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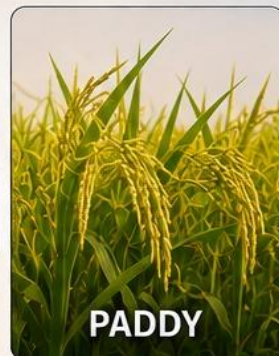
INDIAN COUNCIL OF
AGRICULTURAL RESEARCH

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

PREPAREDNESS | RESPONSE | RESILIENCE



BUILDING A
DROUGHT RESILIENT
UTTAR PRADESH



PADDY



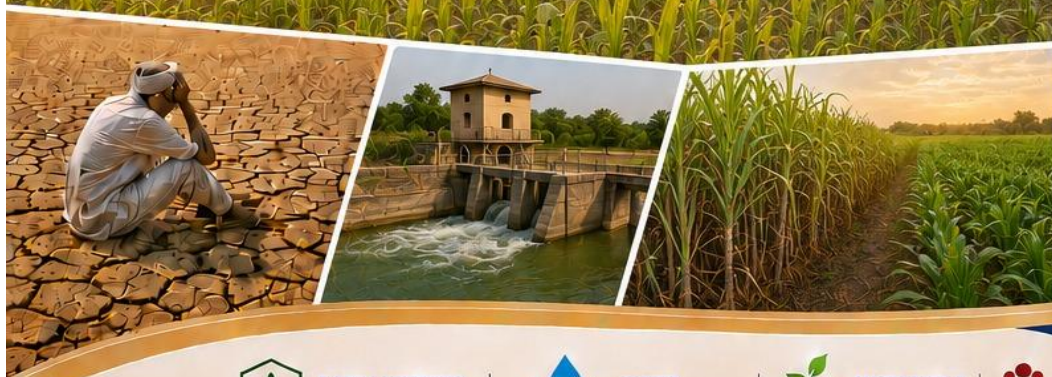
SUGARCANE



BAJRA



MAIZE



EARLY WARNING
& MONITORING



WATER
MANAGEMENT



SUSTAINABLE
AGRICULTURE



COMMUNITY
PARTICIPATION

TOGETHER, LET'S BUILD A RESILIENT UTTAR PRADESH

PREPARE TODAY • PROTECT TOMORROW • PROSPER TOGETHER

Uttar Pradesh

Uttar Pradesh is one of India's most important agricultural state due to its substantial contribution to the production of food grains, sugarcane, wheat, rice, pulses, and potatoes. The economics of Uttar Pradesh is based mainly on Agriculture and round 65 per cent of the total population is dependent on Agriculture. Contribution of agriculture sector is significant in Economic development of the state. According to the survey of 2014-15, approximately 165.98 lac hectare (68.7%) land is used for cultivation. The state possesses fertile Indo-Gangetic alluvial plains, diverse agro-climatic zones, and an extensive irrigation network, making it one of the leading agricultural producers in the country. As a result of hard work and efforts of the farmers that the state has become self-sufficient in the field of food safety and progressing towards more than the requirement. Despite having the largest irrigated area in India, nearly one-third of the cultivated area remains dependent on monsoon rainfall, making agricultural production vulnerable to rainfall variability and climatic extremes. The average annual rainfall in Uttar Pradesh ranges from 800 to 1,100 mm, of which nearly 85 to 90 per cent is received during the southwest monsoon season (June-September).

The major Kharif crops grown in the state include Rice, Maize, Pearl millet (bajra), Sorghum, Pigeon pea, Black gram, Green gram, Sesame, Groundnut, Soybean and sugarcane. During the Rabi season, wheat, chickpea, lentil, mustard, barley, pea, and potato are extensively cultivated (Directorate of Economics and Statistics, 2024). Uttar Pradesh is the largest producer of wheat, sugarcane, potato, and several pulse crops in India, thereby contributing significantly to national food and nutritional security.

Historical Impact of El Nino on Uttar Pradesh

El Nino events frequently influence the southwest monsoon over Uttar Pradesh by causing delayed monsoon onset, below-normal rainfall, prolonged dry spells, and higher temperatures during the Kharif season. The average seasonal rainfall from 1981 to 2016 shows that the average rainfall during the S-W monsoon season during the El Nino years was less than the normal rainfall in all the district of Eastern Uttar Pradesh. The departure was maximum in Barabanki district by 9.0 per cent followed by Sultanpur district (7.3%). Although western Uttar Pradesh has better irrigation facilities, the eastern region and Bundelkhand remain vulnerable to rainfall deficits, particularly during critical crop growth stages. Moisture stress during vegetative, flowering, and grain-filling stages adversely affects crop productivity, while reduced reservoir storage and groundwater recharge further limit irrigation availability. During deficient monsoon years, delayed sowing, poor germination, reduced tillering, flower shedding, and lower grain filling have been commonly observed in major crops. Consequently, El Nino conditions lead to

reduced agricultural productivity, lower farm income, and increased risk to food security in vulnerable districts.

Effects on Major Crops

- **Rice:** Delayed transplanting, poor tillering, moisture stress, and reduced grain yield
- **Sugarcane:** Reduced tillering, lower cane weight, and moisture stress during grand growth stage.
- **Maize:** Poor germination, reduced cob development, and lower grain filling under prolonged dry spells.
- **Pearl millet (Bajra):** Comparatively drought tolerant but yield declines under severe moisture stress.
- **Pigeon pea (Tur):** Flower drop, poor pod formation, and reduced seed yield under terminal drought.
- **Black gram (Urdbean):** Poor crop establishment, flower shedding, and reduced productivity.
- **Green gram (Moongbean):** Reduced pod setting and grain filling under moisture deficit.
- **Sesame (Til):** Better drought tolerance and can serve as an alternate crop during delayed monsoon.
- **Groundnut:** Reduced peg formation and kernel development due to soil moisture deficit.

Contingency Plans for Major Crops Grown in Uttar Pradesh

Crop	El Niño Situation	Recommended Contingency Measures
Rice	Delayed monsoon or delayed transplanting	Community nursery, direct seeded rice (DSR), short-duration varieties, life-saving irrigation, alternate wetting and drying
	Mid-season drought	Gap filling, foliar spray of 2.5 kg urea + 2.5 kg potash, moisture conservation, protective irrigation

Maize	Delayed sowing	Short-duration hybrids, ridge sowing, intercropping with pigeon pea
	Dry spells	Earthing up, mulching, foliar spray of 2% urea or MOP, life-saving irrigation
Sugarcane	Rainfall deficit	Trash mulching, drip irrigation, ratoon management, moisture conservation
Pearl millet	Failure of rice or maize sowing	Suitable drought-resilient substitute crop
Pigeon pea	Delayed monsoon	Intercropping with maize/bajra/sorghum, raised bed sowing
	Moisture stress	Mulching, earthing up, protective irrigation
Black gram	Delayed sowing	Shift to short-duration varieties
	Dry spells	Foliar spray of 2% urea, moisture conservation
Green gram	Late Kharif sowing	Early maturing varieties
	Drought	Foliar nutrition and protective irrigation
Sesame	Delayed monsoon or crop substitution	Use as contingency crop in low rainfall situations
Groundnut	Delayed onset of monsoon	Short-duration varieties, seed treatment, ridge-furrow planting

Agriculture is the backbone of Uttar Pradesh's rural economy and plays a crucial role in ensuring national food security. However, despite the availability of extensive irrigation facilities, large areas of the state remain vulnerable to El Niño-induced rainfall variability, particularly the eastern and Bundelkhand regions. Delayed monsoon onset, prolonged dry spells, and below-normal rainfall adversely affect the productivity of major Kharif crops such as rice, maize, sugarcane, pulses, and oilseeds. Adoption of district-specific contingency plans, climate-resilient crop varieties, efficient water management practices, crop diversification, and timely dissemination of agrometeorological advisories are essential to minimize production losses and enhance the resilience of farming systems in Uttar Pradesh.

Area under major crops

Crop	Area (lakh ha)
Paddy	73.50
Sugarcane	27.20
Bajra	9.31
Maize	6.81

Districts vulnerable to El Nino

High	Medium	Low
Nil	Mahoba	Chitrakoot, Jhansi, Badaun, Deoria, Kheri, Saharanpur, Farrukhabad, Sonbhadra

Actionable Comprehensive Plans for Contingency

State	UTTAR PRADESH	District	BADAUN
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	672.7	More than 19%	Less than 544.887
June	81.3		
July	236.6		
August	200.9		
September	153.9		

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

Irrigation info:

Net irrigated area:	297772	Gross irrigated area:	543677
Net Rainfed area	40103	Gross rainfed area	169200

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	219	219
Wells	211685	429453
Tanks	-	50
Other sources	85868	113955

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	102253	99120	3133
2	Jowar	41	12	29
3	Maize	36191	31448	4743
4	Bajra	108264	28163	80101
5	Ragi	10	3	7

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	650	156	494
2	Groundnut	780	211	569
3	Sesamum	2735	525	2210
4	Soyabean	-		
5	Sunflower	303	264	39
6	Castor	-		

Fibre

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

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	21460	20816	644
2	Tobacco	1614	1605	9
3	Guar seed	-		673
4	Other Fodder crops	4651	3978	673

Crop Plan- Beginning of the season

Condition	Major Farming situation ^a	Normal Crop / Cropping system ^b	Suggested Contingency measures		
			Change in crop / cropping system ^c including variety	Agronomic measures ^d	Remarks on Implementation ^e
Early season drought (delayed onset)					
Delay by 4 weeks (Specify month) 3 rd week of July	Deep soil, yellow colored alluvial loam soil	Maize/ Pearl millet / Sesamum/ Blackgram	Maize:Kanchan, Navin Navjyoti, Azad utam,Surya,Meerutpili,Ganga 2,11 Samrat etc Pearl millet: Raj-171, WCC-75, Pusa 23, 322 ICMH-451 etc. Sesamum: Pergati, shekar, TA-78, TA-12 etc. Blackgram:Narender urd-1, Pant U-30, 19, 35 etc	• Conservation furrow • Inter-cultivation • Sowing with multi seed drill	Seed-drill under RKVY Supply of seed through govt. agencies/e. NFSM

Contingency measures- Mid season

Condition	Major Farming situation ^a	Normal Crop/cropping system ^b	Suggested Contingency measures		
			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	Irrigated upland	Rice: PS 4, 5, PB 1, PRH 10/ Sugarcane:64, 88230, 92254, 95255, COS 767, 8432, 97284/Pearl millet: Raj-171, WCC-75, Pusa 23, 322 ICMH-451/Pigeonpea: UPAS 120, ICPL 151,Pusa 33 /Maize:Kanchan, Navin Navjyoti, Azad utam,Surya,Meerutpili,Ganga 2,11 Samrat /Blackgram:T 9, PU 19,30,35 /Sesamum:Pergati, Shekar, TA-78, TA-12 / Groundnut	1. Thinning, weeding and gap filling in existing crop. 2. Re sowing 3.Postponement of top dressing 4.Life saving irrigation	- Inter cultivation - Conservation furrow - Thinning and weeding - Mulching	- Supply of inter cultural implements through RKVY - Farm ponds through IWSM programme - Pulse crop seeds supply through NFSM - Micro/drip/ sprinkler irrigation under govt. schemes
	Irrigated lowland	Rice:PS 2,3, PB 1, Sarju 52, Pant 4, Narendra 359, Saket 4/Sorghum (Fodder):Kanpuri, UP Chari 1,2/Sugarcane:64, 88230, 92254, 95255, COS 767, 8432, 97284			
	Un irrigated upland	Maize/Sorghum/Pearl millet Pearl millet: Local Merut pili/Sesamum:T-4 ,T-12, T-13, T-78, Shekar, Pergati/ Pigeonpea: UPAS 120, ICPL 151			
	Un irrigated lowland	Pigeonpea: UPAS 120, ICPL 151/ Pearl millet: Local Meerut pili			

Condition	Major Farming situation ^a	Normal Crop/cropping system ^b	Suggested Contingency measures		
			Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
Mid season drought (long dry spell)					
At flowering/ fruiting stage	Irrigated upland	Rice:PS 4, 5, PB 1, PRH 10/Sugarcane: 64, 88230, 92254, 95255, COS 767, 8432, 97284/Pearl millet: Raj-171, WCC-75, Pusa 23, 322 ICMH-451/Pigeonpea: UPAS 120, ICPL 151,Pusa 33 / Maize:Kanchan, Navin Navjyoti, Azad utam,Surya,Meerutpili,Ganga 2,11 Samrat / Blackgram: T 9, PU 19,30,35/ Sesamum:Pergati, Shekar, TA-78, TA-12 / Groundnut	1. Thinning, weeding and gap filling in existing crop. 2.Life saving irrigation 3. Weeding and weed mulching	- Conservation furrow - Thinning and weeding - Mulching - Urea spray or KCL spray	Farm ponds through IWSM programme
	Irrigated lowland	Rice:PS 2,3, PB 1, Sarju 52, Pant 4, Narendra 359, Saket 4/Sorghum			

		(Fodder):Kanpuri, UP Chari 1,2/Sugarcane:64, 88230, 92254, 95255, COS 767, 8432, 97284			
	Un irrigated upland	Maize/Sorghum/Pearl millet Pearl millet: Local Meerut pili/Sesamum:T-4 ,T-12, T-13, T-78, Shekar, Pergati/ Pigeonpea: UPAS 120, ICPL 151			
	Un irrigated lowland	Pearl millet: Local Merut pili/Sesamum:T-4 ,T-12, T-13, T-78, Shekar, Pergati			

