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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
HIMACHAL PRADESH

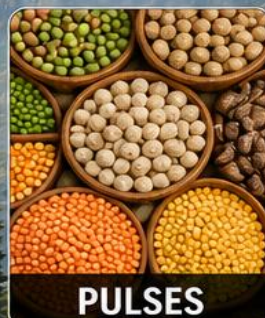
**HIMACHAL
PRADESH**



MAIZE



PADDY



PULSES



CASH CROPS



EARLY WARNING
& MONITORING



WATER
MANAGEMENT



SUSTAINABLE
AGRICULTURE



COMMUNITY
PARTICIPATION

TOGETHER, LET'S BUILD A RESILIENT HIMACHAL PRADESH

PREPARE TODAY • PROTECT TOMORROW • PROSPER TOGETHER

Himachal Pradesh

Himachal Pradesh, often referred to as the "Land of the Himalayas," is one of India's most important hill states, blessed with spectacular mountain landscapes, abundant natural resources, and diverse climatic conditions. Agriculture and horticulture are the twin pillars of the state's economy, sustaining the livelihoods of a majority of the rural population. The state's unique topography, ranging from low hills to snow-covered mountains, supports the cultivation of cereals, pulses, vegetables, temperate fruits, and high-value cash crops. Himachal Pradesh is internationally recognized for its quality apple production and flourishing horticulture sector. However, despite its rich natural resources, a large share of agriculture remains dependent on seasonal rainfall, making crop production highly vulnerable to variations in the southwest monsoon and climate anomalies such as El Niño.

Major Kharif crops include maize, paddy, soybean, black gram, green gram, rajma (kidney bean), finger millet, sesame, and vegetables. During the **Rabi season**, wheat, barley, chickpea, lentil, rapeseed-mustard, and peas are the major crops. Horticultural crops such as apple, pear, peach, plum, cherry, apricot, and off-season vegetables contribute significantly to farmers' income. Himachal Pradesh receives an average annual rainfall of 1,000–1,500 mm, with nearly 70–75 per cent occurring during the southwest monsoon (June–September). Therefore, agricultural production is highly dependent on the timely onset and distribution of monsoon rainfall.

Historical Impact of El Niño on Himachal Pradesh

Himachal Pradesh is vulnerable to El Niño-induced monsoon variability, which often results in delayed monsoon onset, below-normal rainfall, and prolonged dry spells. Reduced rainfall lowers soil moisture, stream flow, and groundwater recharge, affecting both rainfed agriculture and horticulture. Major crops such as maize, paddy, pulses, and vegetables experience moisture stress, while horticultural crops like apple suffer from inadequate chilling, poor flowering, fruit drop, and reduced fruit quality due to rising temperatures associated with El Niño. These conditions lead to lower agricultural productivity, reduced farm incomes, and increased water scarcity in rural areas.

Effects on Major Crops

- **Maize:** Poor germination, reduced cob development, and lower grain filling.
- **Paddy:** Delayed transplanting, poor tillering, and reduced grain yield.

- **Wheat:** Poor germination and reduced tillering due to inadequate residual soil moisture.
- **Barley:** Reduced grain formation under moisture stress.
- **Rajma (Kidney Bean):** Flower drop and poor pod development.
- **Soybean:** Reduced flowering and pod formation.
- **Apple:** Poor flowering, fruit drop, reduced fruit size, and lower quality.
- **Peach, Pear & Plum:** Reduced fruit setting and lower yields.
- **Vegetables:** Reduced growth, flower drop, and lower marketable yield.
- **Rapeseed-Mustard:** Delayed sowing and lower seed yield.

