetable crops like sugar beet, radish, spinach, etc.	

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	Mid and low land Medium deep to deep soils	Rice (Rabi season)	Use early duration variety (Karjat-3, Karjat-184, Ratnagiri 73, Ratnagiri -1) or Grow short duration pulses viz. cowpea (Var. Konkan Sadabahar), under control irrigation and tail end area	• Dapog/mat technique of nursery raising. • Young seedling transplanting. • SRI Technique.	Source of Seed Maharashtra State Seed corporation and other seed agency
		Groundnut	Prefer short duration variety (Phule pragati) or grow short duration pulses viz. Cowpea (Var. Konkan Sadabahar),	• If other source of irrigation is available sow the crop as per schedule. • Use micro irrigation (drip or micro sprinkler) • Prepare the seedlings in portrays of vegetables (cucurbitaceous crops, brinjal, chilli) to avoid delay in transplanting.	
		Pulses (Wal, cowpea, green gram)	No change		
		Vegetables (Cucurbitaceouscrop, chilli, okra etc.)	Prefer short duration vegetables like Kartoli and leafy vegetables varieties Coriander: Dapoli-1 Radish: Japanies white long, Pusa ketaki Math: Math durangi, Co-1		
		Water melon	Use short duration varieties		
Condition			Suggested Contingency measures		

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
	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	Mid and low land Medium deep to deep soils	Rice (Rabi season)	- Prefer early duration variety in low land situation (Karjat-3, Karjat-184, Ratnagiri 73, Ratnagiri -1) - Grow short duration pulses (cow pea (Var. Konkan Sadabahar), Lab lab bean (Konkan wal no. 1), lab lab bean, horse gram), groundnut (Phule Pragati), vegetables in midland situation	- Use SRI Technique for rice cultivation. - Adopt Weed management practices - Use micro irrigation (drip or micro sprinkler)	Procure the seed from Maharashtra State Seed Corporation
		Groundnut	Prefer short duration variety (Phule Pragati)	- Adopt Weed management practices with dry weeder - Use micro irrigation (drip or micro sprinkler) - Adopt Mulching	Procure the seed from Maharashtra State Seed Corporation
		Pulses (Wal, Cowpea, Green gram)	No change		--
		Vegetables (Cucurbitaceous crop, Chilli, Okra etc.)	Grow Dolichous bean or adopt soil conservation measures for regular vegetables	- Adopt Weed management practices. - Use micro irrigation (drip or micro sprinkler) - Adopt mulching	Procure the seed from Maharashtra State Seed Corporation
		Water melon	Grow short duration pulses		

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Non release of water in canals under delayed onset of monsoon in catchment	Mid and low land Medium deep to deep soils	Rice (Rabi season)	Grow Lab lab bean, horse gram, black gram, bengal gram cowpea, mustard on residual moisture under low land situation.	• Minimum tillage and sowing of seed by dibbling. • Adopt Weed management practices • Use micro irrigation (drip or micro sprinkler) • Adopt mulching	• Procure the seed from Maharashtra State Seed Corporation
		Groundnut	No change		
		Wal (Lablab bean)			
		Pulses (Cowpea, Horsegram, Greengram, Bengalgram, Pea etc.)			
		Vegetables (Cucurbitaceouscrop, Chilli, Capsicum, Okra etc.)	No change	• Adopt Weed management practices • Use micro irrigation (drip or micro sprinkler) • Adopt mulching	
		Water melon			

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	Mid and low land Medium deep to deep soils	Rice (Rabi season)	Wal (lablab bean) - Var. Konkan Wal No. 1, Horse gram - Var. Dapoli – 1, Bengal gram, on residual moisture under low land situation	- Minimum tillage and sowing of seed by dibbling, - Relay cropping	
		Groundnut	Short duration pulses like Bengal Gram, Wal (lablab bean), horse gram, black gram, greengram cowpea (Konkan Sadabahar) on residual moisture. If farm pond water is available grow leafy vegetables.	- Minimum tillage and sowing of seed by dibbling, relay cropping - Adopt Weed management practices. - Use micro irrigation (drip or micro sprinkler). - Adopt mulching	
		Pulses (Cowpea, Horsegram, Green gram, Wal)	No change		
		Vegetables (Cucurbitaceoucrop, chilli, okra etc.)	Short duration pulses like Bengal Gram, Wal (lablab bean),	Minimum tillage and sowing of	

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
		Water melon	Horse gram, black gram, greengram cowpea (Konkan Sadabahar) on residual moisture. If farm pond water is available grow leafy vegetables.	seed by dibbling, relay cropping - Adopt Weed management practices. - Use micro irrigation (drip or micro sprinkler). - Adopt mulching	

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Insufficient groundwater recharge due to low rainfall	Mid and low land Medium deep to deep soils	Rice (Rabi season)	Not applicable		
		Groundnut			
		Wal			
		Pulses (Cowpea, Horsegram, Green gram)			
		Vegetables (Cucurbitaceous crop, chilli, okra etc.)			
		Water melon			
Any other condition (specify)		----	----	----	----

Resource management technologies

- Desilting of community pond to increase water storage capacity for providing lifesaving irrigation during kharif and enhancing cropping intensity during rabi season
- Conservation furrows in soybean, pearl millet and cotton for in-situ moisture conservation and enhancing crop productivity
- Crop residue mulching in pomegranate to conserve moisture and reduce weed growth
- Water evaporation retardant in farm pond to minimize evaporation losses
- Fertigation in Pomegranate increases fertilizer use efficiency and yield in Semi-arid areas of Maharashtra
- Desilting of check dams to enhance water storage capacity for providing supplemental irrigation during kharif and rabi season
- Farm ponds for lifesaving irrigation for growing high value crops and for cropping intensification during rabi season
- Farm bunding in soybean, cotton and chickpea for erosion control and for in-situ conservation
- Ridge and furrow in soybean for enhancing water use efficiency and crop productivity
- Micro irrigation system in cotton and chickpea with harvested water for enhancing water use efficiency and crop productivity
- Recharge structures for open/tube wells with silt trap
- Opening of furrow in Bt. cotton and pigeon pea for enhancing water use efficiency and crop productivity
- Desilting of percolation tanks to increase the water storage capacity for providing supplemental irrigation
- Shredding of soybean crop residue as mulching in rabi bengal gram for enhancing soil fertility and moisture holding capacity

- Desilting of drainage channel to enhance water storage capacity for providing supplemental irrigation to kharif and rabi crops
- Opening of dead furrows in cotton for enhancing the water use efficiency and crop productivity
- Deep continuous contour trenching and bunding in soybean, cotton and jowar for in-situ conservation and minimising stress
- Sand bag check dams for water harvesting and enhancing groundwater recharge
- Trench cum bund in soybean, sorghum and maize plantation for erosion control and to overcome the water stress during dry spells
- Application of tank silt to increase the moisture holding capacity of the soil and to improve the fertility of the soil
- Compartmental bunding in sorghum to conserve moisture and improve productivity
- Polyethylene mulching in watermelon to conserve moisture and reduce weed growth
- Low-cost Konkan Jalkunds to enhance water storage capacity for providing supplemental irrigation during kharif and rabi season
- Furrow Irrigated Raised Bed in high value crops for enhancing water use efficiency and crop productivity
- Construction of Vanarai/Vijay bandhara for critical irrigation during dry spells

Actionable Comprehensive Plans for Contingency

State	MAHARASHTRA	District	SATARA
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	844.6	More than 19%	Less than 684.126
June	192.5		
July	266.7		
August	208.4		
September	177		

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

Irrigation info:

Net irrigated area:	0	Gross irrigated area:	0
Net Rainfed area		Gross rainfed area	

Source wise irrigation area details (ha)

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

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	39627	0	
2	Jowar	8064	-	
3	Maize	72066		72066
4	Bajra	36128		36128
5	Ragi	4263		4263

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	501		501
2	Groundnut	28287		28287
3	Sesamum	-		
4	SOyabean	95283		95283
5	Sunflower	141		141
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	616		616
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	116711		116711
2	Tobacco	-		
3	Guar seed	-		
4	Other Fodder crops	-		