Contingency measures- End of the season

Condition	Major Farming situation ^a	Normal Crop/cropping system ^b	Suggested Contingency measures		
			Crop management	Rabi crop planning	Remarks on Implementation
Terminal drought (Early withdrawal of monsoon)	Irrigated upland	Rice:PS 4, 5, PB 1, PRH 10/Sugarcane:64, 88230, 92254, 95255, COS 767, 8432, 97284/Pearl millet: Raj-171, WCC-75, Pusa 23, 322 ICMH-451/Pigeonpea: UPAS 120, ICPL 151,Pusa 33/Maize:Kanchan, Navin Navjyoti, Azad utam,Surya,Meerutpili,Ganga 2,11 Samrat /Blackgram:T 9, PU 19,30,35/Sesamum:Pergati, Shekar, TA-78, TA-12/Groundnut	1.Life saving irrigation 2. Picking/harvesting of pods/ear 3.Harvest at physiological maturity stage 4.Harvest for fodder	- Toria/mustard - Potato - Pea/gram - Berseem/Oat - Land labeling	- Farm ponds through IWSM programme - Supply of seed through ISOPM - Harvesting and threshing implements through RKVY - Supply of land lazer labeler through CLDP or RKVY
	Irrigated lowland	Rice:PS 2,3, PB 1, Sarju 52, Pant 4, Narendra 359, Saket 4/Sorghum (Fodder):Kanpuri, UP Chari 1,2/Sugarcane:64, 88230, 92254, 95255, COS 767, 8432, 97284			
	Un irrigated upland	Maize/Sorghum/Pearl millet Pearl millet: Local Merut pili/Sesamum:T-4 ,T-12, T-13, T-78, Shekar, Pergati/ Pigeonpea: UPAS 120, ICPL 151			
	Un irrigated lowland	Pigeonpea: UPAS 120, ICPL 151/Pearl millet: Local Merut pili/Sesamum:T-4 ,T-12, T-13, T-78, Shekar, Pergati			

Drought Irrigated situation

Condition	Major Farming situation ^f	Normal Crop/cropping system ^g	Suggested Contingency measures		
			Change in crop/cropping system ^h	Agronomic measures ⁱ	Remarks on Implementation ^j
Delayed release of		Rice (Basmati)-Wheat	Replace rice with maize or aerobic rice	Use short duration varieties	Seed through KSSC and NFSM

Condition			Suggested Contingency measures		
	Major Farming situation ^f	Normal Crop/cropping system ^g	Change in crop/cropping system ^h	Agronomic measures ⁱ	Remarks on Implementation ^j
water in canals due to low rainfall	Upland sandy loam soils	Sorghum (Fodder)/Maize-Potato/ Wheat	Pearl millet/Greengram/ Blackgram - Potato/ Wheat Rice: PS 4, 5, PB-1, PRH 10 Maize: Kanchan, Sweta, Navin, Surya Pearl millet:WCC-75,Raj-171,Pusa-23,Pusa-322	- Light irrigation with tube well water - Follow alternate wetting and drying schedule of irrigation in rice - Alternate Furrow irrigation - Mulching in sugarcane/ maize	Adequate supply of electricity/diesel should be ensured by the Govt. agencies.
		Sugarcane + Cucurbits – Ratoon-Wheat	No change required		
	Lowland clay loam soils	Rice-wheat	Basmati rice –Wheat Rice: PS 4, 5, PB 1, PRH 10, Kanchan, Sweta, Navin, Surya	- Use short duration varieties e.g. - Light irrigation with tube well water - Follow alternate wetting and drying schedule of irrigation in rice - Alternate Furrow irrigation - Mulching in sugarcane/Maize	- Seed through KSSC and NFSM - Adequate supply of electricity/diesel should be ensured by the Govt. agencies.
		Sorghum Fodder-Wheat	Pearl millet-Wheat Pearl millet (Fodder): WCC-75,Raj-171,Pusa-23,Pusa-322		
		Sugarcane-Ratoon-Wheat	No change required		

Condition			Suggested Contingency measures		
	Major Farming situation ^f	Normal Crop/cropping system ^g	Change in crop/cropping system ^h	Agronomic measures ⁱ	Remarks on Implementation ^j
Limited release of water in canals due to low rainfall	Upland sandy loam soils	Rice (Basmati)-Wheat	No change required	- Light irrigation with tube well water at critical stages only e.g. CRI, Tillering & Flowering stage - Follow alternate wetting and drying schedule of irrigation in rice - Alternate Furrow irrigation - Mulching in sugarcane/maize	Adequate supply of electricity/diesel should be ensured by the Govt. agencies.
		Sorghum (Fodder)/Maize-Potato/ Wheat	No change required		
		Sugarcane + Cucurbits – Ratoon-Wheat	No change required		
	Lowland clay loam soils	Rice-wheat	No change required	Light irrigation with tube well water at critical stages only	Supply of inter cultural implements through RKV
		Sorghum Fodder-Wheat	No change required		

Condition			Suggested Contingency measures		
	Major Farming situation ^f	Normal Crop/cropping system ^g	Change in crop/cropping system ^h	Agronomic measures ⁱ	Remarks on Implementation ^j
		Sugarcane-Ratoon-Wheat	No change required	e.g CRI, Tillering & Flowering stage • Follow alternate wetting and drying schedule of irrigation in rice • Alternate Furrow irrigation • Mulching in sugarcane	• Adequate supply of electricity/diesel should be ensured by the Govt. agencies.
		Sorghum Fodder	Pearl millet/Sorghum Fodder		
		Sugarcane + Cucurbits	Sugarcane		

Condition			Suggested Contingency measures		
	Major Farming situation ^f	Normal Crop/cropping system ^g	Change in crop/cropping system ^h	Agronomic measures ⁱ	Remarks on Implementation ^j
Non release of water in canals under delayed onset of monsoon in catchment	Upland tube well irrigated canal sandy loam soil	Basmati rice	Maize/Aerobic Rice	• Limited irrigation • Alternate Furrow irrigation • Drip irrigation • Mulching	• Seed through KSSC and NFSM • Supply of inter cultural implements through RKVY •
		Sorghum/Maize	Pearl millet /Pigeonpea/Blackgram		
		Sugarcane + Cucurbits	Sugarcane		
	Lowland tube well irrigated canal clay loam soil	Rice	Pearl millet/Blackgram/ Greengram	• Limited irrigation • Alternate Furrow irrigation • Drip irrigation • Mulching • Alternate furrow irrigation	• Seed through KSSC and NFSM • Harvesting and threshing implements through RKVY
		Sorghum Fodder	Pearl millet/Sorghum Fodder		
		Sugarcane + Cucurbits	Sugarcane		
Condition			Suggested Contingency measures		
	Major Farming situation ^f	Normal Crop/cropping system ^g	Change in crop/cropping system ^h	Agronomic measures ⁱ	Remarks on Implementation ^j
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	1) Farming situation:	Cropping system 1:	NA	NA	NA

Condition			Suggested Contingency measures		
	Major Farming situation ^f	Normal Crop/cropping system ^g	Change in crop/cropping system ^h	Agronomic measures ⁱ	Remarks on Implementation ^j
Insufficient groundwater recharge due to low rainfall	Upland tube well irrigated canal sandy loam soil	Basmati rice	Maize/Aerobic Rice /Vegetable (Tomato, Brinjal, Cucurbitsetc)	• Limited irrigation • Alternate Furrow irrigation	• Seed through KSSC and NFSM • Harvesting and threshing implements through RKVY
		Sorghum/Maize	Pearl millet /Pigeonpea/Blackgram		

Condition			Suggested Contingency measures		
	Major Farming situation ^f	Normal Crop/cropping system ^g	Change in crop/cropping system ^h	Agronomic measures ⁱ	Remarks on Implementation ^j
		Sugarcane + Cucurbits	Sugarcane	• Drip irrigation • Mulching	
	Lowland tube well irrigated canal clay loam soil	Rice	Pearl millet/Blackgram/Greengram	• Limited irrigation • Alternate Furrow irrigation • Drip irrigation • Mulching • Alternate furrow irrigation	• Seed through KSSC and NFSM • Micro/drip/sprinkler irrigation under govt. schemes • Supply of inter cultural implements through RKVY
		Sorghum Fodder	Pearl millet /Sorghum Fodder		
		Sugarcane + cucurbits	Sugarcane		
Any other condition					

Resource management technologies

1. **Rainwater harvesting through permanent check dams** – Harvests runoff, recharges groundwater, and provides irrigation during dry periods.
2. **Groundwater recharge through recharge structures/open dug wells** – Improves groundwater availability and sustains protective irrigation during droughts.
3. **Sprinkler irrigation using harvested water** – Saves irrigation water while increasing pulse crop productivity in water-scarce regions.
4. **Laser land levelling** – Ensures uniform water distribution, conserves irrigation water, and enhances water-use efficiency.
5. **Polythene mulching for vegetables/crops** – Conserves soil moisture, suppresses weeds, and reduces evaporation losses.
6. **Raised bed sowing of pigeonpea and mustard in dryland areas** – Conserves moisture and safely drains excess rainwater, improving yields.
7. **Crop residue management (rice straw mulching) in wheat** – Conserves soil moisture, improves soil health, and mitigates salinity effects.
8. **Land levelling in sodic and flood-prone fields** – Improves water management and facilitates uniform crop establishment.
9. **Application of gypsum in alkali/sodic soils** – Reclaims sodic soils and enhances crop growth and productivity.
10. **Use of CSR-BIO (bioformulation) in rice under sodic soils** – Reduces sodium stress and improves rice performance in salt-affected areas.
11. **Application of Halo Azo and Halo PSB biofertilizers in wheat** – Enhances nutrient availability and alleviates salt stress in affected soils.
12. **Raised bed sowing of pigeonpea in flood-prone areas** – Improves drainage and minimizes crop losses due to waterlogging.

Actionable Comprehensive Plans for Contingency

State	UTTAR PRADESH	District	CHITRAKOOT
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	785.8	More than 19%	Less than 636.498
June	111.7		
July	245.8		
August	251.2		
September	177.1		

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

Irrigation info:

Net irrigated area:	79050	Gross irrigated area:	142276
Net Rainfed area	63342	Gross rainfed area	109616

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	6968	8927
Wells	57955	113801
Tanks	-	2595
Other sources	14127	16953

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	10312	9524	788
2	Jowar	36155	14580	21575
3	Maize	6	4	2
4	Bajra	11861	2902	8959
5	Ragi	1		1

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	25682	5644	20038
2	Groundnut	1		1
3	Sesamum	1636	320	1316
4	Soyabean	4		4
5	Sunflower	1		1
6	Castor	1		

Fibre

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

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	-		
2	Tobacco	5	5	0
3	Guar seed	-		10327
4	Other Fodder crops	10365	38	10327

Crop Plan- Beginning of the season

Condition			Suggested contingency measures		
Early season drought (delayed onset)	Major farming situation	Normal crop/ Cropping systems	Change in crops/ Cropping systems	Agronomic measures	Remark on implementation
Delay by 4 weeks 4 th week of July	Deep soil, Rakar, Parwa, Kabar, and maar Soil	Sesame- Pea Sesame-Gram Black Gram- Pea/Gram Jowar- Wheat Bajra- Wheat Pigeon Pea Green Gram- Lentil	Replace rice with Green gram, Black Gram & Sorghum, Green Gram - PM-8, PDM-11, Samrat, Jyoti, Jagriti, Janpriya, Black Gram - T-9 PU-19,PU-40,PU-35 Sekhar-1,2&3	Sesame on ridges, Mulching, Line Sowing , Light Irrigation, Weed Management and thinning,	Inter cropping

Contingency measures- Mid season

Condition	Suggested contingency measures
Mid season drought (Long dry spell consecutive 2 weeks rainless(.2.5mm period)	

At vegetative stage	Irrigated upland	Sesame- Pea Sesame-Gram Pigeon Pea	Pigeon Pea- NDR-1, NDR- 2,MA-6, MA-13	Life saving Irrigation, straw Mulch, Thinning, Inter cropping	
	Irrigated lowland	Rice-Wheat Black Gram- Pea/Gram Jowar- Wheat Bajra- Wheat Green Gram- Lentil	Use of drought tolerant rice varieties- NDR- 97, Susk Samrat Resowing & Gap filling Inter row harrowing	Life saving Irrigation, straw Mulch, Thinning, Inter cropping	
	Un Irrigated upland	Sesame- Pea Sesame-Gram Pigeon Pea	Til-T-78, Pragti, Sekhar	Life saving Irrigation, straw Mulch, Thinning, Inter cropping	
	Un Irrigated lowland	Black Gram- Pea/Gram	Green Gram- PM-8, PDM-11, Samrat, Jyoti, Jagriti, Janpriya, Black Gram- T- 9 PU-19,PU- 40,PU-35 Sekhar-1,2&3	Life saving Irrigation, straw Mulch, Thinning, Inter cropping	
At flowering / fruiting stage	Irrigated upland	Sesame- Pea Sesame-Gram Pigeon Pea	Life saving Irrigation, straw Mulch, Thinning, Inter cropping	Spraying of 2% urea as foliar application KCI Spray	
	Irrigated lowland	Rice-Wheat Black Gram- Pea/Gram Jowar- Wheat Bajra- Wheat Green Gram- Lentil	Life saving Irrigation, straw Mulch, Thinning, Inter cropping	Spraying of 2% urea as foliar application KCI Spray	
	Un Irrigated upland	Sesame- Pea Sesame-Gram Pigeon Pea	Life saving Irrigation, straw Mulch, Thinning, Inter cropping	Spraying of 2% urea as foliar application KCI Spray	
	Un Irrigated lowland	Black Gram- Pea/Gram	Life saving Irrigation, straw Mulch, Thinning, Inter cropping	Spraying of 2% urea as foliar application KCI Spray	