Contingency Plans for Major Crops Grown in Himachal Pradesh

Crop	El Niño Situation	Recommended Contingency Measures
Maize	Delayed monsoon	Early-maturing hybrids, ridge sowing, mulching
Paddy	Delayed transplanting	Community nursery, direct-seeded paddy (DSR), short-duration varieties
Wheat	Delayed Rabi sowing	Early sowing, zero tillage, moisture conservation
Barley	Moisture stress	Early sowing and limited irrigation
Rajma	Dry spells	Mulching, protective irrigation
Soybean	Delayed monsoon	Short-duration varieties, seed treatment
Apple	Reduced rainfall	Drip irrigation, mulching, anti-hail nets, water harvesting
Vegetables	Water scarcity	Drip irrigation, mulching, protected cultivation
Rapeseed-Mustard	Poor residual moisture	Early sowing, protective irrigation
Pea	Moisture stress	Timely sowing, mulching

Agriculture and horticulture in Himachal Pradesh are highly dependent on the southwest monsoon and are increasingly vulnerable to El Niño-induced rainfall deficits. Delayed monsoon onset, prolonged dry spells, rising temperatures, and reduced water availability adversely affect cereals, pulses, vegetables, and fruit crops, especially apple. Adoption of drought-tolerant varieties, efficient water management, rainwater harvesting, mulching, protected cultivation, and climate-smart agricultural practices can significantly improve the resilience and sustainability of Himachal Pradesh's agriculture under El Niño conditions.

Districts vulnerable to El Nino

High	Medium	Low
Bilaspur, Hamirpur, Kullu, Mandi, Shimla	Kangra, Sirmaur, Solan, Una	Kinnaur

Actionable Comprehensive Plans for Contingency

State	HIMACHAL PRADESH	District	BILASPUR
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	819.1	More than 19%	Less than 663.471
June	102.1		
July	260.8		
August	292.5		
September	163.7		

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

Irrigation info:

Net irrigated area:	1551	Gross irrigated area:	6589
Net Rainfed area	27037	Gross rainfed area	46900

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	-	-
Wells	153	650
Tanks	-	-
Other sources	1398	5939

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	0	0	
2	Jowar	2	2	0
3	Maize	24823	2725	22098
4	Bajra	4		4
5	Ragi	-		

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	-		
2	Groundnut	-		
3	Sesamum	18		18
4	SOyabean	5	2	3
5	Sunflower	-		
6	Castor	-		

Fibre

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

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	-		
2	Tobacco	-		
3	Guar seed	-		103
4	Other Fodder crops	166	63	103

Agriculture Contingency Plan for District: BILASPUR

Condition	Suggested contingency measures				
Early season drought (delayed onset)	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delay by 4 weeks	Shallow to deep loamy soils	Maize	Maize + Cowpea / mash / soybean / sesame	Good drainage	Seed supply through State Department of Agriculture, NSC, SAU
3 rd week of July			Blackgram (Him mash-1, UG-218)		
		Rice (Transplanted/ Direct seeded)	Blackgram	Sow blackgram on raised seed beds with good drainage	
3 rd week of January		Wheat	Barley (HBL276/Dolma), Oats (PLP1/Kent) , Wheat (late sown- HS295/Raj3777/HPW42)	Increase the seed rate and fertilizer by 25%	

Condition	Suggested contingency measures				
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	Major Farming situation	Crop/cropping system	Crop management	Soil nutrient & moisture conservation measure	Remarks on Implementation
At vegetative stage	1. Upland	Maize	Remove 10-20% stand, weeding and intercultural operations frequently to use soil as mulch	Mulching within the crop rows	Seed supply through State Department of Agriculture, NSC, SAU
		Rice(transplanted)	Weeding	- Foliar spray of urea 2% during the dry spell - Mulching within the crop rows - Life saving irrigation with rain water stored in water harvesting structures from adjoining places	
		Rice (direct seeded)	Reduce population by 10-20%, weeding and inter culture to make a soil mulch condition	Foliar spray of urea 2% during the dry spell	
		Wheat	Reduce population, weeding	Life saving irrigation with rain water stored in water harvesting structures from adjoining places	
	2. Low land	Rice	Reduce population, weeding	Foliar spray of urea 2% during the dry spell	

Condition	Suggested contingency measures				
Mid season drought (long dry spell)	Major Farming situation	Crop/cropping system	Crop management	Soil nutrient & moisture conservation measure	Remarks on Implementation
Reproductive phase	1. Upland	Maize	Keep the fields free from weeds	- Foliar spray of 2% urea during the dry spell, - Life saving irrigation from water harvesting structures - Top dressing of 20-30 kg N/ha after relief of dry spell	