Crop Plan- Beginning of the season

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming situation	Normal Crop / Cropping system	Change in crop / cropping system including variety	Agronomic measures	Remarks on Implementation
Delay by 4 weeks (July 2 nd week)	Shallow Grey/black soils	Pearl millet	No Change Prefer Varieties like Shraddha,Saburi, Shanti	Hoeing and application of 25 kg K ₂ O/ha	Seed source : • Central campus MPKV, Rahuri, College of Agril., Pune and Dhule • NSC, MSSC
	Medium black soils	Groundnut	No Change Prefer Varieties like JL-24,JL-501,JL-286	Hoeing	

		Kharif Jowar	Sunflower (Bhanu, Phule Raviraj)	Thinning and Hoeing	
		Upland Paddy	No Change Prefer Varieties like Indrayani, Pavana	Hoeing	
		Soybean	No Change Prefer Varieties like JS-335, DS-228, JS 9305	Sowing at 45 cm row spacing	
	Deep black soils	Kharif Jowar	No Change Prefer Varieties like CSH 14,16,17	Hoeing and weeding	
		Paddy	No Change Prefer Varieties like Indrayani, Pavana,Koyna	Hoeing and weeding	
		Soybean	No Change Prefer Varieties like JS-335, DS-228, JS 9305	Sowing at 45 cm row spacing	

Contingency measures- Mid season

Condition			Suggested Contingency measures		
Mid-season drought (long dry spell, consecutive 2 weeks rainless)	Major Farming situation	Normal Crop /cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
At vegetative stage	Shallow Grey/black soils	Pearl millet	No Change Prefer Varieties like Shraddha,Saburi, Shanti	Protective irrigation from available sources	Seed source with MSSC, NSC and ARS, K. Digraj ARS, Karad MPKV, Rahuri
	Medium black soils	Groundnut	No Change Prefer Varieties like JL-24, JL-501, JL-286	Protective irrigation from available sources	
		Kharif Jowar	No Change Prefer Varieties like CSH 14,16,17	Kaoline spray @ 8%	
		Upland Paddy	No Change Prefer Varieties like Indrayani, Pavana	Protective irrigation from available sources	
		Soybean	No Change Prefer Varieties like JS-335, DS-228, JS 9305	Protective irrigation from available sources	
	Deep black soils	Kharif Sorghum	No Change Prefer Varieties like CSH 14,16,17	Kaoline spray @ 8 %	
		Upland Paddy	No Change Prefer Varieties like Indrayani, Pavana	Protective irrigation from available sources	
		Soybean	No Change	Protective irrigation from available sources	

			Prefer Varieties like JS-335, DS-228, JS 9305		
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Contingency measures- End of the season

Condition			Suggested Contingency measures		
Terminal drought	Major Farming situation	Normal Crop /cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
(Early withdrawal of monsoon)	Shallow Grey/black soils	Pearlmillet	Harvest at physiological maturity stage	--	Seed source with MSSC, NSC and ARS, K. Digraj ARS, Karad MPKV, Rahuri
	Medium black soils	Groundnut	Protective irrigation	--	
		Kharif Sorghum	Harvest at physiological maturity stage	--	
		Paddy	Protective irrigation	-	
		Soybean	Harvest at physiological maturity stage	-	
	Deep black soils	Kharif Sorghum	As above	--	
		Paddy	Protective irrigation	--	
		Soybean	As above	-	

2.1.2 Irrigated situation

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop / Cropping system	Change in crop / cropping system including variety	Agronomic measures	Remarks on Implementation
Delayed release of water in canals due to low rainfall OR Limited release of water in canals due to low rainfall	Shallow Grey/black soils	Pearl millet	Pearl millet	Hoeing and weeding	Seed source with MSSC, NSC and ARS, K. Digraj ARS, Karad MPKV, Rahuri
	Medium black soils	Groundnut	Groundnut	Hoeing at 30 DAS and protective irrigation	
		Kharif Sorghum	Kharif Sorghum	Hoeing	
		Paddy	Paddy	Protective irrigation	

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop / Cropping system	Change in crop / cropping system including variety	Agronomic measures	Remarks on Implementation
		Soybean	Soybean	As above	
	Deep black soils	Kharif Sorghum	Kharif Sorghum	Hoeing	
		Paddy	Paddy	Protective irrigation	
		Soybean	Soybean	As above	

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop / Cropping system	Change in crop / cropping system	Agronomic measures	Remarks on Implementation
Non release of water in canals under delayed onset of monsoon in catchment	Not applicable				

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	Not applicable				

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop / Cropping system	Change in crop / cropping system	Agronomic measures	Remarks on Implementation
Insufficient groundwater recharge due to low rainfall	Shallow soils	Pearl millet	Pearl millet	Hoeing and weeding	Seed source with MSSC, NSC and ARS, K. Digraj ARS, Karad MPKV, Rahuri
	Medium soils	Groundnut	Groundnut	Sprinkler irrigation, Hoeing	

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop / Cropping system	Change in crop / cropping system	Agronomic measures	Remarks on Implementation
		Kharif Sorghum	Sunflower (Bhanu, Phule Raviraj)	Hoeing	
		Paddy	Paddy	Sprinkler irrigation	
		Soybean	Sunflower (Bhanu, Phule Raviraj)	Sprinkler irrigation	
	Deep soil	Kharif Sorghum	Sunflower (Bhanu, Phule Raviraj)	As above	
		Paddy	Paddy	Sprinkler irrigation	
		Soybean	Sunflower (Bhanu, Phule Raviraj)	Hoeing and weeding	
		Kharif Sorghum	Sunflower (Bhanu, Phule Raviraj)	Hoeing	
		Paddy	Paddy	Sprinkler irrigation	
		Soybean	Sunflower (Bhanu, Phule Raviraj)	Sprinkler irrigation	

Resource management technologies

- Desilting of community pond to increase water storage capacity for providing lifesaving irrigation during kharif and enhancing cropping intensity during rabi season
- Conservation furrows in soybean, pearl millet and cotton for in-situ moisture conservation and enhancing crop productivity
- Crop residue mulching in pomegranate to conserve moisture and reduce weed growth
- Water evaporation retardant in farm pond to minimize evaporation losses
- Fertigation in Pomegranate increases fertilizer use efficiency and yield in Semi-arid areas of Maharashtra
- Desilting of check dams to enhance water storage capacity for providing supplemental irrigation during kharif and rabi season
- Farm ponds for lifesaving irrigation for growing high value crops and for cropping intensification during rabi season
- Farm bunding in soybean, cotton and chickpea for erosion control and for in-situ conservation
- Ridge and furrow in soybean for enhancing water use efficiency and crop productivity
- Micro irrigation system in cotton and chickpea with harvested water for enhancing water use efficiency and crop productivity
- Recharge structures for open/tube wells with silt trap
- Opening of furrow in Bt. cotton and pigeon pea for enhancing water use efficiency and crop productivity
- Desilting of percolation tanks to increase the water storage capacity for providing supplemental irrigation
- Shredding of soybean crop residue as mulching in rabi bengal gram for enhancing soil fertility and moisture holding capacity
- Desilting of drainage channel to enhance water storage capacity for providing supplemental irrigation to kharif and rabi crops
- Opening of dead furrows in cotton for enhancing the water use efficiency and crop productivity
- Deep continuous contour trenching and bunding in soybean, cotton and jowar for in-situ conservation and minimising stress
- Sand bag check dams for water harvesting and enhancing groundwater recharge
- Trench cum bund in soybean, sorghum and maize plantation for erosion control and to overcome the water stress during dry spells
- Application of tank silt to increase the moisture holding capacity of the soil and to improve the fertility of the soil
- Compartmental bunding in sorghum to conserve moisture and improve productivity

- Polyethylene mulching in watermelon to conserve moisture and reduce weed growth
- Furrow Irrigated Raised Bed in high value crops for enhancing water use efficiency and crop productivity
- Construction of Vanarai/Vijay bandhara for critical irrigation during dry spells

Actionable Comprehensive Plans for Contingency

State	MAHARASHTRA	District	SINDHUDURG
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	2950.7	More than 19%	Less than 2390.067
June	897		
July	1001.7		
August	628.6		
September	423.4		

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

Irrigation info:

Net irrigated area:	0	Gross irrigated area:	0
Net Rainfed area		Gross rainfed area	

Source wise irrigation area details (ha)

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

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	40997	0	
2	Jowar	-	-	
3	Maize	779		779
4	Bajra	-		
5	Ragi	1406		1406

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	-		
2	Groundnut	2824		2824
3	Sesamum	47		47
4	SOyabean	-		
5	Sunflower	2		2
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	-		