Contingency measures- End of the season

Condition			Suggested contingency measures		
Thermal drought (Early withdrawal of monsoon)	Irrigated upland	Sesame- Pea Sesame-Gram	Life saving Irrigation, straw Mulch, Thinning, Inter cropping	Toria	Early Rabi
	Irrigated lowland	Jowar- Wheat Bajra- Wheat Green Gram- Lentil	Life saving Irrigation, straw Mulch, Thinning, Inter cropping	Toria	Early Rabi
	Un Irrigated upland	Sesame- Pea Sesame-Gram Pigeon Pea	Life saving Irrigation, straw Mulch,	Toria	Early Rabi

			Thinning, Inter cropping		
	Un Irrigated lowland	Black Gram- Pea/Gram	Life saving Irrigation, straw Mulch, Thinning, Inter cropping	Toria	Early Rabi

2.1.2 Drought –Irrigated situation

Condition			Suggested contingency measures		
Early season drought (delayed onset)	Major farming situation	Normal crop/ Cropping systems	Change in crops/ Cropping systems	Agronomic measures	Remark on implementation
Delayed release of water in canals due to low rainfall	Sandy Loam soils	Rice- Wheat	Rice- Short duration Varieties- NDR-97, UPS-212, Susk Smrat, SSahbhagi	Direct sowing, Drum Seeder Micro irrigation	
		Millet- Mustard Pigeon Pea	No change	Micro irrigation/Thinning, Weed control	
		Sesame- Lentil Black gram/ Green gram	No change	Micro irrigation/Thinning, Weed control	
	clay /Silt loam soils	Soybean-Gram	No change	Micro irrigation/Thinning, Weed control	
		-	-	-	-
		-	-	-	-
Limited release of water in canals due to low rainfall	Sandy Loam soils	Rice- Wheat	Rice- Short duration Varieties- NDR-97, UPS-212, Susk Smrat, Sahbhagi	Direct sowing, Drum Seeder Micro irrigation	
		Millet- Mustard Pigeon Pea	No change	Micro irrigation/Thinning, Weed control	
		Sesame- Lentil Black gram/ Green gram	No change	Micro irrigation/Thinning, Weed control	
	clay loam soils	Soybean-Gram	No change	Micro irrigation/Thinning, Weed control	
		-	-	-	-
		-	-	-	-
Non release of water in canals under delayed onset of monsoon in catchment	Sandy Loam soils	Rice- Wheat	Rice may be replaced by Pulses Green Gram- Samrat, Janpriya, Jagriti Black Gram- T-9, PU-40, PU-35 Azad-3	Direct seeding in small beds, Use of Micro- irrigation/ Sub surface irrigation	
		Millet- Mustard Pigeon Pea	No change	Sowing of Pigeon pea at 90 cm+ two rows	

				of inter crops on ridges Use of Micro-irrigation/ Sub surface irrigation	
		Sesame- Lentil Black gram/ Green gram	No change	Direct seeding in small beds, Use of Micro- irrigation/ Sub surface irrigation	
	clay loam soils	Soybean-Gram	No change	Direct seeding in small beds, Use of Micro- irrigation/ Sub surface irrigation	
Insufficient water recharge due to low rainfall	Upland tube well irrigated canal Sandy Loam soils	Rice- Wheat	Rice may be replaced by Pulses Green Gram- Samrat, Janpriya, Jagriti Black Gram- T-9, PU-40, PU-35 Azad-3	Direct seeding in small beds, Use of Micro- irrigation/ Sub surface irrigation	
		Millets- Mustard Pigeon Pea	No change	Sowing of Pigeon pea at 90 cm+ two rows of inter crops on ridges Use of Micro-irrigation/ Sub surface irrigation	
		Sesame- Lentil Black gram/ Green gram	No change	Direct seeding in small beds, Use of Micro- irrigation/ Sub surface irrigation	
	Lowland tube well irrigated canal clay loam soils	Soybean-Gram	No change	Direct seeding in small beds, Use of Micro- irrigation/ Sub surface irrigation	

Resource management technologies

Rainwater harvesting through permanent check dams – Harvests runoff, recharges groundwater, and provides irrigation during dry periods.

Groundwater recharge through recharge structures/open dug wells – Improves groundwater availability and sustains protective irrigation during droughts.

Sprinkler irrigation using harvested water – Saves irrigation water while increasing pulse crop productivity in water-scarce regions.

Laser land levelling – Ensures uniform water distribution, conserves irrigation water, and enhances water-use efficiency.

Polythene mulching for vegetables/crops – Conserves soil moisture, suppresses weeds, and reduces evaporation losses.

Raised bed sowing of pigeonpea and mustard in dryland areas – Conserves moisture and safely drains excess rainwater, improving yields.

Crop residue management (rice straw mulching) in wheat – Conserves soil moisture, improves soil health, and mitigates salinity effects.

Land levelling in sodic and flood-prone fields – Improves water management and facilitates uniform crop establishment.

Application of gypsum in alkali/sodic soils – Reclaims sodic soils and enhances crop growth and productivity.

Use of CSR-BIO (bioformulation) in rice under sodic soils – Reduces sodium stress and improves rice performance in salt-affected areas.

Application of Halo Azo and Halo PSB biofertilizers in wheat – Enhances nutrient availability and alleviates salt stress in affected soils.

Raised bed sowing of pigeonpea in flood-prone areas – Improves drainage and minimizes crop losses due to waterlogging.

Actionable Comprehensive Plans for Contingency

State	UTTAR PRADESH	District	DEORIA
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	781.4	More than 19%	Less than 632.934
June	127.2		
July	269.1		
August	210.2		
September	174.9		

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

Irrigation info:

Net irrigated area:	183152	Gross irrigated area:	339140
Net Rainfed area	21461	Gross rainfed area	34612

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	5679	7187
Wells	169156	321984
Tanks	-	84
Other sources	8317	9885

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	136079	124153	11926
2	Jowar	99	44	55
3	Maize	7252	4799	2453
4	Bajra	162	43	119
5	Ragi	3	2	1

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	6093	1401	4692
2	Groundnut	1982	535	1447
3	Sesamum	116	30	86
4	Soyabean	-		
5	Sunflower	1		1
6	Castor	1		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
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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	11856	11500	356
2	Tobacco	-		
3	Guar seed	-		30
4	Other Fodder crops	203	173	30

Crop Plan- Beginning of the season

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming situation ^a	Normal Crop/cropping system ^b	Change in crop/cropping system ^c	Agronomic measures ^d	Remarks on Implementation ^e
Delay by 4 weeks 3 rd week of July	Upland	Rice-Lentil/ Rice – Chickpea/ Rice-Mustard/ Rice – Barley/ Maize – Lentil/ Maize – Chickpea/ Pigeonpea (sole crop) Rabi crops Lentil:Malviya Vishwanath, PL406, PL639 & KLS-218 Mustard :Varuna, Ashirvad, Vardan Chickpea: Type 6 & BG 256 Barley:K 125, K 141, K 226 & K 560	Rice (short duration varieties) : NDR 97, NDR 118, Varani Deep, Vandana, Govind, Shushk Samrat, Ashwini, Maize :Hybrids: MalaviyaMakka-2, Ganga 2, Ganga 11, Shaktiman 2 ; Composite : Naveen, Kanchan, Sweta, Prabhat, gaurav, Pragati; Desi : Jaunpuri Pigeonpea : Bahar, Narendra Arahar1, Malviya Vakas(MA6) &MalviyaChamtakar (MA13)	Sowing with seed cum ferti drills across the slope and re-sowing if no proper germination. Soil moisture conservation practices such as soil mulching with sugarcane leaves may be utilized.	Breeder seed may be obtained from the University Seed drills under RKVY Supply of seeds through NFSM
		Pigeonpea + Groundnut	Pigeonpea+ Groundnut Groundnut:Chandra, Chitra, Kaushal, Prakash, Utkarsh	Sowing of maize between two rows of sugarcane on ridges.	
	Medium land	Rice-Lentil/ Rice-Mustard/ Rice – Pea/ Rice – Chickpea/ Maize – Pea Rabi crops Lentil:Malviya Vishwanath,	Early maturing, semi dwarf and HYV rice : NDR 97, NDR 118, Ratna, IR-36, NDR-80, Pant Dhan-12, HUR-105 and Pant Shankar dhan-1	Sowing with seed cum ferti drills and re-sowing if no proper germination. Weed management through dry land weeder & also through weedicides.	

		PL406, PL639 & KLS-218) Mustard :Varuna, Ashirvad, Vardan Pea : HUDP 15, Rachana, HUP-2, HUDP-2		Conservation furrow, interculture, surface water management	
		Sugarcane + Maize/ Sugarcane + Mustard/ Pigeon pea + Ground nut	Sugarcane + Maize Pigeonpea + Groundnut	Sowing should be done on ridges of main as well as intercrops.	
	Lowland	Rice-Pea/ Rice –Barley Rabi Crops Pea: HUDP 15, Rachana, HUP-2, HUDP-2 Barley: K 125, K 141, K 226 & K 560	MTU-7029, BPT-5204, NDR-8002, Jalmagana, Madhukar, Jal Priya, Jal Nidhi, Bar Avarodhi	Transplanting of rice seedlings should be started with the onset of the monsoon through community base nursery	

Contingency measures- Mid season

Condition			Suggested Contingency measures		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	Major Farming situation ^a	Normal Crop/cropping system ^b	Crop management ^c	Soil nutrient & moisture conservation measures ^d	Remarks on Implementation ^e
At vegetative stage	Upland	Rice-Lentil/ Rice – Chickpea/ Rice-Mustard/ Rice - Barley Maize – Lentil/ Maize - Chickpea Pigeon pea (sole crop) Genotypes of crops-as given above	Life saving irrigation, if possible Dust/ straw mulch Thinning Inter row harrowing	Use of additional N @10kg/ha Spray 2% urea as foliar application Conservation furrow	
		Pigeonpea + Groundnut	Earthing up and thinning of intercrops to maintain proper distance between the plants.	Conservation tillage Spray of 2% urea as foliar application	
	Medium land	Rice-Lentil/ Rice-Mustard/ Rice – Pea/ Rice – Chickpea/	Life saving irrigation if possible Dust/ straw mulch	Use of additional N @10kg/ha	

		Maize – Pea Genotypes of crops- as above	Thinning Inter row harrowing	Spray 2% urea as foliar application Conservation furrow	
	Lowland	Rice-Pea/ Rice –Barley	Life saving irrigation if possible Dust/ straw mulch Thinning Inter row harrowing	Use of additional N @10kg/ha Spray 2% urea as foliar application Conservation furrow	
Condition			Suggested Contingency measures		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	Major Farming situation^a	Normal Crop/cropping system^b	Crop management^c	Soil nutrient & moisture conservation measures^d	Remarks on Implementation^e
At vegetative stage	Upland	Rice-Lentil/ Rice – Chickpea/ Rice-Mustard/ Rice - Barley Maize – Lentil/ Maize - Chickpea Pigeon pea (sole crop) Genotypes of crops-as given above	Life saving irrigation, if possible Dust/ straw mulch Thinning Inter row harrowing	Use of additional N @10kg/ha Spray 2% urea as foliar application Conservation furrow	
		Pigeonpea + Groundnut	Earthing up and thinning of intercrops to maintain proper distance between the plants.	Conservation tillage Spray of 2% urea as foliar application	
	Medium land	Rice-Lentil/ Rice-Mustard/ Rice – Pea/ Rice – Chickpea/ Maize – Pea Genotypes of crops- as above	Life saving irrigation if possible Dust/ straw mulch Thinning Inter row harrowing	Use of additional N @10kg/ha Spray 2% urea as foliar application Conservation furrow	
	Lowland	Rice-Pea/ Rice –Barley	Life saving irrigation if possible Dust/ straw mulch Thinning Inter row harrowing	Use of additional N @10kg/ha Spray 2% urea as foliar application Conservation furrow	

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	Major Farming situation ^a	Normal Crop/cropping system ^b	Crop Management ^c	Soilnutrient&moisture conservation measures ^d	Remarks on Implementation ^e
At flowering/ fruiting stage	Upland	Rice-Lentil/ Rice – Chickpea/ Rice-Mustard/ Rice - Barley Maize – Lentil/ Maize - Chickpea Pigeon pea (sole crop) Genotypes of crops-as given above	Life saving irrigation if possible Harvest maize for fodder purposes	1) Spraying 2% urea as foliar application. 2) KCI Spray	Farmers may be advised to work in NREGS & CLDP in the spare time
		Pigeonpea + Groundnut	If there is no winter rain , give light irrigation to Pigeon pea crop	1) Spraying 2% urea as foliar application. 2) KCI Spray	Farmers may be advised to work in NREGS & CLDP in the spare time
	Medium land	Rice-Lentil/ Rice-Mustard/ Rice – Pea/ Rice – Chickpea/ Maize – Pea Genotypes of crops- as above	Life saving irrigation to rice – one or two depending upon availability of water in canal	1) Spraying of 2% urea as foliar application. 2) KCI Spray	Farmers may be advised to work in NREGS &CLDP in the spare time
	Lowland	Rice-Pea/ Rice –Barley	Life saving irrigation, if possible Dust/ straw mulch Thinning Inter row harrowing	Use of additional N @10kg/ha Spray 2% urea as foliar application Conservation furrow Use of Azotobacter/ Azospirillum Use of Blue Green algae @12.5kg/ha after 3-4 days of transplanting of rice seedlings	