				- Mulching in crop rows if possible - Dust mulch through frequent inter culture	
		Rice (Transplanted & direct seeded)		- Foliar spray of 2% urea during the dry spell - Life saving irrigation from water harvesting structures - Top dressing of 20-30 kg N/ha after relief of dry spell - Mulching in crop rows if possible - Dust mulch through frequent inter culture	
		Wheat		- Foliar spray 2% of urea during the dry spell - Life saving irrigation from water harvesting structures if possible	
		Blackgram	Weeding, pest control	- Life saving irrigation - Create soil mulch through interculture	
		Chickpea	Weeding, pest control	- Life saving irrigation - Create soil mulch through interculture	

Condition	Suggested contingency measures				
Terminal drought	Major Farming situation	Crop/cropping system	Crop management	Rabi Crop planning	Remarks on Implementation
		Maize	Life saving irrigation	Sowing of Toria/Gobi sarson/radish/Peas in good moisture from last rains or in areas where drought is expected quite often then go for early wheat varieties VL616/VL829/HPW251	
		Rice		Sowing of Radish/Peas/Toria as catch crop followed by wheat or in areas where drought is expected quite often then go for early wheat varieties VL829/HPW251	
		Wheat		Prepare land for sowing of Kharif crop	
		Blackgram		Sowing of early wheat varieties (VL829/HPW251) OR Toria/Toria+Gobhi sarson	

Drought- Irrigated situation

Condition	Suggested contingency measures				
	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delayed/ limited release of water in canals due to low rainfall		Maize	Maize + soybean or Maize + Blackgram	Maize early varieties (early composite), Mulching in crop rows	

Condition	Suggested contingency measures				
	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
				- Ridge and furrow planting - Irrigation at critical crop growth stages - Alternate furrow or micro-irrigation systems like sprinkler	
		Rice	Direct seeded rice, (HPR 1156/HPR1028 Sukhara dhan/ VL421	SRI planting, Foliar N in the form of urea 2%	
		Wheat	Wheat (HS490, VL982 Raj.3777), Wheat + Mustard, Wheat + Gobhi sarson (Neelam)	- Irrigation only at critical stage (CRI, flowering and dough stage) - Popularization of split application of nitrogen	

Condition	Suggested contingency measures				
	Major Farming situation	Crop /cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Non release of water in canals under delayed onset of monsoon in catchment	Not applicable				
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	Not applicable				
Insufficient groundwater recharge due to low rainfall	Not applicable				

Actionable Comprehensive Plans for Contingency

State	HIMACHAL PRADESH	District	HAMIRPUR
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	973.2	More than 19%	Less than 788.292
June	114.1		
July	316.1		
August	381.6		
September	161.4		

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

Irrigation info:

Net irrigated area:	1702	Gross irrigated area:	2761
Net Rainfed area	30437	Gross rainfed area	60434

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	-	-
Wells	23	37
Tanks	-	-
Other sources	1679	2724

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	0	0	
2	Jowar	-	-	
3	Maize	31961	917	31044
4	Bajra	-		
5	Ragi	-		

Pulses & Oilseeds

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

Fibre

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

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	28	7	21
2	Tobacco	-		
3	Guar seed	-		298
4	Other Fodder crops	320	22	298

Agriculture Contingency Plan for District: Hamirpur

Condition	Suggested Contingency measures				
Early season drought (delayed onset)	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delay by 4 weeks 3 rd week of July	Shallow to deep, loamy soils	1.Maize	1.Blackgram 2.Intercropping/mixed cropping of Maize (fodder) + Cowpea/ Blackgram/ Soybean/ Sesame Blackgram: UG218, Him Mash-1 Cowpea: C-475 Soybean: Shivalik Sesame: LTK-4	Proper drainage	Seed supply through Department of Agriculture, NSC, SAU, ISOPOM for the supply of good quality seed