Crop Plan- Beginning of the season

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming situation	Normal Crop / Cropping system	Change in crop / cropping system including variety	Agronomic measures	Remarks on Implementation
** Delay by 4 weeks 1 st week of July	Upland medium deep to shallow soils	Rice	Use very early duration variety (Ratnagiri – 73, Karjat-184)	Raise the crop by direct seeding method (dry or sprouted seeds)	Procure the seed from reliable source
		Finger millet	Cowpea (Var. Konkan Sadabahar), Black gram (TPU- 4)	-	
		Prosomillet	Oil Seed like niger (Var. IGP 76)	-	

		Groundnut	Use early duration variety (Phule pragati, SB-XI)	-	
		Niger	No change	--	
		Black gram	No change	--	
		Sugarcane	No change	Irrigation as per requirement	
	Mid-land medium deep soils	Rice	Use very early duration variety (Ratnagiri – 73, Karjat-184)	Raise the crop by direct seeding method (dry or sprouted seeds)	Procure the seed from reliable source
	Low land deep soils	Rice	Use early duration variety (Ratnagiri-1, Ratnagiri-5, Ratnagiri-24, Ratnagiri-711, Karjat- 3, Karjat-4, Karjat-7.)		
	Hill slope shallow soils	Finger millet	Grow pulses like cowpea (Var. Konkan Sadabahar), black gram (TPU- 4) Oil Seed like Niger (Var. IGP 76)	--	
		Prosomillet			

Note :- ** Generally such type of situation has not occurred during past years

Contingency measures- Mid season

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	Major Farming situation	Normal Crop/cropping system	Crop management	Soilnutrient&moisture conservation measures	Remarks on Implementation
At flowering/ fruiting stage	Upland medium deep to shallow soils	Rice	- Protective irrigation - Take three spray Copper oxy chloride 2.5 g/lit water + Streptocycline sulphate 0.5 g/lit of water to control Bacterial leaf blight at 15 days interval. - Take three sprays of Tricyclazole 1g/lit of water for control of rice blast.	- Adopt weed management practices. - Maintain the existing water level in the field. - Spray 1 % potassium nitrate	Use water from the outside sources like farm ponds, nalas, streams, rivers
		Finger millet	Protective irrigation.	Adopt weed management practices with dry land weeder.	
		Prosomillet			
		Groundnut			
		Niger			

		Black gram		• Mulching with tree lopping or glyricidia leaves • Spray 1 % potassium nitrate	
		Sugarcane	No change	• Adopt weed management practices. • Mulching with tree lopping or glyricidia leaves.	

	Mid-land medium deep soils	Rice	• Protective irrigation. • Take three spray Copper oxy chloride 2.5 g/lit water + Streptocycline sulphate 0.5 g/lit of water to control Bacterial leaf blight at 15 days interval. • Take three sprays of Tricyclazole 1g/lit of water for control of rice blast.	• Adopt weed management practices. • Maintain the existing water level in the field. • Spray 1 % potassium nitrate	
	Low land deep soils	Rice			
	Hill slope shallow soils	Finger millet	• Give protective irrigation if possible.	• Adopt weed management practices	
		Prosomillet			

Contingency measures- End of the season

Condition			Suggested Contingency measures		
Terminal drought	Major Farming situation	Normal Crop/cropping system	Crop management	Rabi crop planning	Remarks on Implementation
(Early withdrawal of monsoon)	Upland medium deep to shallow soils	Rice	Harvest crop at physiological maturity	• Carry out sowing of Rabi crops as early as possible (Cowpea, groundnut, water melon, leafy vegetables) • Raise the seedlings of chilli, brinjal, cabbage, knolkhol)if irrigation facility available	Need based Water conservation measures viz. Konkan jalkund, farm pond, nala bunding, vijaybhandhara.
		Finger millet			
		Prosomillet			
		Groundnut			
		Niger			
		Black gram			
		Sugarcane	No change	Protective irrigation	

	Mid-land medium deep soils	Rice	• Protective irrigation • Harvest crop at physiological maturity	• Carry out sowing of Rabi crops as early as possible (Cowpea, Horse gram, mustard, sweet corn, groundnut, water melon, leafy vegetables) • Raise the seedlings of chilli, brinjal, cabbage, knolkhol) if irrigation facility available	
	Low land deep soils	Rice		• Carry out sowing of Rabi crops as early as possible (Cowpea, Horse gram, mustard, lab lab bean, sweet corn, groundnut, water melon, leafy vegetables)if irrigation facility available • Raise the seedlings of chilli, brinjal, cabbage, knolkhol) if irrigation facility available	
	Hill slope shallow soils	Finger millet Prosomillet	Harvest crop at physiological maturity	----	

2.1.2 Irrigated situation

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delayed release of water in canals due to low rainfall	Mid and low land Medium deep to deep soils	Rice (Rabi season)	Use early duration variety (Ratnagiri 73, Ratnagiri-1, Karjat-184) or Grow short duration pulses viz. cowpea (Var. Konkan Sadabahar), under control irrigation and tail end area	- Dapog/mat technique of nursery raising. - Young seedling transplanting. - SRI Technique.	Procure the seed from reliable source
		Groundnut	Use early duration variety (Phule pragati) or grow short duration pulses viz. Cowpea (Var. Konkan Sadabahar), Horsegram (Var. Dapoli-1), Lablab bean (Var. Konkan wal-1 and 2)	- If other source of irrigation is available sow the crop as per schedule. - If irrigation facility available use micro irrigation (drip)	Procure the seed from reliable source
		Pulses (Cowpea, Horsegram, Green gram)	No change		--
		Vegetables	Use early duration vegetables like leafy vegetables varieties Coriander: Dapoli-1 Radish: Japanies white long, Pusa ketaki Amaranthus: Konkan durangi, Co-1	- If other source of irrigation is available sow the crop as per schedule. - If irrigation facility available use micro irrigation (drip) - Prepare the seedlings of vegetables in portrays (cucurbitaceous crops, brinjal, chilli) to avoid delay in transplanting.	Procure the seed from reliable source
		Sugarcane	No change	If other source of irrigation is available planting should be done as per as per schedule.	

Condition	Major Farming situation	Normal Crop/cropping system	Suggested Contingency measures		
			Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Limited release of water in canals due to low rainfall	Mid and low land Medium deep to deep soils	Rice (Rabi season)	Prefer early duration variety in low land situation (Ratnagiri 73, Ratnagiri -1) Grow short duration pulses (cow pea, lab lab bean, horse gram), oilseed (groundnut (Phule Pragati) and vegetables (Coriander: Dapoli-1, Radish: Japanes white long, Pusa ketaki , Amaranthus: Konkan durangi, Co-1) in midland situation	• Use SRI Technique for rice cultivation. • Adopt Weed management practices • Protective irrigation	Procure the seed from reliable source
		Groundnut	Prefer short duration variety (Phule Pragati,)	• Adopt Weed management practices with dry land weeder	Procure the seed from reliable source
		Pulses (Cowpea, Horsegram, Green gram)	No change	• If irrigation facility available use micro irrigation (drip) • Adopt mulching	--
		Vegetables	Grow Dolichous bean or short duration leafy vegetables	• Adopt Weed management practices.	Procure the seed from reliable source
		Water melon	Either follow the water conservation measures like plastic mulch for water melon or grow short duration pulses	• If irrigation facility available use micro irrigation (drip) • Use mulch	Training is essential on drip irrigation and mulching
		Sugarcane	No change	• Adopt Weed management practices • Adopt mulching • Use drip irrigation	

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Non release of water in canals under delayed onset of monsoon in catchment	Mid and low land Medium deep to deep soils	Rice (Rabi season)	Lab lab bean (Var. Konkan wal-1 and 2), horse gram (Var.Dapoli-1), black gram, cowpea (var. Konkan sadbahar and Konkan safed), mustard (vare. Varuan) on residual moisture under low land situation	• Minimum tillage and sowing of seed by dibbling.	Procure the seed from reliable source
		Groundnut	If irrigation water is available raise,short duration pulses like cowpea (Konkan Sadabahar) and leafy vegetables	• Adopt recommended weed management practices • Use micro irrigation (drip) • Use mulch	
		Pulses (Cowpea, Horsegram, Green gram)			
		Vegetables			
		Water melon			
		Sugarcane			
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	Mid and low land Medium deep to deep soils	Not applicable			
Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Insufficient groundwater recharge due to low rainfall	Mid and low land Medium deep to deep soils	Rice (Rabi season)	If irrigation water is available raise, short duration pulses like Wal (lablab bean) - Var. Konkan Wal No. 1, Horse gram - Var. Dapoli – 1.	• Minimum tillage and sowing of seed by dibbling • Relay cropping if residual moisture is available	Procure the seed from reliable source
		Groundnut	If farm pond water is available go for short duration pulses like cowpea (Konkan Sadabahar) and leafy vegetables	• Adopt recommended weed management practices • Use micro irrigation (drip) • Use mulch	
		Pulses (Cowpea, Horsegram, Green gram)			
		Vegetables			
		Water melon			
		Sugarcane			