Contingency measures- End of the season

Condition			Suggested Contingency measures		
Terminal drought (Early withdrawal of monsoon)	Major Farming situation ^a	Normal Crop/cropping system ^b	Crop Management ^c	Rabi Crop planning ^d	Remarks on Implementation ^e
	Upland	Rice-Lentil/ Rice – Chickpea/ Rice-Mustard/ Rice - Barley	Life saving irrigation, if possible Dust/ straw mulch Inter row harrowing	Toria/Agati mustard may be sown during last week of	

		Maize – Lentil/ Maize - Chickpea Pigeonpea (sole crop) Genotypes of crops-as given above	Defoliate older leaves Harvesting at physiological maturity.	September to middle of October.	
		Pigeonpea + Groundnut	1) Harvesting at physiological maturity 2) Life saving irrigation, if possible to Pigeonpea 3) Harvesting of pearl millet for fodder Purposes if inter cropped at the place of ground nut	1) Spraying of 2% urea as foliar application. 2) KCI Spray	Farmers may be advised to work in NREGS &CLDP in the spare time
	Medium land	Rice-Lentil/ Rice-Mustard/ Rice – Pea/ Rice – Chickpea/ Maize – Pea Genotypes of crops- as above	Life saving irrigation Dust/ straw mulch Inter row harrowing Defoliate older leaves Harvesting at physiological maturity.	Toria/Agati mustard may be sown during last week of September to middle of October.	
	Lowland	Rice-Pea/ Rice –Barley	Life saving irrigation Dust/ straw mulch Inter row harrowing Defoliate older leaves Harvesting at physiological maturity.	Use of Azotobacter/ Azospirillum Use of Blue Green Algae @12.5kg/ha after 3-4 days of transplanting of rice seedlings. Toria/Agati mustard may be sown during last week of September to middle of October	

2.1.2 Drought - Irrigated situation

Condition	Suggested Contingency measures				
	Major Farming situation ^f	Normal Crop/cropping system ^g	Change in crop/cropping system ^h	Agronomic measures ⁱ	Remarks on Implementation ^j
Delayed release of water in canals due to low rainfall	Medium land	Rice-Wheat/ Rice-Pea / Rice-Mustard/ Maize-potato/ Rice-Wheat-Sugarcane (2 years) Rice-Maize (Rabi)/ Green gram Maize : Hybrids- Malaviya Makka-2, Ganga 2, Ganga 11, Shaktiman 2; Composite :Naveen, Kanchan, Sweta, Prabhat, gaurav, Pragati;	Rice short duration varieties: NDR 97, NDR 118, Varani Deep, Vandana, Govind, Shushk Samrat, Ashwini	Community nursery, Direct seeding in small beds. Use of micro-irrigation systems viz. sprinkler & sub-surface irrigation.	Breeders seed will be supplied by BHU and NDAU, Faizabad. Seed drills RKVY and supply of seeds NFSM

Condition			Suggested Contingency measures		
	Major Farming situation ^f	Normal Crop/cropping system ^g	Change in crop/cropping system ^h	Agronomic measures ⁱ	Remarks on Implementation ^j
		Desi – Jaunpuri Rabi crops Wheat: HUW-468, HD-2824, UP-2338, K-9107 Pea: Rachna, HUDD-15, DDR-23, KPMR-144-1 Toria: T-9, Bhavani, NDR angati rai-4, PT-30, PT-507 Mustard :Varuna, Ashirvad, Vardan Sugarcane : CoS-96268, CoLK-94184 and Local Potato:Kufrisadabahaar, Kufrisindhuri, Kufriyoti			
	Lowland	Rice-Wheat/ Rice-Pea/ Rice-Mustard/ Maize-potato/ Rice-wheat-sugarcane/ (2 years) Rice-Maize (Rabi)/Green gram Genotypes of crops- as above	Rice varieties: Swarna, Cross-116, MTU-7029, BPT-5204	Transplanting of rice seedlings should be completed before 15 th of July through community base nursery	Breeder seed may be obtained from the University Seed drills under RKVY Supply of seeds through NFSM
Limited release of water in canals due to low rainfall	Medium land	Rice-Wheat/ Rice-Pea/ Rice-Mustard/ Maize-potato/ Rice-wheat-sugarcane/ (2 years) Rice-maize (Rabi)/Green gram Genotypes of crops- as above	Short duration rice varieties: NDR-118, NDR-97, Pant dhan-12, HUR-105, Vandana, Sushksamrat, Ashwini to be grown under aerobic condition.	Community nursery, Direct seeding in small beds. Use of micro-irrigation systems viz. sprinkler & sub-surface irrigation.	Breeders seed will be supplied by BHU and NDAU, Faizabad. Seed drills RKVY and supply of seeds NFSM
	Lowland	Rice-Wheat/ Rice-Pea/ Rice-Mustard/ Maize-potato/ Rice-wheat-sugarcane/ (2 years) Rice-Maize (Rabi)/Green gram Genotypes of crops- as above	Tall rice varieties: Swarna, Cross-116, MTU-7029 and BPT-5204	Transplanting of rice seed lings should be completed before 15 th of July through community base nursery	Breeder seed may be obtained from the University Seed drills under RKVY Supply of seeds through NFSM

Condition			Suggested Contingency measures		
	Major Farming situation ^f	Normal Crop/cropping system ^g	Change in crop/cropping system ^h	Agronomic measures ⁱ	Remarks on Implementation ^j
Non release of water in canals under delayed onset of monsoon in catchment	Medium land	Rice-Wheat/ Rice-Pea/ Rice-Mustard/ Maize-potato/ Rice-wheat-sugarcane/	Early maturing, semi dwarf and HYV rice: Saket-4, NDR 97, NDR 118, Govind, Ashwini, HUR-105 and Pant shankar dhan-1	Direct sowing in lines through Seed-cum Ferti drill Use of dust and straw mulch.	Breeder seed may be obtained from the University Seed drills under RKVY

Condition			Suggested Contingency measures		
	Major Farming situation ^f	Normal Crop/cropping system ^g	Change in crop/cropping system ^h	Agronomic measures ⁱ	Remarks on Implementation ^j
		(2 years) Rice-Maize (Rabi)/Green gram Genotypes of crops- as above			Supply of seeds through NFSM
	Lowland	Rice-Wheat/ Rice-Pea/ Rice-Mustard/ Maize-potato/ Rice-wheat-sugarcane/ (2 years) Rice-Maize (Rabi)/Green gram Genotypes of crops- as above	Tall rice: Type-3, Type-23, Mahsoori and Swarna	After heavy rainfall transplanting may be done with seedlings from community nursery.	Breeder seed may be obtained from the University Seed drills under RKVY Supply of seeds through NFSM
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	Medium & lowland	Rice-Wheat/ Rice-Pea/ Rice-Mustard/ Maize-potato/ Rice-Wheat-Sugarcane/ (2 years) Rice-Maize (Rabi)/Green gram Genotypes of crops- as above	Early maturing, semi dwarf and HYV rice : Saket-4, NDR 97, NDR 118, Govind, Ashwini, HUR-105 and Pant Shankar dhan-1 / Sorghum (fodder) and pearl millet	Conservation tillage.	Breeders seed will be supplied by BHU and NDAU, Faizabad. Seed drills RKVY and supply of seeds NFSM

Condition			Suggested Contingency measures		
	Major Farming situation ^f	Normal Crop/cropping system ^g	Change in crop/cropping system ^h	Agronomic measures ⁱ	Remarks on Implementation ^j
Insufficient groundwater recharge due to low rainfall	Medium & lowland	Rice-Wheat/ Rice-Pea/ Rice-Mustard/ Maize-potato/ Rice-Wheat-Sugarcane/ (2 years) Rice-Maize (Rabi)/Green gram Genotypes of crops- as above	Pulses (Blackgram), Oilseeds (Sesame, Ground nut)	Direct seeding in small beds. Use of micro-irrigation systems viz. sprinkler & sub-surface irrigation.	Breeders seed will be supplied by BHU and NDAU, Faizabad. Seed drills RKVY and supply of seeds NFSM

Resource management technologies

Rainwater harvesting through permanent check dams – Harvests runoff, recharges groundwater, and provides irrigation during dry periods.

Groundwater recharge through recharge structures/open dug wells – Improves groundwater availability and sustains protective irrigation during droughts.

Sprinkler irrigation using harvested water – Saves irrigation water while increasing pulse crop productivity in water-scarce regions.

Laser land levelling – Ensures uniform water distribution, conserves irrigation water, and enhances water-use efficiency.

Polythene mulching for vegetables/crops – Conserves soil moisture, suppresses weeds, and reduces evaporation losses.

Raised bed sowing of pigeonpea and mustard in dryland areas – Conserves moisture and safely drains excess rainwater, improving yields.

Crop residue management (rice straw mulching) in wheat – Conserves soil moisture, improves soil health, and mitigates salinity effects.

Land levelling in sodic and flood-prone fields – Improves water management and facilitates uniform crop establishment.

Application of gypsum in alkali/sodic soils – Reclaims sodic soils and enhances crop growth and productivity.

Use of CSR-BIO (bioformulation) in rice under sodic soils – Reduces sodium stress and improves rice performance in salt-affected areas.

Application of Halo Azo and Halo PSB biofertilizers in wheat – Enhances nutrient availability and alleviates salt stress in affected soils.

Raised bed sowing of pigeonpea in flood-prone areas – Improves drainage and minimizes crop losses due to waterlogging.

Actionable Comprehensive Plans for Contingency

State	UTTAR PRADESH	District	FARRUKHABAD
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	727.9	More than 19%	Less than 589.599
June	77.6		
July	255		
August	226		
September	169.3		

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

Irrigation info:

Net irrigated area:	134983	Gross irrigated area:	236983
Net Rainfed area	6732	Gross rainfed area	39999

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	692	852
Wells	106831	186537
Tanks	-	69
Other sources	27460	49525

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	13842	13016	826
2	Jowar	1215	535	680
3	Maize	62599	46555	16044
4	Bajra	7303	1900	5403
5	Ragi	2	1	1

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	1385	319	1066
2	Groundnut	1501	405	1096
3	Sesamum	4184	835	3349
4	Soyabean	-		
5	Sunflower	1	1	0
6	Castor	1		

Fibre

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

3	Mesta	-		
4	Sunhemp	26		26

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	9923	9625	298
2	Tobacco	7206	7181	25
3	Guar seed	-		239
4	Other Fodder crops	1693	1454	239

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 3 rd week	Normal rainfall sandy loam soils	Maize	Crop replace by sesame –T-78, Pragti, Sekhar	Line sowing,	Linked with SDC
		Pearlmillet	Cropping system 2:Perlmillet Composite- ICMB-155, WCC-75,ICTP-8203 and Raj-171 Hybride- Pusa-23 & 322 and ICMH-451	Use medium maturing varieties, Thinning, Intercultivation, Mulching	Use disease free certified seed from a reliable source
		Sorghum	Cropping system 1: Sorghum Composite- Varsha, CSV-13 & CSV-15, Hybrid- CSH-9, 16, and CSH-14	Use medium maturing varieties, Thinning, Intercultivation, Mulching	Use disease free certified seed from a reliable source

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	Normal rainfall sandy loam soils	Maize	Cropping system 3: Maize Composite- Naveen, Azad uttam, Pragati,Gaurav and KH-510 Hybrid- Ganga-11, Sartaj , HQPM-5 and Prakash, JH-3459	Thinning, Intercultivation, Mulching	Wider plant spacing by thinning
		Pearlmillet	Cropping system 2:Perlmillet Composite- ICMB-155, WCC-75,ICTP-8203 and Raj-171 Hybrid- Pusa-23 & 322 and ICMH-451	Thinning, Intercultivation, Mulching	Wider plant spacing by thinning

		Sorghum	Cropping system 1: Sorghum Composite- Varsha, CSV-13, CSV-15,SPB-1388 and Vijeta Hybrid- CSH-9, 16,14,18,13 and CSH-23	Thinning, Intercultivation, Mulching	Wider plant spacing by thinning
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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	sandy loam soils	Maize	Cropping system 3: Maize Composite- Naveen, Azad uttam, Pragati,Gaurav and KH-510 Hybrid- Ganga-11, Sartaj , HQPM-5 and Prakash, JH-3459	Spray 2% solution of Urea , Mulching	Linked with U.P Agro/PCF
		Pearlmillet	Cropping system 2:Perlmillet Composite- ICMB-155, WCC-75,ICTP-8203 and Raj-171 Hybrid- Pusa-23 & 322 and ICMH-451	Spray 2% solution of Urea , Mulching	
		Sorghum	Cropping system 1: Sorghum Composite- Varsha, CSV-13, CSV-15,SPB-1388 and Vijeta Hybrid- CSH-9, 16,14,18,13 and CSH-23	Spray 2% solution of Urea , Mulching	

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
	Normal rainfall sandy loam soils	Maize	Cropping system 3: Maize Composite- Naveen, Azad uttam, Pragati,Gaurav and KH-510 Hybrid- Ganga-11, Sartaj , HQPM-5 and Prakash, JH-3459	Planning for early potato	Linked with NSC/ Deptt. Of hort.
		Pearlmillet	Cropping system 2:Perlmillet Composite- ICMB-155, WCC-75,ICTP-8203 and Raj-171 Hybrid- Pusa-23 & 322 and ICMH-451	Planning for early potato	
		Sorghum	Cropping system 1: Sorghum Composite- Varsha, CSV-13, CSV-15,SPB-1388 and Vijeta	Planning for early potato	

			Hybrid- CSH-9, 16,14,18,13 and CSH-23		
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2.1.2 Drought - Irrigated situation