3 rd week of January		1.Wheat	1.Wheat/ Barley/Oat Wheat: HS295, HS490, Raj3777, HPW42 Barley:HBL276, Dolma Oat: PLP1, Kent	Increase the seed rate and fertilizer by 25%	
Condition	Suggested contingency measures				
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	Major Farming situation	Crop/cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
At vegetative stage	Upland	Rice (transplanted)	Weeding	Foliar spray of urea (2%), mulching with the weeds and in-situ conservation through diverting water from adjoining places	
		Rice (direct seeded)	Reduce population by 10-20% Weeding, Soil mulch		
		Maize		Foliar spray of nutrients and anti transpirants, Mulching with waste materials	
		Wheat		Foliar spray of nutrients, Soil mulch	
	Lowland	Rice		Foliar spry of Nitrogen, Weeding	
		Condition	Suggested contingency measures		
Mid-season drought (long dry spell)	Major Farming situation	Crop/cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
	Upland	Rice Transplanted/ direct seeded	Keep the fields free from weeds	Foliar spray of Nitrogen, Life saving irrigation	
		Maize			
		Wheat			
		Blackgram	Weeding	Life saving irrigation , Soil mulch	
		Chickpea			

Condition	Suggested contingency measures				
Terminal drought	Major Farming situation	Crop/cropping system	Crop management	Rabi Crop planning	Remarks on Implementation
	Upland	Rice	If crop stand is poor then use of crop as fodder	Sowing of Radish/Peas/Toria as catch crop followed by Wheat OR in areas where drought is expected quite often then go for early wheat varieties VL616/VL829/HPW251	
		Maize			
		Wheat	If crop stand is poor then use of crop as fodder	Prepare land for sowing of Rabi crops	
		Blackgram	If no pod setting then use as fodder	Sowing of early wheat varieties (VL616/VL829/HPW251) OR Toria/Toria+Gobhi sarson	

			or incorporate in soil as manure		
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Drought- Irrigated situation

Condition	Suggested contingency measures				
	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delayed/ limited release of water in canals due to low rainfall		Rice	Direct seeded rice, Rice : HPR 1156, HPR1028, Sukara dhan, VL421	SRI planting, Foliar N itrogen management instead of top dressing of Nitrogen	
		Maize	Intercropping of Maize + Soybean or Maize + Black gram Maize: Bajaura makka/ Vivek/ QPM9/early composite/KH101		ISOPOM
		Wheat	Wheat + Mustard (RCC4) Wheat : HS490,VL892 Raj3777	Irrigation only at critical stage(CRI, flowering and dough stage) Split application of nitrogen	

Condition	Suggested contingency measures				
	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Non-release of water in canals under delayed onset of monsoon in catchment	Not applicable				
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	Not applicable				
Insufficient groundwater recharge due to low rainfall	Not applicable				

Actionable Comprehensive Plans for Contingency

State	HIMACHAL PRADESH	District	KANGRA
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	1622.4	More than 19%	Less than 1314.144
June	181.4		
July	565.7		
August	607.2		
September	268.1		

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

Irrigation info:

Net irrigated area:	33037	Gross irrigated area:	65770
Net Rainfed area	64381	Gross rainfed area	118615

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	565	1125
Wells	4283	8527
Tanks	-	-
Other sources	28189	56118

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	0	0	
2	Jowar	-	-	
3	Maize	42766	4256	38510
4	Bajra	112	12	100
5	Ragi	-		

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	-		
2	Groundnut	-		
3	Sesamum	1292	62	1230
4	SOyabean	17	16	1
5	Sunflower	-		
6	Castor	-		

Fibre

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

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	1325	856	469
2	Tobacco	-		
3	Guar seed	-		3132
4	Other Fodder crops	4704	1572	3132