Resource management technologies

- Desilting of community pond to increase water storage capacity for providing lifesaving irrigation during kharif and enhancing cropping intensity during rabi season
- Conservation furrows in soybean, pearl millet and cotton for in-situ moisture conservation and enhancing crop productivity
- Crop residue mulching in pomegranate to conserve moisture and reduce weed growth
- Water evaporation retardant in farm pond to minimize evaporation losses
- Fertigation in Pomegranate increases fertilizer use efficiency and yield in Semi-arid areas of Maharashtra
- Desilting of check dams to enhance water storage capacity for providing supplemental irrigation during kharif and rabi season
- Farm ponds for lifesaving irrigation for growing high value crops and for cropping intensification during rabi season
- Farm bunding in soybean, cotton and chickpea for erosion control and for in-situ conservation
- Ridge and furrow in soybean for enhancing water use efficiency and crop productivity
- Micro irrigation system in cotton and chickpea with harvested water for enhancing water use efficiency and crop productivity
- Recharge structures for open/tube wells with silt trap
- Opening of furrow in Bt. cotton and pigeon pea for enhancing water use efficiency and crop productivity
- Desilting of percolation tanks to increase the water storage capacity for providing supplemental irrigation
- Shredding of soybean crop residue as mulching in rabi bengal gram for enhancing soil fertility and moisture holding capacity
- Desilting of drainage channel to enhance water storage capacity for providing supplemental irrigation to kharif and rabi crops
- Opening of dead furrows in cotton for enhancing the water use efficiency and crop productivity
- Deep continuous contour trenching and bunding in soybean, cotton and jowar for in-situ conservation and minimising stress
- Sand bag check dams for water harvesting and enhancing groundwater recharge
- Trench cum bund in soybean, sorghum and maize plantation for erosion control and to overcome the water stress during dry spells
- Application of tank silt to increase the moisture holding capacity of the soil and to improve the fertility of the soil
- Compartmental bunding in sorghum to conserve moisture and improve productivity
- Polyethylene mulching in watermelon to conserve moisture and reduce weed growth
- Low-cost Konkan Jalkunds to enhance water storage capacity for providing supplemental irrigation during kharif and rabi season
- Furrow Irrigated Raised Bed in high value crops for enhancing water use efficiency and crop productivity
- Construction of Vanarai/Vijay bandhara for critical irrigation during dry spells

Actionable Comprehensive Plans for Contingency

State	MAHARASHTRA	District	THANE
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	2433.3	More than 19%	Less than 1970.973
June	460.1		
July	920.4		
August	622.9		
September	429.9		

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

Irrigation info:

Net irrigated area:	0	Gross irrigated area:	0
Net Rainfed area		Gross rainfed area	

Source wise irrigation area details (ha)

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

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	68542	0	
2	Jowar	-	-	
3	Maize	210		210
4	Bajra	-		
5	Ragi	2922		2922

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	893		893
2	Groundnut	11		11
3	Sesamum	57		57
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	-		

Crop Plan- Beginning of the season

Condition		Suggested Contingency measures			
Early season drought (delayed onset)	Major Farming situation	Normal Crop / Cropping system	Change in crop / cropping system including variety	Agronomic measures	Remarks on Implementation
** Delay by 4 weeks 1 st week of July	Upland medium deep to shallow soils	Rice	Use very early duration variety (Ratnagiri – 73, Karjat-184)	Raise the crop by direct seeding method (dry or sprouted seeds)	Procure the seed from reliable source
		Finger millet	Cowpea (Var. Konkan Sadabahar), Black gram (TPU- 4) Oil Seed like Niger (Var. IGP 76)		
		Niger	No change	-	
		Chick pea, Tur	No change	-	

		Vegetables like chilli, brinjal, okra, capsicum, cluster bean, bitter gourd, snake gourd, dolichus bean	No change	Prepare seedlings in portrays and use protective irrigation	Procure the seed from reliable source
		Flower crops like Jasmin, <i>Michelia champak</i> , Lily	No change	Provide protective irrigation	
	Mid-land medium deep soils	Rice	Use very early duration variety (Ratnagiri – 73, Karjat-184)	Raise the crop by direct seeding method (dry or sprouted seeds)	
		Chick pea, Tur	No change	-	
		Vegetables like chilli, brinjal, okra, capsicum, cluster bean, bitter gourd, snake gourd, dolichus bean	No change	Prepare seedlings in portrays and use protective irrigation	
		Flower crops like Jasmin, <i>Michelia champak</i> , Lily	No change	Provide protective irrigation	
	Low land deep soils	Rice	Use early duration variety (Ratnagiri-1, Ratnagiri-5, Ratnagiri-24, Ratnagiri-711, Karjat-3, Karjat-4, Karjat-7.)		
	Hill slope shallow soils	Finger millet	Grow pulses like cowpea (Var. Konkan Sadabahar), black gram (TPU- 4) Oil Seed like Niger (Var. IGP 76)	--	

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	Normal Crop/cropping system	Crop management	Soilnutrient&moisture conservation measures	Remarks on Implementation
At vegetative stage	Upland medium deep to shallow soils	Rice	• Protective irrigation. • Postpone the split dose of Nitrogen application till receipts of rain/protective irrigation • Take three spray Copper oxy chloride 2.5 g/lit water + Streptocycline sulphate 0.5 g/lit of water to control Bacterial leaf blight at 15 days interval. • Take three sprays of Tricyclazole 1g/lit of water for control of rice blast.	• Adopt weed management practices. • Apply split dose of Nitrogen after restart of rains • Spray 1% potassium nitrate	Use water from the outside sources like farm ponds, nalas, streams, rivers for puddling operation and protective irrigation
		Finger millet	• Protective irrigation		
		Niger	• Protective irrigation	• Adopt weed management practices with dry land weeder. • Mulching with tree lopping or glyricidia leaves. • Spray 1% potassium nitrate	
		Chick pea, Tur		Protective irrigation after sowing	
		Vegetables like chilli, brinjal, okra, capsicum, cluster bean, bitter gourd, snake gourd, dolichus bean	No change	Prepare seedlings in portrays and use protective irrigation	
		Flower crops like Jasmin, <i>Michelia champak</i> , Lily	No change	Provide protective irrigation	

	Mid-land medium deep soils	Rice	- Postpone the split dose of Nitrogen application till receipts of rain/protective irrigation - Protective irrigation - Take three spray Copper oxy chloride 2.5 g/lit water + Streptocycline sulphate 0.5 g/lit of water to control Bacterial leaf blight at 15 days interval. - Take three sprays of Tricyclazole 1g/lit of water for control of rice blast	- Adopt weed management practices. - Maintain the existing water level in the field. - Apply split dose of Nitrogen after restart of rains - Spray 1 % potassium nitrate	
		Chick pea, Tur		Protective irrigation after sowing	
		Vegetables like chilli, brinjal, okra, capsicum, cluster bean, bitter gourd, snake gourd, dolichus bean	No change	Prepare seedlings in portrays and use protective irrigation	
		Flower crops like Jasmin, <i>Michelia champak</i> , Lily	No change	Provide protective irrigation	
	Low land deep soils	Rice	- Postpone the split dose of Nitrogen application till receipts of rain/protective irrigation - Protective irrigation - Take three spray Copper oxy chloride 2.5 g/lit water + Streptocycline sulphate 0.5 g/lit of water to control Bacterial leaf blight at 15 days interval. - Take three sprays of Tricyclazole 1g/lit of water for control of rice blast	- Adopt weed management practices. - Maintain the existing water level in the field. - Apply split dose of Nitrogen after restart of rains - Spray 1% potassium nitrate	
		Finger millet	Protective irrigation	Adopt weed management practices.	
	Hill slope shallow soils				