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delayed release of water in canals due to low rainfall	Normal rainfall Loam Soil	Cropping system 1:Paddy (Transplanted) Rain-fed ; Govind, Narendra-118,97 , Ashwani, Irrigated (Early) Saket-4, Ratna, Pant-12, Narendra-80, 2026 Irrigated (Medium) Sarjoo-52, Pant-4, Narendra-359, 2026,2064 Irrigated (Late)- Type-3, PB-1, Kashturi, Narendra lalmati and Malva sugandh	Direct seeded Paddy Saket-4, Ratna, Pant-12, Narendra-80, 2026	Limited irrigation, weed management	Linked with SDC/SAUs
		Cropping system 2:			

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	Normal rainfall Loam Soil	Cropping system 1:Paddy (Transplanted) Rain-fed ; Govind, Narendra-118,97 , Ashwani, Irrigated (Early) Saket-4, Ratna, Pant-12, Narendra-80, 2026 Irrigated (Medium) Sarjoo-52, Pant-4, Narendra-359, 2026,2064 Irrigated (Late)- Type-3, PB-1, Kashturi, Narendra lalmati and Malva sugandh	Direct seeded Paddy Saket-4, Ratna, Pant-12, Narendra-80, 2026	Limited irrigation, weed management	Linked with SDC/SAUs
		Wheat			
		potato			

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	Loam Soil	Cropping system 1:Paddy (Transplanted) Rain-fed ; Govind, Narendra-118,97 , Ashwani, Irrigated (Early) Saket-4, Ratna, Pant-12, Narendra-80, 2026 Irrigated (Medium) Sarjoo-52, Pant-4, Narendra-359, 2026,2064 Irrigated (Late)- Type-3, PB-1, Kashturi, Narendra lalmati and Malvya sugandh	Direct seeded Paddy Saket-4, Ratna, Pant-12, Narendra-80, 2026	Limited irrigation, weed management	Linked with SDC/SAUs

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	Loam Soil	Cropping system 1:Paddy (Transplanted) Rain-fed ; Govind, Narendra-118,97 , Ashwani, Irrigated (Early) Saket-4, Ratna, Pant-12, Narendra-80, 2026 Irrigated (Medium) Sarjoo-52, Pant-4, Narendra-359, 2026,2064 Irrigated (Late)- Type-3, PB-1, Kashturi, Narendra lalmati and Malvya sugandh	Direct seeded Paddy Saket-4, Ratna, Pant-12, Narendra-80, 2026	Limited irrigation, weed management	Linked with SDC/SAUs

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	Loam Soil	Paddy	Catch crop Toria T-9, T-36, PT-30 and PT-303 as per situation	Limited irrigation, Weeding and Management of Pest and Disease	Seed supply through Govt. approved seed centers

Resource management technologies

Rainwater harvesting through permanent check dams – Harvests runoff, recharges groundwater, and provides irrigation during dry periods.

Groundwater recharge through recharge structures/open dug wells – Improves groundwater availability and sustains protective irrigation during droughts.

Sprinkler irrigation using harvested water – Saves irrigation water while increasing pulse crop productivity in water-scarce regions.

Laser land levelling – Ensures uniform water distribution, conserves irrigation water, and enhances water-use efficiency.

Polythene mulching for vegetables/crops – Conserves soil moisture, suppresses weeds, and reduces evaporation losses.

Raised bed sowing of pigeonpea and mustard in dryland areas – Conserves moisture and safely drains excess rainwater, improving yields.

Crop residue management (rice straw mulching) in wheat – Conserves soil moisture, improves soil health, and mitigates salinity effects.

Land levelling in sodic and flood-prone fields – Improves water management and facilitates uniform crop establishment.

Application of gypsum in alkali/sodic soils – Reclaims sodic soils and enhances crop growth and productivity.

Use of CSR-BIO (bioformulation) in rice under sodic soils – Reduces sodium stress and improves rice performance in salt-affected areas.

Application of Halo Azo and Halo PSB biofertilizers in wheat – Enhances nutrient availability and alleviates salt stress in affected soils.

Raised bed sowing of pigeonpea in flood-prone areas – Improves drainage and minimizes crop losses due to waterlogging.

Actionable Comprehensive Plans for Contingency

State	UTTAR PRADESH	District	JHANSI
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	721.5	More than 19%	Less than 584.415
June	89.3		
July	239.1		
August	225.6		
September	167.5		

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

Irrigation info:

Net irrigated area:	255898	Gross irrigated area:	413588
Net Rainfed area	151745	Gross rainfed area	286857

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	81377	98681
Wells	72746	208098
Tanks	-	5034
Other sources	101775	101775

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	9461	7959	1502
2	Jowar	2318	1019	1299
3	Maize	1602	979	623
4	Bajra	8	2	6
5	Ragi	1		1

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	2		2
2	Groundnut	26451	7142	19309
3	Sesamum	108428	20579	87849
4	Soyabean	2550	102	2448
5	Sunflower	22	3	19
6	Castor	4		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	-		
2	Jute	6		6

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	-		41
4	Other Fodder crops	368	327	41

Crop Plan- Beginning of the season

Condition			Suggested contingency measures		
Early season drought (delayed onset)	Major farming situation	Normal crop/ Cropping systems	Change in crops/ Cropping systems	Agronomic measures	Remark on implementation
Delay by 4 weeks 4 th week of July	Deep soil, Rakar, Parwa, Kabar, and maar Soil	Sesame- Pea Sesame-Gram Black Gram- Pea/Gram Jowar- Wheat Bajra- Wheat Pigeon Pea Green Gram- Lentil	Replace rice with Green gram, Black Gram & Sorghum, Green Gram- PM-8, PDM-11, Samrat, Jyoti, Jagriti, Janpriya, Black Gram- T-9 PU-19,PU-40,PU-35 Sekhar-1,2&3	Sesame on ridges, Mulching, Line Sowing , Light Irrigation, Weed Management and thinning,	Inter cropping

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 systems	Crop management	Soil nutrient & moisture conservation measures	Remark on implementation
At vegetative stage	Irrigated upland	Sesame- Pea Sesame-Gram Pigeon Pea	Pigeon Pea- NDR-1, NDR-2,MA-6, MA-13	Life saving Irrigation, straw Mulch, Thinning, Inter cropping	
	Irrigated lowland	Rice-Wheat Black Gram- Pea/Gram Jowar- Wheat Bajra- Wheat Green Gram- Lentil	Use of drought tolerant rice varieties- NDR-97, Susk Samrat Resowing & Gap filling Inter row harrowing	Life saving Irrigation, straw Mulch, Thinning, Inter cropping	
	Un Irrigated upland	Sesame- Pea Sesame-Gram Pigeon Pea	Til-T-78, Pragti, Sekhar	Life saving Irrigation, straw Mulch, Thinning, Inter cropping	
	Un Irrigated lowland	Black Gram- Pea/Gram	Green Gram- PM-8, PDM-11, Samrat, Jyoti, Jagriti, Janpriya, Black Gram- T-9 PU-19,PU-	Life saving Irrigation, straw Mulch, Thinning, Inter cropping	

			40,PU-35 Sekhar-1,2&3		
At flowering / fruiting stage	Irrigated upland	Sesame- Pea Sesame-Gram Pigeon Pea	Life saving Irrigation, straw Mulch, Thining, Inter cropping	Spraying of 2% urea as foliar application KCI Spray	
	Irrigated lowland	Rice-Wheat Black Gram- Pea/Gram Jowar- Wheat Bajra- Wheat Green Gram- Lentil	Life saving Irrigation, straw Mulch, Thinning, Inter cropping	Spraying of 2% urea as foliar application KCI Spray	
	Un Irrigated upland	Sesame- Pea Sesame-Gram Pigeon Pea	Life saving Irrigation, straw Mulch, Thinning, Inter cropping	Spraying of 2% urea as foliar application KCI Spray	
	Un Irrigated lowland	Black Gram- Pea/Gram	Life saving Irrigation, straw Mulch, Thining, Inter cropping	Spraying of 2% urea as foliar application KCI Spray	
	Irrigated lowland	Jowar- Wheat Bajra- Wheat Green Gram- Lentil	Life saving Irrigation, straw Mulch, Thinning, Inter cropping	Toria	Early Rabi
	Un Irrigated upland	Sesame- Pea Sesame-Gram Pigeon Pea	Life saving Irrigation, straw Mulch, Thinning, Inter cropping	Toria	Early Rabi
	Un Irrigated lowland	Black Gram- Pea/Gram	Life saving Irrigation, straw Mulch, Thinning, Inter cropping	Toria	Early Rabi

Contingency measures- End of the season

Condition			Suggested contingency measures		
Thermal drought (Early withdrawal of monsoon)	Major farming situation	Normal crop/ Cropping systems	Crop management	Soil nutrient & moisture conservation measures	Remark on implementation
	Irrigated upland	Sesame- Pea Sesame-Gram	Life saving Irrigation, straw Mulch, Thinning, Inter cropping	Toria	Early Rabi
	Irrigated lowland	Jowar- Wheat Bajra- Wheat Green Gram- Lentil	Life saving Irrigation, straw Mulch, Thinning, Inter cropping	Toria	Early Rabi
	Un Irrigated upland	Sesame- Pea Sesame-Gram Pigeon Pea	Life saving Irrigation, straw Mulch, Thinning, Inter cropping	Toria	Early Rabi

	Un Irrigated lowland	Black Gram- Pea/Gram	Life saving Irrigation, straw Mulch, Thinning, Inter cropping	Toria	Early Rabi
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2.1.2 Drought –Irrigated situation

Condition			Suggested contingency measures		
Early season drought (delayed onset)	Major farming situation	Normal crop/ Cropping systems	Change in crops/ Cropping systems	Agronomic measures	Remark on implementation
Delayed release of water in canals due to low rainfall	Sandy Loam soils	Rice- Wheat	Rice- Short duration Varieties- NDR-97, UPS-212, SuskSmrat, Sahbhagi	Direct sowing, Drum Seeder Micro irrigation	
		Millet- Mustard Pigeon Pea	No change	Micro irrigation/Thinning, Weed control	
		Sesame- Lentil Black gram/ Green gram	No change	Micro irrigation/Thinning, Weed control	
	clay /Silt loam soils	Soybean-Gram	No change	Micro irrigation/Thinning, Weed control	
		-	-	-	-
		-	-	-	-
Limited release of water in canals due to low rainfall	Sandy Loam soils	Rice- Wheat	Rice- Short duration Varieties- NDR-97, UPS-212, SuskSmrat, Sahbhagi	Direct sowing, Drum Seeder Micro irrigation	
		Millet- Mustard Pigeon Pea	No change	Micro irrigation/Thinning, Weed control	
		Sesame- Lentil Black gram/ Green gram	No change	Micro irrigation/Thinning, Weed control	
	clay loam soils	Soybean-Gram	No change	Micro irrigation/Thinning, Weed control	
		-	-	-	-
		-	-	-	-
Non release of water in canals under delayed onset of monsoon in catchment	Sandy Loam soils	Rice- Wheat	Rice may be replaced by Pulses Green Gram- Samrat, Janpriya, Jagriti Black Gram- T-9, PU-40, PU-35 Azad-3	Direct seeding in small beds, Use of Micro- irrigation/ Sub surface irrigation	
		Millet- Mustard Pigeon Pea	No change	Sowing of Pigeon pea at 90 cm+ two rows of inter crops on ridges	

				Use of Micro-irrigation/ Sub surface irrigation	
		Sesame- Lentil Black gram/ Green gram	No change	Direct seeding in small beds, Use of Micro- irrigation/ Sub surface irrigation	
	clay loam soils	Soybean-Gram	No change	Direct seeding in small beds, Use of Micro- irrigation/ Sub surface irrigation	
Insufficient water recharge due to low rainfall	Upland tube well irrigated canal Sandy Loam soils	Rice- Wheat	Rice may be replaced by Pulses Green Gram- Samrat, Janpriya, Jagriti Black Gram- T-9, PU-40, PU-35 Azad-3	Direct seeding in small beds, Use of Micro- irrigation/ Sub surface irrigation	
		Millet- Mustard Pigeon Pea	No change	Sowing of Pigeon pea at 90 cm+ two rows of inter crops on ridges Use of Micro- irrigation/ Sub surface irrigation	
		Sesame- Lentil Black gram/ Green gram	No change	Direct seeding in small beds, Use of Micro- irrigation/ Sub surface irrigation	
	Lowland tube well irrigated canal clay loam soils	Soybean-Gram	No change	Direct seeding in small beds, Use of Micro- irrigation/ Sub surface irrigation	

Resource management technologies

Rainwater harvesting through permanent check dams – Harvests runoff, recharges groundwater, and provides irrigation during dry periods.

Groundwater recharge through recharge structures/open dug wells – Improves groundwater availability and sustains protective irrigation during droughts.

Sprinkler irrigation using harvested water – Saves irrigation water while increasing pulse crop productivity in water-scarce regions.

Laser land levelling – Ensures uniform water distribution, conserves irrigation water, and enhances water-use efficiency.

Polythene mulching for vegetables/crops – Conserves soil moisture, suppresses weeds, and reduces evaporation losses.

Raised bed sowing of pigeonpea and mustard in dryland areas – Conserves moisture and safely drains excess rainwater, improving yields.

Crop residue management (rice straw mulching) in wheat – Conserves soil moisture, improves soil health, and mitigates salinity effects.

Land levelling in sodic and flood-prone fields – Improves water management and facilitates uniform crop establishment.

Application of gypsum in alkali/sodic soils – Reclaims sodic soils and enhances crop growth and productivity.

Use of CSR-BIO (bioformulation) in rice under sodic soils – Reduces sodium stress and improves rice performance in salt-affected areas.

Application of Halo Azo and Halo PSB biofertilizers in wheat – Enhances nutrient availability and alleviates salt stress in affected soils.