Contingency plan for the district: Kangra

Condition	Suggested contingency measures				
Early season drought (delayed onset)	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delay by 4 weeks 3 week of July	Upland Rain-fed Loamy, coarse, loamy skeletal deep to medium deep soils	Rice (Transplanted/ Direct seeded)	Rice direct seeded : VL Dhan 221, RP 2421, HPR 1156, HPR 1068 Transplanted: 15 days old seedlings be transplanted of VL Dhan 221 Black gram(Well drained conditions) Black Gram: Him Black Gram-1, UG-218	Spacing 15 cm x 15 cm in rice and planting 3-4 seedlings/hill in normal rice -Follow SRI technique if nursery can be raised elsewhere	ISOPOM,MGNAREGA, taking up seed production in RKVY for these crops
		Maize	Maize fodder, Maize+ legume fodder Blackgram/Kulthi /Sesame Maize fodder var.African Tall Black Gram :UG 218, Pant U 19,Him black Gram 1 Finger millet: Baizu,Til (for Zone 1): LTK 4(all alternate upto 20July)		
		Vegetables Okra (P-8,Pusa Sawani ,Harbhajan) Tomato: Indeterminate varieties viz. Solan Vajr,Solan Garima,Solan Pride and Sindhur,Palam Pride and determinate Pink and Palam Pride) Chilli (Surajmukhi, CH-1) Cucurbits :, Bottle Gourd (PSPL, PSPL, Pusa Meghdoot), Cucumber (Poinsette, KH1,Khira 75,Khira 90), Bitter GourdSolan Hara Solan Safed) (Dehra, Nurpur and parts of Kangra)	Vegetables Okra (P-8,Pusa Sawani ,Harbhajan) Tomato: Ineterminate varieties viz. Solan Braj, Solan Garima<Solan Sindhur,Palam Pink and Palam Pride) Chilli (Surajmukhi, CH-1) Cucurbits :Snake Gourd	For cucurbits seed germination, be carried out in Poly tubes	

Condition	Suggested contingency measures				
Mid season drought (long dry spell, consecutive 2	Major Farming situation	Crop/cropping system	Crop management	Soil nutrient & moisture conservation measure	Remarks on Implementation

weeks rainless (>2.5 mm) period)					
At vegetative stage	Upland Rain-fed Loamy, coarse, loamy skeletal deep to medium deep soils	Rice transplanted	Intercultivation	Foliar spray of urea 1-2% after showers ,mulching with the weeds and in-situ conservation through diverting water from adjoining areas	Awareness through the KVK and Agricultural department on the measures to be taken
		Rice direct seeded	Reduce population by 10-20% and remove weeds and inter culture to make a soil mulch condition	Foliar spray of urea 1% after showers, mulching with the weeds and in-situ conservation through diverting water from adjoining areas	
		Maize	Remove 10-20% stand ,weeding and intercultural operations frequently to use soil as mulch	Foliar spray of nutrients 1-2%) after showers and Mulching with waste materials	
	Lowland Medium deep loamy soils	Rice	Remove weeds and reduce the plant population	Foliar N management instead of Top N dress; efficient weed management and their <i>in-situ</i> mulching	

Condition	Suggested contingency measures				
Mid season drought (long dry spell)	Major Farming situation	Crop/cropping system	Crop management	Soil nutrient & moisture conservation measure	Remarks on Implementation
	Upland Rain-fed Loamy, coarse, loamy skeletal deep to medium deep soils	Rice transplanted/ Rice direct seeded	Keep the fields weeds free	Foliar spray of N 1% after showers if stand is adequate, lifesaving irrigation, if possible Foliar N management instead of top N dress; efficient weed management and their <i>in-situ</i> mulching	Awareness about the use of foliar spray of nutrient
		Maize	Keep the fields free from weeds and if very poor crop use as fodder	Foliar spray of N 1-2%, if stand is adequate, interculture to create soil mulch, lifesaving irrigation if possible, use of mulch materials	
		Black Gram	Remove weeds and control insects	Lifesaving irrigation, create soil mulch through interculture	

Condition	Suggested contingency measures				
Terminal drought	Major Farming situation	Crop/cropping system	Crop management	Rabi Crop planning	Remarks on Implementation
	Upland Rain-fed Loamy, coarse, loamy skeletal deep to medium deep soils	Rice	If crop stand is poor then use of crop as fodder	Sowing of Radish/Peas/Toria as catch crop followed by Wheat OR in areas where drought is expected quite often then go for early wheat varieties viz., VL616/VL829/HPW251	
		Maize	If crop stand is poor then use of crop as fodder	Sowing of Toria/Gobi sarson/radish/Peas in good moisture from last rains or in areas where drought is expected quite often then go for early sown wheat varieties viz., VL616/VL829/HPW251	
		Black Gram	If no pod setting then use as fodder or incorporate in soil as manure	Sowing of early sown wheat varieties (VL616/VL829/HPW251) OR Toria/Toria+Gobhi sarson	