Condition	Suggested Contingency measures		
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Mid season drought (long dry spell)	Major Farming situation	Normal Crop/cropping system	Crop management	Soilnutrient&moisture conservation measures	Remarks on Implementation
At flowering/ fruiting stage	Upland medium deep to shallow soils	Rice	• Protective irrigation • Take three spray Copper oxy chloride 2.5 g/lit water + Streptocycline sulphate 0.5 g/lit of water to control Bacterial leaf blight at 15 days interval. • Take three sprays of Tricyclazole 1g/lit of water for control of rice blast.	• Adopt weed management practices. • Maintain the existing water level in the field. • Spray 1% potassium nitrate	Use water from the outside sources like farm ponds, nalas, streams, rivers for puddling operation and protective irrigation
		Finger millet	• Protective irrigation.	• Adopt weed management practices with dry land weeder. • Mulching with tree lopping or glyricidia leaves • Spray 1% potassium nitrate	
	Mid-land medium deep soils	Rice	• Protective irrigation. • Take three spray Copper oxy chloride 2.5 g/lit water + Streptocycline sulphate 0.5 g/lit of water to control Bacterial leaf blight at 15 days interval. • Take three sprays of Tricyclazole 1g/lit of water for control of rice blast.	• Adopt weed management practices. • Maintain the existing water level in the field. • Spray 1% potassium nitrate	
		Chick pea, Tur		Protective irrigation after sowing	
		Vegetables like chilli, brinjal, okra, capsicum, cluster bean, bitter gourd, snake gourd, dolichus bean	No change	Prepare seedlings in portrays and use protective irrigation	

		Flower crops like Jasmin, <i>Michelia champak</i> , Lily	No change	Provide protective irrigation	
	Low land deep soils	Rice	• Protective irrigation. • Take three spray Copper oxy chloride 2.5 g/lit water + Streptocycline sulphate 0.5 g/lit of water to control Bacterial leaf blight at 15 days interval. • Take three sprays of Tricyclazole 1g/lit of water for control of rice blast.	• Adopt weed management practices. • Maintain the existing water level in the field. • Spray 1% potassium nitrate	
	Hill slope shallow soils	Finger millet	• Protective irrigation	• Adopt weed management practices.	

Contingency measures- End of the season

Condition			Suggested Contingency measures		
Terminal drought	Major Farming situation	Normal Crop/cropping system	Crop management	Rabi crop planning	Remarks on Implementation
(Early withdrawal of monsoon)	Upland medium deep to shallow soils	Rice	Harvest crop at physiological maturity	• Carry out sowing of Rabi crops as early as possible (Cowpea, groundnut, water melon, leafy vegetables) • Raise the seedlings of chilli, brinjal, cabbage, knolkhol)if irrigation facility available	Need based Water conservation measures viz. Konkan jalkund, farm pond, nala bunding, vijaybhandhara.
		Finger millet			
		Niger			
		Chick pea, Tur			
		Vegetables like chilli, brinjal, okra, capsicum, cluster bean, bitter gourd, snake gourd, dolichus bean	No change	Prepare seedlings in polytrays for rabi season and use protective irrigation for vegetables in field	
		Flower crops like Jasmin, <i>Michelia champak</i> , Lily	No change	Provide protective irrigation	

	Mid-land medium deep soils	Rice	• Protective irrigation • Harvest crop at physiological maturity	• Carry out sowing of Rabi crops as early as possible (Cowpea, Horse gram, mustard, sweet corn, groundnut, water melon, leafy vegetables) • Raise the seedlings of chilli, brinjal, cabbage, knolkhol) if irrigation facility available	
		Vegetables like chilli, brinjal, okra, capsicum, cluster bean, bitter gourd, snake gourd, dolichus bean	No change	Prepare seedlings in portrays for rabi season and use protective irrigation for vegetables in field	
		Flower crops like Jasmin, <i>Michelia champak</i> , Lily	No change	Provide protective irrigation	
	Low land deep soils	Rice		• Carry out sowing of Rabi crops as early as possible (Cowpea, Horse gram, mustard, lab lab bean, sweet corn, groundnut, water melon, leafy vegetables)if irrigation facility available • Raise the seedlings of chilli, brinjal, cabbage, knolkhol) if irrigation facility available	
	Hill slope shallow soils	Finger millet	Harvest crop at physiological maturity	----	

2.1.3 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	Mid and low land Medium deep to deep soils	Rice (Rabi season)	Use early duration variety (Ratnagiri 73, Ratnagiri-1, Karjat-184) or Grow short duration pulses viz. cowpea (Var. Konkan Sadabahar), under control irrigation and tail end area	• Dapog/mat technique of nursery raising. • Young seedling transplanting. • SRI Technique.	Procure the seed from reliable source

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
		Groundnut	Use early duration variety (Phule pragati) or grow short duration pulses viz. Cowpea (Var. Konkan Sadabahar), Horsegram (Var. Dapoli-1), Lablab bean (Var. Konkan wal-1 and 2)	- If other source of irrigation is available, sow the crop as per schedule. - If irrigation facility available use micro irrigation (drip)	Procure the seed from reliable source
		Pulses (Cowpea, Horsegram, Green gram)	No change		--
		Vegetables like chilli, brinjal, okra, capsicum, cluster bean, bitter gourd, snake gourd, dolichus bean	Use early duration vegetables like leafy vegetables varieties Coriander: Dapoli-1 Radish: Japanies white long, Pusa ketaki Amaranthus: Konkan durangi, Co-1	- If other source of irrigation is available, sow the crop as per schedule. - If irrigation facility available use micro irrigation (drip) - Prepare the seedlings of vegetables in portrays (cucurbitaceous crops, brinjal, chilli) to avoid delay in transplanting.	Procure the seed from reliable source
		Flower crops like Jasmin, <i>Michelia champak</i> , Lily	No change	- If other source of irrigation is available, sow the crop as per schedule. - If irrigation facility available use micro irrigation (drip) - Use mulch	

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	Mid and low land Medium deep to deep soils	Rice (Rabi season)	Prefer early duration variety in low land situation (Ratnagiri 73, Ratnagiri -1) Grow short duration pulses (cow pea, lab lab bean, horse gram), oilseed (groundnut (Phule Pragati)) and vegetables (Coriander: Dapoli-1, Radish: Japanies white long, Pusa ketaki, Amaranthus: Konkan durangi, Co-1) in midland situation	- Use SRI Technique for rice cultivation. - Adopt Weed management practices - Protective irrigation	Procure the seed from reliable source
		Groundnut	Prefer short duration variety (Phule Pragati)	Adopt Weed management practices with dry land weeder	Procure the seed from reliable source

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
		Pulses (Cowpea, Horsegram, Green gram)	No change	- If irrigation facility available use micro irrigation (drip) - Adopt mulching	--
		Vegetables like chilli, brinjal, okra, capsicum, cluster bean, bitter gourd, snake gourd, dolichus bean	Grow Dolichous bean or short duration leafy vegetables	- Adopt Weed management practices. - If irrigation facility available use micro irrigation (drip) - Use mulch	Procure the seed from reliable source . Training is essential on drip irrigation and mulching
		Water melon	Either follow the water conservation measures like plastic mulch for water melon or grow short duration pulses		
		Flower crops like Jasmin, <i>Michelia champak</i> , Lily	No change	- If other source of irrigation is available, sow the crop as per schedule. - If irrigation facility available use micro irrigation (drip) - Use mulch	

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Non release of water in canals under delayed onset of monsoon in catchment	Mid and low land Medium deep to deep soils	Rice (Rabi season)	Lab lab bean (Var. Konkan wal-1 and 2), horse gram (Var.Dapoli-1), black gram, cowpea (var. Konkan sadbahar and Konkan safed), mustard (vare. Varuan) on residual moisture under low land situation	• Minimum tillage and sowing of seed by dibbling. •	Procure the seed from reliable source .
		Groundnut	If irrigation water is available raise,short duration pulses like cowpea (Konkan Sadabahar) and leafy vegetables	• Adopt recommended weed management practices • Use micro irrigation (drip) • Use mulch	
		Pulses (Cowpea, Horsegram, Green gram)			
		Vegetables like chilli, brinjal, okra, capsicum, cluster bean, bitter gourd, snake gourd, dolichus bean			
		Water melon			
		Flower crops like Jasmin, <i>Michelia champak</i> , Lily			