Raised bed sowing of pigeonpea in flood-prone areas – Improves drainage and minimizes crop losses due to waterlogging.

Actionable Comprehensive Plans for Contingency

State	UTTAR PRADESH	District	KHERI
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	922	More than 19%	Less than 746.82
June	142.7		
July	310.8		
August	252.2		
September	216.3		

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

Irrigation info:

Net irrigated area:	471800	Gross irrigated area:	781394
Net Rainfed area	50045	Gross rainfed area	75880

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	7960	9949
Wells	399166	553633
Tanks	-	82
Other sources	64674	217730

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	183890	174855	9035
2	Jowar	145	64	81
3	Maize	15364	11221	4143
4	Bajra	500	131	369
5	Ragi	3	2	1

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	1306	303	1003
2	Groundnut	11408	3080	8328
3	Sesamum	6386	1224	5162
4	Soyabean	-		
5	Sunflower	40	34	6
6	Castor	15		

Fibre

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Cotton	1	1	0
2	Jute	3		3

3	Mesta	-		
4	Sunhemp	5		5

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	369849	358754	11095
2	Tobacco	3	2	1
3	Guar seed	-		1573
4	Other Fodder crops	5140	3567	1573

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 (3rd weeks of July)	Sandy Loam, Silty soil and Deep, silty soils associated with loamy soils slightly eroded	Sorghum/Bajra/	No change Jowar-CSV-13,CSV-15,CSV-23, Bundela Bajra-ICMV-221, JBV-2, ICTP-8203,	Line sowing/ Raised bed against slope	Linked with SDC/SAUs
		Sorghum/Bajra+ Pigeon Pea	No change Jowar-CSV-13,CSV-15,CSV-23, Bundela Bajra-ICMV-221, JBV-2, ICTP-8203, Pigeon Pea -N Arhar-1, N arhar-2, Bahar, PDA-11, MA-13, MA-6	Line sowing/ Raised bed 1:2	Linked with SDC/SAUs
		Sorghum/Bajra+ Pigeon Pea+Urd	No change Jowar-CSV-13,CSV-15,CSV-23, Bundela Bajra-ICMV-221, JBV-2, ICTP-8203, Pigeon Pea -N Arhar-1, N arhar-2, Bahar, PDA-11, MA-13, MA-6 Urd- Azad urd-2, Azad urd-3, Sekhar-1, sekhar-2, sekhar-3,	Line sowing/ Raised bed 1:2:1	Linked with SDC/SAUs

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	Sandy Loam, Silty soil and Deep, silty soils associated with	Sorghum/Bajra/	Spray 2% MOP+ 2% Urea	All nutrients apply at the time of sowing. Mulching.	

	loamy soils slightly eroded	Sorghum/Bajra+ Pigeon Pea	Spray 2% MOP	All nutrients apply at the time of sowing. Mulching.	
		Sorghum/Bajra+ Pigeon Pea+Urd	Spray 2% MOP	All nutrients apply at the time of sowing. Mulching.	

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	Sandy Loam, Silty soil and Deep, silty soils associated with loamy soils slightly eroded	Sorghum/Bajra/	Spray 2% MOP+2% Urea	Life saving irrigation if available	
		Sorghum/Bajra+ Pigeon Pea	Spray 2% MOP	Life saving irrigation if available	
		Sorghum/Bajra+ Pigeon Pea+Urd	Spray 2% MOP	Life saving irrigation if available	

2.1.2 Drought - Irrigated situation

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delayed release of water in canals due to low rainfall	Sandy Loam	Paddy	Inclusion of these varieties Sarju-52, pant-12, NDR-359, PR-113and Hybrids.	- SRI - Provide irrigation at hair line crack stage - Weed control	Linked with SDC/SAUs
		Maize	Prefer early/short duration varieties/composites/Hybrids Azad Uttam, Azad Kamal, Tarun, Naveen and prakash, PEHM-2, PEHM-5	- Ridge and furrow planting - Irrigation at critical stages - Weed control - Ensure recommended basal dose (2/3 of RDF) and 1/3 of RDF of K at tasseling initiation stage	Linked with SDC/SAUs
		Groundnut	Prefer varieties like Kaushal, Prakash and TG-37 A,	Raised bed planting Alternate furrow irrigation, Mulching	Linked with SDC/SAUs
		Sugarcane	No change	Application of MOP, removal of lower leaves and light irrigation	Linked with SDC/SAUs

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
	Sandy Loam	Paddy	No change	- SRI - Weed control	

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				Life saving irrigation	
		Maize	No change	- Ridge and furrow planting - Life saving irrigation - Mulching	
		Groundnut	No change	- Life saving irrigation - Mulching - Spray of micro nutrient like boron	
		Sugarcane	No change	- Life saving irrigation - Spray of MOP2% - Apply lower leaves for 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	Farming situation: Sandy Loam	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	Tube well irrigated	Not Applicable			

Resource management technologies

Rainwater harvesting through permanent check dams – Harvests runoff, recharges groundwater, and provides irrigation during dry periods.

Groundwater recharge through recharge structures/open dug wells – Improves groundwater availability and sustains protective irrigation during droughts.

Sprinkler irrigation using harvested water – Saves irrigation water while increasing pulse crop productivity in water-scarce regions.

Laser land levelling – Ensures uniform water distribution, conserves irrigation water, and enhances water-use efficiency.

Polythene mulching for vegetables/crops – Conserves soil moisture, suppresses weeds, and reduces evaporation losses.

Raised bed sowing of pigeonpea and mustard in dryland areas – Conserves moisture and safely drains excess rainwater, improving yields.

Crop residue management (rice straw mulching) in wheat – Conserves soil moisture, improves soil health, and mitigates salinity effects.

Land levelling in sodic and flood-prone fields – Improves water management and facilitates uniform crop establishment.

Application of gypsum in alkali/sodic soils – Reclaims sodic soils and enhances crop growth and productivity.

Use of CSR-BIO (bioformulation) in rice under sodic soils – Reduces sodium stress and improves rice performance in salt-affected areas.

Application of Halo Azo and Halo PSB biofertilizers in wheat – Enhances nutrient availability and alleviates salt stress in affected soils.

Raised bed sowing of pigeonpea in flood-prone areas – Improves drainage and minimizes crop losses due to waterlogging.

Actionable Comprehensive Plans for Contingency

State	UTTAR PRADESH	District	MAHOBA
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	597.9	More than 19%	Less than 484.299
June	69.1		
July	188.6		
August	211.7		
September	128.5		

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

Irrigation info:

Net irrigated area:	67309	Gross irrigated area:	191919
Net Rainfed area	170021	Gross rainfed area	175706

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	26692	27466
Wells	37680	96039
Tanks	-	2521
Other sources	2937	65893

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	243	224	19
2	Jowar	8979	3949	5030
3	Maize	10	6	4
4	Bajra	4	1	3
5	Ragi	-		

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	2409	552	1857
2	Groundnut	11348	3064	8284
3	Sesamum	40206	7640	32566
4	Soyabean	163	7	156
5	Sunflower	7	1	6
6	Castor	-		

Fibre

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

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	-		
2	Tobacco	3	2	1
3	Guar seed	-		88
4	Other Fodder crops	153	65	88

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 (3 rd week of July)	Deep black soil (Mar and Kabar)	Sorghum (CSB 13 CSH 9 14, 16, 18)+ Pigeon pea (Ajad , Pusa 9, PDA 11, Narendra Arhar 2)	No Change	Intercropping of Sorghum (Varsha, CSV 13, SPB 1388, Bundella, CSH 16 and 13)+ Pigeon pea (Ajad , Pusa 9, PDA 11, Narendra Arhar 2) with ratio of 2:1 on raised bed	
		Sesame (Type 4, Type12,Type13, Sekhar, Pragati and Tarun)	No Change	Line sowing	
	Parwa (Loamy Sand)	Sorghum+ pigeon pea+ Black gram/ Green gram	No Change	Intercropping of Sorghum (Varsha, CSV 13, SPB 1388, Bundella, CSH 16 and 13)+ Pigeon pea (Ajad , Pusa 9, PDA 11, Narendra Arhar 2) + Urd (Ajad 1 and Ajad 3, Narendra Urd 1) with ratio of 2:1:1 on raised bed	
		Sesame (Type 4, Type 12, Sekhar, Pragati, Type 13, Tarun)	No Change	Line sowing with seed drill	
	Rakar (Shallow sandy loam)	Sorghum+ pigeon pea+ Black gram/ Green gram	No Change	Intercropping of Sorghum (Varsha, CSV 13, SPB 1388, Bundella, CSH 16 and 13)+ Pigeon pea (Ajad , Pusa 9, PDA 11, Narendra Arhar 2) + Urd (Ajad 1 and Ajad 3, Narendra Urd 1) with ratio of 2:1:1 on raised bed	

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	Deep black soil (Mar and Kabar)	Sorghum (Varsha, CSV 13, SPB 1388, Bundella, CSH 16 and 13)+ Pigeon pea (Ajad , Pusa 9, PDA 11, Narendra Arhar 2)	• Interculture	Foliar spray with 1% KCl	
	Parwa (Loamy Sand)	Sorghum+ pigeon pea+ Urd/ moong	• Interculture	Foliar spray with 1% KCl	
	Rakar (Shallow sandy loam)	Sorghum+ pigeon pea+ Urd/ moong	• Interculture	Foliar spray with 1% KCl	

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	Deep black soil (Mar and Kabar)	Sorghum (Varsha, CSV 13, SPB 1388, Bundella, CSH 16 and 13)+ Pigeon pea (Ajad , Pusa 9, PDA 11, Narendra Arhar 2)		Mulching with local available materials	
	Parwa (Loamy Sand)	Sorghum+ pigeon pea+ Urd/ moong		Mulching with local available materials	
	Rakar (Shallow sandy loam)	Sorghum+ pigeon pea+ Urd/ moong		Mulching with local available materials	

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
	Deep black soil (Mar and Kabar)	Sorghum (Varsha, CSV 13, SPB 1388, Bundella, CSH 16 and 13)+ Pigeon pea (Ajad , Pusa 9, PDA 11, Narendra Arhar 2)		Harvest at maturity	
	Parwa (Loamy Sand)	Sorghum+ pigeon pea+ Urd/ moong		Harvest at maturity	
	Rakar (Shallow sandy loam)	Sorghum+ pigeon pea+ Urd/ moong		Harvest at maturity	

2.1.2 Drought - Irrigated situation

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delayed release of water in canals due to low rainfall	Deep black soil (Mar and Kabar)	Rice	No change	• Drum seeding under puddle field • Alternate wet and dry irrigation	Linked with UP Agro
		Wheat	Prefer varieties such as Raj 337, PBW 502, K0307, Halna	• Provide irrigation at critical stage as per availability of irrigation water • Ensure K application as RDF • Chemical Control of Phalaris minor	Seed available from SDC, NSC and SAU, kanpur
	Parwa (Loamy Sand)	Rice	No change	• Drum seeding under puddle field • Alternate wet and dry irrigation	
		Wheat	Prefer varieties such as Raj 337, PBW 502, K0307, Halna	• Provide irrigation at critical stage as per availability of irrigation water • Ensure K application as RDF • Chemical Control of weeds	

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	Deep black soil (Mar and Kabar)	Rice	No change	• Drum seeding under puddle field • Alternate wet and dry irrigation	
		Wheat	Prefer varieties such as Raj 337, PBW 502, K0307, Halna	• Provide irrigation at critical stage as per availability of irrigation water • Ensure K application as RDF • Chemical Control of Phalaris minor	
	Parwa (Loamy Sand)	Rice	No change	• Drum seeding under puddle field • Alternate wet and dry irrigation	
		Wheat	Prefer varieties such as Raj 337, PBW 502, K0307, Halna	• Provide irrigation at critical stage as per availability of irrigation water • Ensure K application as RDF • Chemical Control of weeds	

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	Deep black soil (Mar and Kabar)	Sorghum (CSB 13 CSH 9 14, 16, 18)+ Pigeon pea (Ajad , Pusa 9, PDA 11, Narendra Arhar 2)	No Change	Intercropping of Sorghum (Varsha, CSV 13, SPB 1388, Bundella, CSH 16 and 13)+ Pigeon pea (Ajad , Pusa 9, PDA 11, Narendra Arhar 2) with ratio of 2:1 on raised bed	
		Sesame (Type 4, Type12, Type13, Sekhar, Pragati and Tarun)	No Change	Line sowing	
	Parwa (Loamy Sand)	Sorghum+ pigeon pea+ Urd/ moong	No Change	Intercropping of Sorghum (Varsha, CSV 13, SPB 1388,	

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
				Bundella, CSH 16 and 13)+ Pigeon pea (Ajad , Pusa 9, PDA 11, Narendra Arhar 2) + Urd (Ajad 1 and Ajad 3, Narendra Urd 1) with ratio of 2:1:1 on raised bed	
	Rakar (Shallow sandy loam)	Sesame (Type 4, Type 12, Sekhar, Pragati, Type 13, Tarun)	No Change	Line sowing with seed drill	
		Sorghum+ pigeon pea+ Urd/ moong	No Change	Intercropping of Sorghum (Varsha, CSV 13, SPB 1388, Bundella, CSH 16 and 13)+ Pigeon pea (Ajad , Pusa 9, PDA 11, Narendra Arhar 2) + Urd (Ajad 1 and Ajad 3, Narendra Urd 1) with ratio of 2:1:1 on raised bed	
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	Deep black soil (Mar and Kabar)	Pigeon pea	- No change - Prefer varieties such as UPAS 120	Raised bed planting	
		Sorghum	No change		
		Wheat	Prefer varieties such as K8027, K9351, K9644, Lok 1	Foliar spray with 2% Urea +2% MOP Apply irrigation at CRI stage	
		Chick pea	Prefer varieties such as Radhe, Pusa 256, JG 16		
	Parwa (Loamy Sand)	Rice	Prefer Varieties such as Gobind, Pant 10 and Pant 12		
		Wheat	Prefer varieties such as K8027, K9351, K9644, Lok 1	Foliar spray with 2% Urea +2% MOP Apply irrigation at CRI stage	
		Sorghum	No change		
		Black gram			

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
	Rakar (Shallow sandy loam)	Green gram	Narendra moong 1, PDM 54, Pant moong 1, PDM 11		
		Wheat	Prefer varieties such as K8027, K9351, K9644, Lok 1	Foliar spray with 2% Urea +2% MOP Apply irrigation at CRI stage	
		Chick pea	Prefer varieties such as Radhe, Pusa 256, JG 16		

Resource management technologies

Rainwater harvesting through permanent check dams – Harvests runoff, recharges groundwater, and provides irrigation during dry periods.

Groundwater recharge through recharge structures/open dug wells – Improves groundwater availability and sustains protective irrigation during droughts.

Sprinkler irrigation using harvested water – Saves irrigation water while increasing pulse crop productivity in water-scarce regions.

Laser land levelling – Ensures uniform water distribution, conserves irrigation water, and enhances water-use efficiency.

Polythene mulching for vegetables/crops – Conserves soil moisture, suppresses weeds, and reduces evaporation losses.

Raised bed sowing of pigeonpea and mustard in dryland areas – Conserves moisture and safely drains excess rainwater, improving yields.

Crop residue management (rice straw mulching) in wheat – Conserves soil moisture, improves soil health, and mitigates salinity effects.

Land levelling in sodic and flood-prone fields – Improves water management and facilitates uniform crop establishment.

Application of gypsum in alkali/sodic soils – Reclaims sodic soils and enhances crop growth and productivity.

Use of CSR-BIO (bioformulation) in rice under sodic soils – Reduces sodium stress and improves rice performance in salt-affected areas.

Application of Halo Azo and Halo PSB biofertilizers in wheat – Enhances nutrient availability and alleviates salt stress in affected soils.

Raised bed sowing of pigeonpea in flood-prone areas – Improves drainage and minimizes crop losses due to waterlogging.

Actionable Comprehensive Plans for Contingency

State	UTTAR PRADESH	District	SAHARANPUR
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	756.8	More than 19%	Less than 613.008
June	116.2		
July	249.7		
August	240.4		
September	150.5		

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

Irrigation info:

Net irrigated area:	201115	Gross irrigated area:	436235
Net Rainfed area	12646	Gross rainfed area	25587

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	21624	33227
Wells	138300	361755
Tanks	-	62
Other sources	41191	41191

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	58334	53665	4669
2	Jowar	52	20	32
3	Maize	9270	5797	3473
4	Bajra	4	2	2
5	Ragi	3	1	2

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	50	19	31
2	Groundnut	3875	1046	2829
3	Sesamum	76	15	61
4	Soyabean	-		
5	Sunflower	1	1	0
6	Castor	1		

Fibre

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

3	Mesta	-		
4	Sunhemp	3		3

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	121787	118133	3654
2	Tobacco	1	1	0
3	Guar seed	-		2239
4	Other Fodder crops	26278	24039	2239

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 3 rd week of July	Deep soil, yellow colored alluvial loam soils	Maize/ Pearl millet/ Sesame/ Blackgram	Maize: Kanchan, Navin Navjyoti, Azad utam, Surya, Meerutpili, Ganga 2, 11 Samrat etc Pearl millet: Raj-171, WCC-75, Pusa 23, 322 icmh-451 Sesame: Pergati, shekar, TA-78, TA-12 Blackgram: Narendra Blackgram-1, Pant U-30, 19, 35 etc	- Conservation furrow - Inter-cultivation - Sowing with multi seed drill	Seed-drill under RKVY Supply of seed through govt. agencies/e. NFSM

Contingency measures- Mid season

Condition			Suggested Contingency measures		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	Major	Normal Crop/cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
At vegetative stage	Irrigated upland	Rice: PS 4, 5, PB 1, PRH 10 / Sugarcane: 64, 88230, 92254, 95255, COS 767, 8432, 97284 / Maize: Kanchan, Sweta, Navin, Surya, Azad uttam, Navjyoti, Jaunpuri, Meerut pili Sorghum (Fodder): Kanpuri, UP Chari 1,2, Pant Chari3, HC 308, 171 Pearl millet: Raj-171, WCC-75, Pusa 23, 322 icmh-451	1. Thining, weeding and gap filling in existing crop. 2. Re sowing 3. Postponement of top dressing 4. Life saving irrigation	- Inter cultivation - Conservation furrow - Thinning and weeding - Mulching	- Supply of inter cultural implements through RKVY - Farm ponds through IWSM programme - Pulse crop seeds supply through NFSM - Micro/drip/sprinkler irrigation under govt. schemes

	Irrigated lowland	Rice: PS 2,3, PB 1, Sarju 52, Pant 4, Narendra 359, Saket 4 / Sorghum (Fodder): Kanpuri, UP Chari 1,2 / Sugarcane: 64, 88230, 92254, 95255, COS 767, 8432, 97284			
	Un irrigated upland	Maize/Sorghum (Local Merut pili) / Pigeonpea: UPAS 120, ICPL 151			
	Un irrigated lowland	Maize/Sorghum/ Pearl millet (Local Merut pili) / Sesame: T-4 ,T-12, T-13, T-78, Shaker, Pergati			

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	Irrigated upland	Rice: PS 4, 5, PB 1, PRH 10 / Sugarcane: 64, 88230, 92254, 95255, COS 767, 8432, 97284 / Maize: Kanchan, Sweta, Navin, Surya, Azad uttam, Navjyoti, Jaunpuri, Meerut pili / Sorghum (Fodder): Kanpuri, UP Chari 1,2, Pant Chari3, HC 308, 171 / Pearl millet: Raj-171,WCC-75,Pusa 23, 322 icmh-451	1. Thining, weeding and gap filling in existing crop. 2.Life saving irrigation 3. Weeding and weed mulching	- Conservation furrow - Thinning and weeding - Mulching - Urea spray or KCL spray	Farm ponds through IWSM programme
	Irrigated lowland	Rice: PS 2,3, PB 1, Sarju 52, Pant 4, Narendra 359, Saket 4 / Sorghum (Fodder): Kanpuri, UP Chari 1,2 / Sugarcane: 64, 88230, 92254, 95255, COS 767, 8432, 97284			
	Un irrigated upland	Maize/Sorghum (Local Merut pili) / Pigeonpea: UPAS 120, ICPL 151			

	Un irrigated lowland	Maize/Sorghum/Pearl millet (Local Merut pili) / Sesame: T-4 ,T-12, T-13, T-78, Shaker, Pergati			
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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)	Irrigated upland	Rice: PS 4, 5, PB 1, PRH 10 / Sugarcane: 64, 88230, 92254, 95255, COS 767, 8432, 97284 / Maize: Kanchan, Sweta, Navin, Surya, Azad uttam, Navjyoti, Jaunpuri, Meerut pili / Sorghum (Fodder): Kanpuri, UP Chari 1,2, Pant Chari3, HC 308, 171 / Pearl millet: Raj-171,WCC-75,Pusa 23, 322 icmh-451	1.Life saving irrigation 2. Picking/harvesting of pods/ear 3.Harvest at physiological maturity stage 4.Harvest for fodder	- Toria/mustard - Potato - Pea/gram - Barseem/oat - Land labeling	- Farm ponds through IWSM programme - Supply of seed through ISOPM - Harvesting and threshing implements through RKVY - Supply of land laser labeler through CLDP or RKVY
	Irrigated lowland	Rice: PS 2,3, PB 1, Sarju 52, Pant 4, Narendra 359, Saket 4 / Sorghum (Fodder): Kanpuri, UP Chari 1,2 / Sugarcane: 64, 88230, 92254, 95255, COS 767, 8432, 97284			
	Un irrigated upland	Maize/Sorghum/Pigeonpea (UPAS 120, ICPL 151)			
	Un irrigated lowland	Pearl millet: Local Merut pili / Sesame: T-4 ,T-12, T-13, T-78, Shaker, Pergati			

Drought 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	Upland sandy loam soils	Rice (Basmati)-Wheat	Replace rice with maize or aerobic rice	- Use short duration varieties e.g. Rice: PS 4, 5, PB 1, PRH 10 - Maize: Kanchan, Sweta, Navin, Surya - Pearl millet:Wcc-75,Raj-171,Pusa-23,Pusa-322	- Seed through KSSC and NFSM - Adequate supply of electricity/diesel should be ensured by the Govt. agencies.
		Sorghum (Fodder)/Maize-Potato/ Wheat	Pearl millet/Blackgram/ Greengram- Potato/ Wheat		
		Sugarcane +cucurbits – Ratoon-Wheat	No change		

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
				• Light irrigation with tube well water • Follow alternate wetting and drying schedule of irrigation in rice • Alternate Furrow irrigation • Mulching in sugarcane/maize	
Lowland clay loam soils		Rice-wheat	Basmati rice -Wheat	• Use short duration varieties e.g. Rice: PS 4, 5, PB 1, PRH 10 Kanchan, Sweta, Navin, Surya Pearl millet (Fodder): Wcc-75,Raj-171,Pusa-23,Pusa-322 • Light irrigation with tube well water • Follow alternate wetting and drying schedule of irrigation in rice • Alternate Furrow irrigation • Mulching in sugarcane	• Seed through KSSC and NFSM • Adequate supply of electricity/diesel should be ensured by the Govt. agencies.
		Sorghum Fodder-Wheat	Pearl millet-Wheat		
		Sugarcane-Ratoon-Wheat	No change required		
Condition	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures ⁱ	Remarks on Implementation ^j
Limited release of water in canals due to low rainfall	Upland sandy loam soils	Rice (Basmati)-Wheat	No change	• Light irrigation with tube well water at critical stages only e.g CRI, tillering &.Flowering stage • Follow alternate wetting and drying schedule of irrigation in rice • Alternate Furrow irrigation • Mulching in sugarcane/maize	• Adequate supply of electricity/diesel should be ensured by the Govt. agencies.
		Sorghum (Fodder)/Maize-Potato/ Wheat	No change		
		Sugarcane +cucurbits – Ratoon-Wheat	No change		
	Lowland clay loam soils	Rice-wheat	No change	• Light irrigation with tube well water at critical stages only e.g CRI, tillering&.Flowering stage • Follow alternate wetting and drying	• Supply of inter cultural implements through RKV • Adequate supply of electricity/diesel should be
		Sorghum Fodder-Wheat	No change		
		Sugarcane-Ratoon-Wheat	No change		

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
				schedule of irrigation in rice • Alternate Furrow irrigation • Mulching in sugarcane	ensured by the Govt. agencies.
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	Upland tube well irrigated canal sandy loam soil	Basmati rice	Maize/Arabic Rice	• Limited irrigation • Alternate Furrow irrigation • Drip irrigation • Mulching	• Seed through KSSC and NFSM • Supply of inter cultural implements through RKVY
		Sorghum/Maize	Pearl millet /Pigeonpea/Blackgram		
		Sugarcane +cucurbits	Sugarcane		
	Lowland tube well irrigated canal clay loam soil	Rice	Pearl millet/Blackgram/Greengram	• Limited irrigation • Alternate Furrow irrigation • Drip irrigation • Mulching • Alternate furrow irrigation	• Seed through KSSC and NFSM • Harvesting and threshing implements through RKVY
		Sorghum Fodder	Pearl millet/Sorghum Fodder		
		Sugarcane + cucurbits	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		Cropping system 1:	NA	NA	NA

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	Upland tube well irrigated canal sandy loam soil	Basmati rice	Maize/Arabic Rice /Vegetable (Tomato, Brinjal, cucurbitsetc)	• Limited irrigation • Alternate Furrow irrigation • Drip irrigation • Mulching	• Seed through KSSC and NFSM • Harvesting and threshing implements through RKVY
		Sorghum/Maize	Pearl millet /Pigeonpea/Blackgram		
		Sugarcane + cucurbits	Sugarcane		
	Lowland tube well irrigated canal clay loam soil	Rice	Pearl millet/Blackgram/Greengram	• Limited irrigation • Alternate Furrow irrigation • Drip irrigation	• Seed through KSSC and NFSM • Micro/drip/sprinkler irrigation under govt. schemes
		Sorghum Fodder	Pearl millet/Sorghum Fodder		
		Sugarcane + cucurbits	Sugarcane		

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
				• Mulching • Alternate furrow irrigation	• Supply of inter cultural implements through RKVY

Resource management technologies

Rainwater harvesting through permanent check dams – Harvests runoff, recharges groundwater, and provides irrigation during dry periods.

Groundwater recharge through recharge structures/open dug wells – Improves groundwater availability and sustains protective irrigation during droughts.

Sprinkler irrigation using harvested water – Saves irrigation water while increasing pulse crop productivity in water-scarce regions.

Laser land levelling – Ensures uniform water distribution, conserves irrigation water, and enhances water-use efficiency.

Polythene mulching for vegetables/crops – Conserves soil moisture, suppresses weeds, and reduces evaporation losses.

Raised bed sowing of pigeonpea and mustard in dryland areas – Conserves moisture and safely drains excess rainwater, improving yields.

Crop residue management (rice straw mulching) in wheat – Conserves soil moisture, improves soil health, and mitigates salinity effects.

Land levelling in sodic and flood-prone fields – Improves water management and facilitates uniform crop establishment.