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	Mid and low land Medium deep to deep soils	Not applicable			
Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Insufficient groundwater recharge due to low rainfall	Mid and low land Medium deep to deep soils	Rice (Rabi season)	If irrigation water is available raise, short duration pulses like Wal (lablab bean) - Var. Konkan Wal No. 1, Horse gram - Var. Dapoli – 1.	• Minimum tillage and sowing of seed by dibbling • Relay cropping if residual moisture is available	Procure the seed from reliable source
		Groundnut	If farm pond water is available go for short duration pulses like cowpea (Konkan Sadabahar) and leafy vegetables	• Adopt recommended weed management practices • Use micro irrigation (drip) • Use mulch	
		Pulses (Cowpea, Horsegram, Green gram)			
		Vegetables like chilli, brinjal, okra, capsicum, cluster bean, bitter gourd, snake gourd, dolichus bean			
		Water melon			
		Flower crops like Jasmin, <i>Michelia champak</i> , Lily			

Resource management technologies

- Desilting of community pond to increase water storage capacity for providing lifesaving irrigation during kharif and enhancing cropping intensity during rabi season
- Conservation furrows in soybean, pearl millet and cotton for in-situ moisture conservation and enhancing crop productivity
- Crop residue mulching in pomegranate to conserve moisture and reduce weed growth
- Water evaporation retardant in farm pond to minimize evaporation losses
- Fertiligation in Pomegranate increases fertilizer use efficiency and yield in Semi-arid areas of Maharashtra
- Desilting of check dams to enhance water storage capacity for providing supplemental irrigation during kharif and rabi season
- Farm ponds for lifesaving irrigation for growing high value crops and for cropping intensification during rabi season
- Farm bunding in soybean, cotton and chickpea for erosion control and foe in-situ conservation
- Ridge and furrow in soybean for enhancing water use efficiency and crop productivity
- Micro irrigation system in cotton and chickpea with harvested water for enhancing water use efficiency and crop productivity
- Recharge structures for open/tube wells with silt trap
- Opening of furrow in Bt. cotton and pigeon pea for enhancing water use efficiency and crop productivity
- Desilting of percolation tanks to increase the water storage capacity for providing supplemental irrigation
- Shredding of soybean crop residue as mulching in rabi bengal gram for enhancing soil fertility and moisture holding capacity
- Desilting of drainage channel to enhance water storage capacity for providing supplemental irrigation to kharif and rabi crops
- Opening of dead furrows in cotton for enhancing the water use efficiency and crop productivity
- Deep continuous contour trenching and bunding in soybean, cotton and jowar for in-situ conservation and minimising stress
- Sand bag check dams for water harvesting and enhancing groundwater recharge
- Application of tank silt to increase the moisture holding capacity of the soil and to improve the fertility of the soil
- Compartmental bunding in sorghum to conserve moisture and improve productivity
- Polyethylene mulching in watermelon to conserve moisture and reduce weed growth
- Furrow Irrigated Raised Bed in high value crops for enhancing water use efficiency and crop productivity
- Construction of Vanarai/Vijay bandhara for critical irrigation during dry spells

Actionable Comprehensive Plans for Contingency

State	MAHARASHTRA	District	WARDHA
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	840.8	More than 19%	Less than 681.048
June	170.2		
July	265.8		
August	223.5		
September	181.3		

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

Irrigation info:

Net irrigated area:	0	Gross irrigated area:	0
Net Rainfed area		Gross rainfed area	

Source wise irrigation area details (ha)

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

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	0	0	
2	Jowar	414	-	
3	Maize	265		265
4	Bajra	9		9
5	Ragi	-		

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	60867		60867
2	Groundnut	2087		2087
3	Sesamum	1556		1556
4	SOyabean	139578		139578
5	Sunflower	-		
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	241697		241697
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	1255		1255
2	Tobacco	-		
3	Guar seed	-		
4	Other Fodder crops	-		

Crop Plan- Beginning of the season

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming situation	Normal Crop /Cropping system	Change in crop/cropping system including variety	• Agronomic measures	Remarks on Implementation

Delay by 4 weeks 9 th July 15 th July 28 th MW	Medium deep to deep black soils	Cotton	- Replace the hybrids with improved early varieties in cotton. - American: AKH-081, AKH-9916, PKV Rajat - Deshi Cotton: AKA-5, AKA-7, AKA-8 - Soybean: JS-335, JS-93-05 - Pigeonpea varieties: AKT 8811, Vipula, Rajeshwari, PKV TARA, BSMR-736/853, BDN716	- Normal recommended Package of Practices by Dr. PDKV, Akola. - Test GP%, use seed rate @ 75-80 kg/ha, seed treatment with <i>Azotobacter</i> + PSB (250 g each/10 kg seed), Thiram + Carboxin 3.5g, <i>Trichoderma</i> 4g/kg of seed. - Use 20-25% more than recommended seed rate and reduce fertilizer dose by 25% for Cotton. - To reduce the risk of late sowing follow Cotton + Sorghum + Pigeonpea + Sorghum (3:1:1:1/6:1:2:1) intercropping system.	- Linkage with Dr. PDKV/ MSSC/ NSC for seed. - Linkage with MAIDC, custom hiring centres for implements. Linkage with Dr. PDKV/ regional KVKs for agro-techniques
		Soybean	No change	- Follow normal recommended package of practices. - Intercrop one row of pigeonpea after every 4 or 6 rows of soybean as per convenience. - Open furrow after six/three rows of soybean.	
		Pigeonpea	No change	Use spacing 90 x 30 cm or 90 X 20 cm.	

	Sorghum (Kharif)	- Replaces sorghum by soybean varieties JS 335, JS 93-05, JS 9560, MAUS-71, MAUS-81 or - Pigeonpea variety - AKT 8811, Vipula, Rajeshwari, PKV TARA, BSMR-	- Use of early varieties (CSV 17)/ hybrids (CSH 14, CSH 23) - Planting with 20% higher seed rate - Seed treatment of Imidacloprid 70 WS 7g/kg seed. - Follow normal recommended package of practices. - Intercrop one row of pigeonpea after every 4 or 6 rows of soybean as per convenience. - Open furrow after six/three rows of	
Shallow black soils	Soybean	No change	- Normal recommended Package of Practices by Dr. PDKV, Akola. - Test GP%, use seed rate @ 75-80 kg/ha, seed treatment with <i>Rhizobium</i> + PSB (250 g each/10 kg seed), Thiram + Carboxin 3.5g, <i>Trichoderma</i> 4g/kg of seed.	- Linkage with Dr. PDKV/ MSSC/ NSC for seed. - Linkage with MAIDC, custom hiring centres for implements. Linkage with Dr. PDKV/ regional KVKs for agro-techniques

	Greengram	- Replace greengram with soybean varieties • JS335, JS 93-05, JS 9560, MAUS-71, MAUS-81	- Normal recommended Package of Practices by Dr.PDKV, Akola. - Seed treatment with <i>Rhizobium</i>+PSB (250g each /10kg seed), Thiram +Carboxin 3 g, <i>Trichoderma</i> 4 g/kg of seed. <i>Thiamethoxam 30 FS 10ml/kg of seed.</i>	
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		Blackgram	- Replace Blackgram by - Soybean Varieties • JS335, JS 93-05, JS 9560, MAUS-71, MAUS-81	- Normal recommended Package of Practices by Dr.PDKV, Akola - Seed treatment with <i>Rhizobium</i>+PSB(250 g each /10kg seed), Thiram +Carboxin 3 g, <i>Trichoderma</i> 4 g/kg of seed. <i>Thiamethoxam 30 FS 10ml/kg of seed.</i>	
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Contingency measures- Mid season

Condition			Suggested Contingency measures		
Midseason drought (long dry spell, consecutive 2 weeks rainless (<2.5 mm) At vegetative stage	Major Farming situation	Normal Crop/cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
	Medium deep to Deep black soils	Cotton	Give protective irrigation if possible. Weeding, inter-cultivation to create soil mulch to conserve moisture.	- Avoid top dressing of fertilizer during moisture stress period. - Spraying of 1% KNO₃ or K₂SO₄. - Opening of conservation furrows for moisture	With limited water availability prefer micro-irrigation system. Intercultivation implements/machineries to be popularized through Govt. schemes.
		Soybean	Give protective irrigation if possible. Weeding, inter-cultivation to create soil mulch to conserve	- Spraying of 1% KNO₃. - Opening of conservation furrows for moisture	
		Pigeonpea	Give protective irrigation if possible. Weeding, inter-cultivation to create soil mulch to conserve	- Spraying of 1% KNO₃. - Opening of conservation furrows for moisture	