Application of gypsum in alkali/sodic soils – Reclaims sodic soils and enhances crop growth and productivity.

Use of CSR-BIO (bioformulation) in rice under sodic soils – Reduces sodium stress and improves rice performance in salt-affected areas.

Application of Halo Azo and Halo PSB biofertilizers in wheat – Enhances nutrient availability and alleviates salt stress in affected soils.

Raised bed sowing of pigeonpea in flood-prone areas – Improves drainage and minimizes crop losses due to waterlogging.

Actionable Comprehensive Plans for Contingency

State	UTTAR PRADESH	District	SONBHADRA
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	873.3	More than 19%	Less than 707.373
June	119.2		
July	286.2		
August	246.8		
September	221.1		

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

Irrigation info:

Net irrigated area:	83013	Gross irrigated area:	170496
Net Rainfed area	394	Gross rainfed area	94258

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	35478	53380
Wells	29419	88984
Tanks	-	1287
Other sources	18116	26845

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	33788	31691	2097
2	Jowar	9481	3169	6312
3	Maize	15746	9638	6108
4	Bajra	225	55	170
5	Ragi	31	2	29

Pulses& Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	18405	3704	14701
2	Groundnut	5645	1524	4121
3	Sesamum	623	110	513
4	Soyabean	-		
5	Sunflower	16	15	1
6	Castor	2		

Fibre

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

3	Mesta	-		
4	Sunhemp	252		252

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	-		
2	Tobacco	-		
3	Guar seed	-		329
4	Other Fodder crops	531	202	329

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 3 rd week of July	Red Sandy Loam soils Uplands with hillocks	Sequence cropping Rice- Chickpea Rice- Lentil Pearl millet- Chickpea Maize- Chickpea Maize-Lentil Pearl millet- Lentil Pearl millet- Pea Sorghum – Chickpea Sorghum- Pea Sorghum - Lentil	Replace rice with greengram, blackgram and sorghum Greengram :Pant Mung -8, PDM-11, Samrat, Jyoti, Jagriti, Janpriya, Jan Chetana and Jan Kalyani Blackgram : T-9,Pant Urd-19, Azad-1-2-3, Shekhar-1,2 &3,Pant Urd-31 Sorghum : CSH-16, CHS-9, CHS-14, CSV-13 &CSV-15	Resowing of rice crop to have proper germination or gap filling for proper plant stand. Interculture, thinning, conservation furrow. Sowing the crops through seed cum ferti drills Split application of nutrients wherever necessary	Seed drills under RKVY Supply of seeds through NFSM
		Inter cropping system Pigeonpea + Pearl millet Pigeonpea + Sesame Pigeonpea+ Sorghum	Intercropping of Pigeonpea + Sesame/ Greengram/ Blackgram Pigeonpea : Bahar, Narendra Arabar-1, Malviya Vakas(MA6) & Malviya Chamtkar (MA13) Sesame :Type 4, T-12, T-13, Shekhar ,GT1 ,TC 25 &TC 289 Greengram :Pant Mung -8, PDM-11, Samrat, Jyoti, Jagriti, Janpriya, Jan Chetana and Jan Kalyani Blackgram :Type 9,	Sowing of Pigeonpea + Sesame on ridges Wider spacing of Pigeon pea 90cm and normal spacing of Sesame <i>i. e.</i> 30 cm for mono culmed and 45 cm for branched genotypes.	Breeder seed of pigeon pea and greengram can be obtained from the University (B.H.U.) certified seed from NSC.

			Pant U 19, Pant U 35, Narendra Urd 1 & Azad Urd-3		
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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	Red Sandy Loam soils Uplands with hillocks	Sequence cropping Rice- Chickpea Rice- Lentil Pearl millet- Chickpea Maize- Chickpea Maize-Lentil Pearl millet- Lentil Pearl millet-Pea Sorghum – Chickpea Sorghum- Pea Sorghum - Lentil	Life saving irrigation if possible Dust/ straw mulch Thinning Intercultivation	Use of additional N @10kg/ha Spray of 2% urea as foliar application Conservation furrow	
		Inter cropping system Pigeonpea + Pearl millet Pigeonpea + Sesame Pigeonpea + Sorghum	Earthing up in main crop, thinning to maintain proper distance between the plants Intercultivation	Conservation tillage Spray of 2% urea as foliar application	

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	Red Sandy Loam soils Uplands with hillocks	Sequence cropping Rice- Chickpea Rice- Lentil Pearl millet- Chickpea Maize- Chickpea Maize-Lentil Pearl millet- Lentil Pearl millet-Pea Sorghum – Chickpea Sorghum- Pea Sorghum - Lentil	Life saving irrigation if possible Dust/ straw mulch Intercultivation Defoliate older leaves Harvesting at physiological maturity	1) Spraying of 2% urea as foliar application 2) KCI Spray	

		Inter cropping system Pigeonpea + Pearl millet Pigeonpea + Sesame Pigeonpea + Sorghum	Life saving irrigation Harvesting of intercrops at physiological maturity Harvesting of Pearl millet & Sorghum crops for fodder purposes	1) Spraying of 2% urea as foliar application 2) KCI Spray	
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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
	Red Sandy Loam soils Uplands with hillocks	Sequence cropping Rice- Chickpea Rice- Lentil Pearl millet- Chickpea Maize- Chickpea Maize- Lentil Pearl millet- Lentil Pearl millet- Pea Sorghum – Chickpea Sorghum- Pea Sorghum - Lentil	Life saving irrigation if possible. Dust/ straw mulch Intercultivation Defoliate older leaves Harvesting at physiological maturity	Sowing of <i>Toria</i> in the month of September (Type 9 & Bhawani) Conservation tillage Deep ploughing with rotovator	
		Inter cropping system Pigeonpea- Pearl millet Pigeonpea- Sesame Pigeonpea- Sorghum	4) Harvesting of intercrop at physiological maturity. 5) Earthing up in main crop 6) Harvesting of Pearl millet & Sorghum crops for fodder purposes. 7) Life saving irrigation to pigeon pea if possible.		

2.1.2 Drought - Irrigated situation

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delayed release of water in canals due to low rainfall	Canal & Bore well- Irrigated Medium to lowland situation	Sequence Cropping Rice – Wheat Rice - Pea Rice – Chickpea Rice – Lentil Rice – Mustard	Short duration rice varieties- NDR 97, Ratna, Narendra 118, Narendra 97, Pant Dhan 12, HUR 105, Induri Sambha, HUR 2-1, HUR-3022 to be grown under aerobic condition.	Community nursery Direct seeding in small beds. Use of micro-irrigation systems viz. sprinkler &	Breeder seed will be supplied by BHU and NDAUT, Faizabad. Seed drills RKVY and supply of seeds NFSM

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
			Sowing of Sorghum: CSH-16, CHS-9, CHS-14, CSV-13 & CSV-15 on ridges. Rice : Early Maturity: Ratna, Narendra 118, Narendra 97, Pant Dhan 12, IR 36, HUR 105, HUR 3022, HUBR 2-1, Induri Sambha; Medium Maturity: Sarju 52, Pant Dhan 4, Narendra 359, PNR 381 <i>Late</i> Maturity under low land: Type-3, Basmati 370, Mahsoori, GR-32, Badshabhog, Adamchini	sub-surface irrigation.	
Limited release of water in canals due to low rainfall	Canal & Bore well-Irrigated Medium to lowland situation	Sequence Cropping Rice – Wheat Rice – Pea Rice – Chickpea Rice – Lentil Rice – Mustard	Grow short duration aerobic rice such as NDR 97, NDR 118, Govind, Vandana, Varanideep, Susk Samrat & HUR 105 Maize : Malviya hybrid Makka-2, Naveen & Jaunpuri Pearl millet: WCC 75, Raj 171, Pusa 23 Sorghum: CSH-16, CHS-9, CHS-14, CSV-13 & CSV-15 should be grown on ridges for fodder/grain purposes. Rice genotypes: Early Maturity: Ratna, Narendra 118, Narendra 97, Pant Dhan 12, IR 36, HUR 105, HUR 3022, HUBR 2-1, Induri Sambha; Medium Maturity: Sarju 52, Pant Dhan 4, Narendra 359, PNR 381 Late Maturity under lowland: Type-3, Basmati 370, Mahsoori, GR-32, Badshabhog, Adamchini	Community nursery, Direct seeding in small beds. Use of micro-irrigation systems viz. sprinkler & sub-surface irrigation.	Breeder seed will be supplied by BHU and NDAU, Faizabad. Seed drills RKVY and supply of seeds NFSM

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	Canal & Bore well-Irrigated Medium to lowland situation	Sequence Cropping Rice – Wheat Rice – Pea Rice – Chickpea Rice – Lentil Rice – Mustard	Rice may be replaced by pulses Greengram – Pant Mung -8, PDM-11, Samrat, Jyoti, Jagriti, Janpriya, JanChetana & Jan Kalyani, Blackgram -Type 9, Pant U 19, Pant U 35, Narendra Urd 1 & Azad Urd-3 Oil seeds: Sesame –Type 4, T-12, T13, Shekhar, GT1, TC 25 & TC 28	Direct seeding in small beds. Use of micro-irrigation systems viz. sprinkler & sub-surface irrigation.	Breeder seed will be supplied by BHU and NDAU, Faizabad. Seed drills RKVY and supply of seeds NFSM

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
			Vegetables :Cowpea/ Bhendi/ Brinjal/ Chillies		
		Intercropping	Inter cropping of Pigeonpea + Sesame Pigeonpea + Blackgram Pigeonpea + Greengram Pigeonpea + Sorghum Pigeonpea + Pearl millet	Sowing of Pigeonpea at 90 cm + two rows of intercrops on ridges	Breeder's seed may be obtained from BHU & Faizabad. Ridger from RKVY

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	Canal & Bore well-Irrigated Medium to lowland situation	Sequence Cropping Rice – Wheat Rice - Pea Rice – Chickpea Rice – Lentil Rice – Mustard	Rice genotypes: (<i>Early Maturity:</i> Ratna, Narendra 118, Narendra 97, Pant Dhan 12, IR 36, HUR 105, HUR 3022, HUBR 2-1, Induri Sambha; <i>Medium Maturity:</i> Sarju 52, Pant Dhan 4, Narendra 359, PNR 381 <i>Late Maturity under low land:</i> Type-3, Basmati 370, Mahsoori, GR-32, Badshabhog, Adamchini) Grow fodder crops such as Cowpea :Russian Giant, UPC 5286, UPC 5287, NP 3 Sorghum :PC 6, PC 9, UP <i>Chari</i> -1 &2, Pant <i>Chari</i> -3, HC 308 & Haryana <i>Chari</i> 171 Maize: (<i>Desi</i> (T 41) Hybrid Ganga -2, 5 & 7 and Composites – Kissan, African Tall & Vijay) & Pearl millet :Gaint Bajra, Raj Bajra-2 Grow Pearl millet (WCC 75, Raj 171, Pusa 23) for grain purpose.	Conservation tillage. Sowing of Pearl millet& Sorghum for grain purposes at a spacing of 45 cm on ridges. 2% of foliar application of Urea at vegetative stage. Use of mulches (straw/dust).	Breeder's seed will be supplied by BHU and NDAUT, Faizabad. Seed drills RKVY and supply of seeds NFSM
		Intercropping	Pigeonpea + Pearl millet Pigeonpea + Sesame	Conservation tillage – ridge furrows. Use of mulches (straw & dust both).	

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	Canal & Bore well-Irrigated Medium to lowland situation	Sequence Cropping Rice – Wheat Rice - Pea Rice – Chickpea Rice – Lentil Rice – Mustard	Rice should be replaced by pulses (green gram & black gram), oilseeds (Sesame) in <i>Kharif</i> and wheat by greengram & lentil in <i>Rabi</i> season.	Direct seeding in small beds. Use of micro-irrigation systems viz. sprinkler &	Breeder's seed will be supplied by BHU and NDAUT, Faizabad.

Condition			Suggested Contingency measures		
	Major Farming situation	Normal Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
				sub-surface irrigation.	Seed drills RKVY and supply of seeds NFSM
		Intercropping	Pigeonpea + Pearl millet Pigeonpea + Sesame Pigeonpea + Sorghum	Conservation tillage – ridge furrows. Use of mulches (straw & dust both).	

Resource management technologies

Rainwater harvesting through permanent check dams – Harvests runoff, recharges groundwater, and provides irrigation during dry periods.

Groundwater recharge through recharge structures/open dug wells – Improves groundwater availability and sustains protective irrigation during droughts.

Sprinkler irrigation using harvested water – Saves irrigation water while increasing pulse crop productivity in water-scarce regions.

Laser land levelling – Ensures uniform water distribution, conserves irrigation water, and enhances water-use efficiency.

Polythene mulching for vegetables/crops – Conserves soil moisture, suppresses weeds, and reduces evaporation losses.

Raised bed sowing of pigeonpea and mustard in dryland areas – Conserves moisture and safely drains excess rainwater, improving yields.

Crop residue management (rice straw mulching) in wheat – Conserves soil moisture, improves soil health, and mitigates salinity effects.

Land levelling in sodic and flood-prone fields – Improves water management and facilitates uniform crop establishment.

Application of gypsum in alkali/sodic soils – Reclaims sodic soils and enhances crop growth and productivity.

Use of CSR-BIO (bioformulation) in rice under sodic soils – Reduces sodium stress and improves rice performance in salt-affected areas.

Application of Halo Azo and Halo PSB biofertilizers in wheat – Enhances nutrient availability and alleviates salt stress in affected soils.

Raised bed sowing of pigeonpea in flood-prone areas – Improves drainage and minimizes crop losses due to waterlogging.