		Sorghum (<i>Khariif</i>)	Give protective irrigation if possible. Weeding, inter cultivation to create soil mulch to conserve moisture.	• Avoid top dressing of fertilizer during moisture stress period. • Opening of conservation furrows for moisture conservation.	
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	Shallow black soils	Soybean	Give protective irrigation if possible. Weeding, inter cultivation to create soil mulch to conserve moisture.	• Spraying of 1% KNO₃. • Opening of conservation furrows for moisture	With limited water availability prefer micro-irrigation system. Intercultural implements/machineries to be popularized through Govt. schemes.
		Greengram	Intercultivation to create soil mulch to conserve moisture. Protective irrigation if possible.	• Spraying of 1% KNO₃. • Opening of conservation furrows for moisture	
		Blackgram	Give protective irrigation if possible. Weeding, inter cultivation to create soil mulch to conserve moisture.	• Spraying of 2% urea or 1% KNO₃. • Opening of conservation furrows for moisture conservation. • Spraying of 2 % urea or DAP.	

Condition			Suggested Contingency		
Mid season drought (long dry spell) At flowering/fruiting stage	Major Farming situation	Normal Crop/cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
	Medium deep to deep black soils	Cotton	Give protective irrigation if possible. Weeding, inter cultivation to create soil mulch to conserve moisture.	• Opening of conservation furrows for moisture conservation. • After release of moisture stress spraying of 2 % urea or DAP at flowering and 1% Urea + 1% MgSO₄ at boll development stage	
		Soybean	Give protective irrigation if possible.	• After release of moisture stress spraying of 2 % urea at flowering and pod development.	
		Pigeonpea	Give protective irrigation if possible.	• Opening of conservation furrows for moisture conservation. • After release of moisture stress spraying of 2 % urea at flowering	
		Sorghum (<i>Kharif</i>)	Give protective irrigation if possible.	• After release of moisture stress spraying of 2%	

		Greengram	Give protective irrigation if possible.	• After release of moisture stress spraying of 2 % urea at flowering and pod development.	
		Blackgram	Give protective irrigation if possible.	• After release of moisture stress spraying of 2 % urea at flowering and pod development.	
	Shallow black soils	Soybean	Give protective irrigation if possible.	• After release of moisture stress spraying of 2% urea at flowering and pod development.	
		Greengram	Give protective irrigation if possible.	• After release of moisture stress spraying of 2% urea at flowering and pod development.	
		Blackgram	Give protective irrigation if possible.	• After release of moisture stress spraying of 2% urea at flowering and pod development.	

Contingency measures- End of the season

Condition			Suggested Contingency measures		
Terminal drought (Early withdrawal of monsoon)	Major Farming situation	Normal Crop/cropping system	Crop management	Rabi Crop planning	Remarks on Implementation
	Medium deep to deep black soils	Cotton	Give protective irrigation if possible. Spraying of	-	
		Soybean	Give protective irrigation if possible.	• Plan for <i>rabi</i> sowing.	
		Pigeonpea	Give protective irrigation if possible.	• Spraying of 2% urea or 1% KNO ₃ .	
		Sorghum (<i>Kharif</i>)	Give protective irrigation if possible for mid late to late varieties.	• Harvest at physiological maturity. • Plan for <i>rabi</i> sowing.	
	Shallow black soil	Soybean	Give protective irrigation if possible.	• Harvest at physiological maturity. • Plan for <i>rabi</i> sowing.	

Resource management technologies

- Desilting of community pond to increase water storage capacity for providing lifesaving irrigation during kharif and enhancing cropping intensity during rabi season
- Conservation furrows in soybean, pearl millet and cotton for in-situ moisture conservation and enhancing crop productivity
- Crop residue mulching in pomegranate to conserve moisture and reduce weed growth
- Water evaporation retardant in farm pond to minimize evaporation losses
- Fertigation in Pomegranate increases fertilizer use efficiency and yield in Semi-arid areas of Maharashtra

- Desilting of check dams to enhance water storage capacity for providing supplemental irrigation during kharif and rabi season
- Farm ponds for lifesaving irrigation for growing high value crops and for cropping intensification during rabi season
- Farm bunding in soybean, cotton and chickpea for erosion control and for in-situ conservation
- Ridge and furrow in soybean for enhancing water use efficiency and crop productivity
- Micro irrigation system in cotton and chickpea with harvested water for enhancing water use efficiency and crop productivity
- Recharge structures for open/tube wells with silt trap
- Opening of furrow in Bt. cotton and pigeon pea for enhancing water use efficiency and crop productivity
- Desilting of percolation tanks to increase the water storage capacity for providing supplemental irrigation
- Shredding of soybean crop residue as mulching in rabi bengal gram for enhancing soil fertility and moisture holding capacity
- Desilting of drainage channel to enhance water storage capacity for providing supplemental irrigation to kharif and rabi crops
- Opening of dead furrows in cotton for enhancing the water use efficiency and crop productivity
- Deep continuous contour trenching and bunding in soybean, cotton and jowar for in-situ conservation and minimising stress
- Sand bag check dams for water harvesting and enhancing groundwater recharge
- Trench cum bund in soybean, sorghum and maize plantation for erosion control and to overcome the water stress during dry spells
- Application of tank silt to increase the moisture holding capacity of the soil and to improve the fertility of the soil
- Compartmental bunding in sorghum to conserve moisture and improve productivity
- Polyethylene mulching in watermelon to conserve moisture and reduce weed growth
- Low-cost Konkan Jalkunds to enhance water storage capacity for providing supplemental irrigation during kharif and rabi season
- Furrow Irrigated Raised Bed in high value crops for enhancing water use efficiency and crop productivity
- Construction of Vanarai/Vijay bandhara for critical irrigation during dry spells

Actionable Comprehensive Plans for Contingency

State	MAHARASHTRA	District	YAVATMAL
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	808.8	More than 19%	Less than 655.128
June	173		
July	251.5		
August	222.9		
September	161.4		

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

Irrigation info:

Net irrigated area:	0	Gross irrigated area:	0
Net Rainfed area		Gross rainfed area	

Source wise irrigation area details (ha)

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

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	0	0	
2	Jowar	3649	-	
3	Maize	1939		1939
4	Bajra	255		255
5	Ragi	-		

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	113744		113744
2	Groundnut	9528		9528
3	Sesamum	10510		10510
4	SOyabean	279850		279850
5	Sunflower	-		
6	Castor	-		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	469552		469552
2	Jute	-		
3	Mesta	-		
4	Sunhemp	-		

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	10204		10204
2	Tobacco	-		
3	Guar seed	-		
4	Other Fodder crops	-		

Crop Plan- Beginning of the season

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming situation	Normal Crop /Cropping system	Change in crop/cropping system including variety	<i>Agronomic measures</i>	Remarks on Implementation
Delay by 4 weeks 9 th -15 th July 28 th MW	Medium deep to deep black soils	Cotton	- Replace the hybrids with improved early varieties in cotton. - American: AKH-081, AKH-9916, PKV Rajat - Deshi Cotton: AKA-5, AKA-7, AKA-8 - Soybean: JS-335, JS-93-05 - Pigeonpea varieties: AKT 8811, Vipula, Rajeshwari, PKV TARA, BSMR-736/853, BDN716	- Normal recommended Package of Practices by Dr.PDKV, Akola. - Test GP%, use seed rate @ 75-80 kg/ha, seed treatment with <i>Azotobacter</i> + PSB (250g each/10kg seed), Thiram + Carboxin 3.5g, <i>Trichoderma</i> 4g/kg of seed. - Use 20-25% more than recommended seed rate and reduce fertilizer dose by 25% for Cotton. - To reduce the risk of late sowing follow Cotton+ Sorghum+PigeonPea+ Sorghum(3:1:1:1/6:1:2:1) intercropping system.	- Linkage with Dr.PDKV/M SSC/NSC for seed. - Linkage with MAIDC, custom hiring centres for implements. Linkage with Dr.PDKV/regional KVKs for agro-techniques
		Soybean	No change	- Follow normal recommended package of practices. - Intercrop one row of pigeonpea after every 4 or 6 rows of soybean as per convenience. - Open furrow after six/three rows of soybean.	
		Pigeonpea	No change	Use spacing 90 x 30 cm or 90 X 20 cm.	
	Sorghum(Kharif)	- Replace sorghum by soybean varieties JS335, JS 93-05, JS 9560, MAUS-71, MAUS-81 - Pigeonpea variety: AKT 8811, Vipula, Rajeshwari, PKV TARA, BSMR-736/853, BDN716	- Use of early varieties (CSV 17)/ hybrids (CSH 14, CSH 23) - Planting with 20% higher seed rate - Seed treatment of Imidacloprid 70 WS7g/kg seed. - Follow normal recommended package of practices. - Intercrop one row of pigeonpea after every 4 or 6 rows of soybean as per convenience. - Open furrow after six/three rows of soybean. - For pigeonpea use spacing 90 x 30 cm or 90 X 20 cm.		

Shallow black soils	Soybean	No change	- Normal recommended Package of Practices by Dr.PDKV, Akola. - Test GP%, use seed rate @ 75-80kg/ha, seed treatment with <i>Rhizobium</i> +PSB (250geach /10kgseed),Thiram + Carboxin 3 g, <i>Trichoderma</i>4g/kgofseed. <i>Thiamethoxam</i> 30 FS 10ml/kgofseed.	- Linkage with Dr.PDKV/M SSC/NSC for seed. - Linkage with MAIDC, custom hiring centresfor implements. Linkage with Dr.PDKV/regional KVKs for agro-techniques
	Greengram	- Replace greengramwith soybean varieties · · JS335, JS 93-05, JS 9560, MAUS-71, MAUS-81	- Normal recommended Package of Practices by Dr.PDKV, Akola. - Seed treatment with <i>Rhizobium</i>+PSB (250geach /10kgseed), Thiram +Carboxin 3 g, <i>Trichoderma</i> 4 g/kg of seed. <i>Thiamethoxam</i> 30 FS 10ml/kg of seed.	
	Blackgram	- Replace Blackgram by Soybean Varieties · · JS335, JS 93-05, JS 9560, MAUS-71,MAUS-81	- Normal recommended Package of Practices by Dr.PDKV, Akola - Seed treatment with <i>Rhizobium</i>+PSB (250geach /10kgseed),Thiram+Carboxin 3g, <i>Trichoderma</i> 4 g/kg of seed. <i>Thiamethoxam</i> 30 FS 10ml/kg of seed.	

Contingency measures- Mid season

Condition			Suggested Contingency measures		
Mid-season drought (long dry spell, consecutive 2weeks rainless (<2.5 mm) At vegetative stage	Major Farming situation	Normal Crop/cropping system	Crop management	Soil nutrient &moisture conservation measures	Remarks on Implementation
	Medium deep to Deep black soils	Cotton	Give protective irrigation if possible. Weeding, inter cultivation to create soil mulch to conserve moisture.	- Avoid top dressing of fertilizer during moisture stress period. - Spraying of 1% KNO₃ or K₂SO₄. - Opening of conservation furrows for moisture	With limited water availability prefer micro-irrigation system. Intercultivation implements/machineries to be popularized through Govt. schemes.
		Soybean	Give protective irrigation if possible. Weeding, inter-cultivation to create soil mulch to conserve	- Spraying of 1% KNO₃. - Opening of conservation furrows for moisture	
		Pigeonpea	Give protective irrigation if possible. Weeding, inter cultivation to create soil mulch to conserve	- Spraying of 1% KNO₃. - Opening of conservation furrows for moisture	

	Sorghum (<i>Khariif</i>)	Give protective irrigation if possible. Weeding, inter cultivation to create soil mulch to conserve moisture.	• Avoid top dressing of fertilizer during moisture stress period. • Opening of conservation furrows for moisture conservation.	
Shallow black soils	Soybean	Give protective irrigation if possible. Weeding, inter cultivation to create soil mulch to conserve moisture.	• Spraying of 1% KNO₃. • Opening of conservation furrows for moisture conservation.	With limited water availability prefer micro-irrigation system. Intercultural implements/machineries to be popularized through Govt. schemes.
	Greengram	Intercultivation to create soil mulch to conserve moisture. Protective irrigation if possible.	• Spraying of 1% KNO₃. • Opening of conservation furrows for moisture conservation.	
	Blackgram	Give protective irrigation if possible. Weeding, inter cultivation to create soil mulch to conserve moisture.	• Spraying of 2% urea or 1% KNO₃. • Opening of conservation furrows for moisture conservation. • Spraying of 2% urea or DAP.	

Condition			Suggested Contingency measures		
Mid-season drought (long dry spell) At flowering/fruiting stage	Major Farming situation	Normal Crop/cropping system	Crop management	Soil nutrient & moisture conservation	Remarks on Implementation
	Medium deep to deep black soils	Cotton	Give protective irrigation if possible. Weeding, inter cultivation to create soil mulch to conserve moisture.	• Opening of conservation furrows for moisture conservation. • After release of moisture stress spraying of 2% urea.	
		Soybean	Give protective irrigation if possible.	• After release of moisture stress spraying of 2% urea at flowering and pod development.	
		Pigeonpea	Give protective irrigation if possible.	• Opening of conservation furrows for moisture conservation.	
		Sorghum(<i>khariif</i>)	Give protective irrigation if possible.	• After release of moisture stress spraying of 2% urea.	

		Greengram	Give protective irrigation if possible.	• After release of moisture stress spraying of 2% urea at flowering and pod	
		Blackgram	Give protective irrigation if possible.	• After release of moisture stress spraying of 2% urea at flowering and pod	
	Shallow blacksoils	Soybean	Give protective irrigation if possible.	• After release of moisture stress spraying of 2% urea at flowering and pod	
		Greengram	Give protective irrigation if possible.	• After release of moisture stress spraying of 2% urea at flowering and pod	
		Blackgram	Give protective irrigation if possible.	• After release of moisture stress spraying of 2% urea at flowering and pod	

Contingency measures- End of the season

Condition			Suggested Contingency measures		
Terminal drought (Early with drawal of monsoon)	Major Farming situation	Normal Crop/cropping system	Crop management	Rabi Crop planning	Remarks on Implementation
	Medium deep to deep black soils	Cotton	Give protective irrigation if possible. Spraying of 2% urea at flowering and pod	-	
		Soybean	Give protective irrigation if possible.	• Plan for <i>rabi</i> sowing.	
		Pigeonpea	Give protective irrigation if possible.	• Spraying of 2% urea or 1% KNO ₃ .	
		Sorghum(<i>Kharif</i>)	Give protective irrigation if possible for mid late to late varieties.	• Harvest at physiological maturity. • Plan for <i>rabi</i> sowing.	
	Shallow black soil	Soybean	Give protective irrigation if possible.	• Harvest at physiological maturity. • Plan for <i>rabi</i> sowing.	

Resource management technologies

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- Water evaporation retardant in farm pond to minimize evaporation losses
- Fertigation in Pomegranate increases fertilizer use efficiency and yield in Semi-arid areas of Maharashtra
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- Farm ponds for lifesaving irrigation for growing high value crops and for cropping intensification during rabi season
- Farm bunding in soybean, cotton and chickpea for erosion control and for in-situ conservation

- Ridge and furrow in soybean for enhancing water use efficiency and crop productivity
- Micro irrigation system in cotton and chickpea with harvested water for enhancing water use efficiency and crop productivity
- Recharge structures for open/tube wells with silt trap
- Opening of furrow in Bt. cotton and pigeon pea for enhancing water use efficiency and crop productivity
- Desilting of percolation tanks to increase the water storage capacity for providing supplemental irrigation
- Shredding of soybean crop residue as mulching in rabi bengal gram for enhancing soil fertility and moisture holding capacity
- Desilting of drainage channel to enhance water storage capacity for providing supplemental irrigation to kharif and rabi crops
- Opening of dead furrows in cotton for enhancing the water use efficiency and crop productivity
- Deep continuous contour trenching and bunding in soybean, cotton and jowar for in-situ conservation and minimising stress
- Sand bag check dams for water harvesting and enhancing groundwater recharge
- Trench cum bund in soybean, sorghum and maize plantation for erosion control and to overcome the water stress during dry spells
- Application of tank silt to increase the moisture holding capacity of the soil and to improve the fertility of the soil
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