Irrigated situation

Condition	Suggested contingency measures				
	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delayed/ limited release of water in canals due to low rainfall (Irrigation by <i>kuhls</i> from natural streams and the adequate discharge dependent on good rains)	Irrigated Loamy, coarse, loamy skeletal deep to medium deep soils	Rice	Direct seeded rice, HPR 1156, VL Dhan 221,	Spacing 15 cm x 15 cm in rice and planting 3-4seedlings/hill in normal rice -Follow SRI technique if nursery can be raised elsewhere	State agriculture departments AEOS and ADOs trainings by KVK /demonstrations/lectures and availability of seeds from university Popularization of micro irrigation schemes
		Wheat	Shift to late sown varieties viz., HS490, VL892 Wheat+Mustard (RCC4) Wheat+Gobhi sarson (Neelam)	-Irrigation only at critical stages (CRI, flowering and dough stage) -Popularization of split application of nitrogen	
		Vegetables	No change	-Proper bunding, if possible, use sprinkler irrigation -Using Split application of nitrogen and prefer foliar application	
Non-release of water in canals under delayed onset of monsoon in catchment	Not applicable				

Condition	Suggested contingency measures				
	Major Farming situation	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				
Insufficient groundwater recharge due to low rainfall	Not applicable				

Actionable Comprehensive Plans for Contingency

State	HIMACHAL PRADESH	District	KINNAUR
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	247.8	More than 19%	Less than 200.718
June	41.8		
July	64.2		
August	71.6		
September	70.2		

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

Irrigation info:

Net irrigated area:	5478	Gross irrigated area:	6636
Net Rainfed area	3071	Gross rainfed area	3424

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	-	-
Wells	-	-
Tanks	-	-
Other sources	5478	6636

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	0	0	
2	Jowar	-	-	
3	Maize	68	38	30
4	Bajra	-		
5	Ragi	-		

Pulses & Oilseeds

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

Fibre

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

Other crops

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

Agriculture Contingency Plan for District: Kinnaur

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 (1st week of August)	Dry temperate High hills	Maize- Fallow Maize: local	No change Maize- Fallow Maize: local	- Mulching with local grasses/ organic materials - Weed control measures - Ridge and furrow planting	Link Department of Agriculture , KVKs and NGOs for the Supply of seeds and training to the farmers

		Rajmash- Fallow Rajmash: Kanchan, Jawala	Rajmash- Fallow Rajmash: Kanchan, Jawala improved varieties suitable for temperate zone such as Baspa, triloki and Kailash	Gap filling with improved varieties if the plant population is around 70% of optimum	
		Peas- Fallow Pea: Lincoln and AP-1	Peas- Fallow Pea: Lincoln and AP-1 Improved varieties suitable for temperate zone such as AP-1, Super AP-1		
		Vegetables	Potato- Fallow Potato: Kufri Jyoti Improved varieties suitable for temperate zone and resistant to cold and diseases		
		Millets (Ogla/ Phaphra)- Barley Ogla: local Phaphra: local Barley: Dolma	Millets (Ogla/ Phaphra)- Barley Ogla: local Phaphra: local		
		Vegetables	vegetables	-	
		Millets (Ogla/ Phaphra)- Barley Ogla: local Phaphra: local Barley: Dolma	Millets (Ogla/ Phaphra)- Barley Ogla: local Phaphra: local Barley: Dolma	- Gap filling with the seeds when the plant population is around 70% or more than optimum plant stands - Timely weed control - Mulching in crop rows	
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	Dry temperate High Hills	Maize- Fallow Maize: local	Life saving irrigation Re sowing/ Gap filling with higher (15-20%) Intercropping with legumes like mash	Mulching with local grasses Intercropping Adopt weed control	Awareness by extension workers of the Department of Agriculture , KVKs and NGOs
		Rajmash- Fallow Rajmash: Kanchan, Jawala	Life saving irrigation Gap filling with higher (15-20%)		
		Peas- Fallow Pea: Lincoln and AP-1			

		Potato- Fallow Potato: Kufri Jyoti			
		Millets (Ogla/ Phaphra)- Barley Ogla: local Phaphra: local Barley: Dolma			
	High Hills Temperate Dry and Cold Deserts	Vegetables			
		Millets (Ogla/ Phaphra)- Barley Ogla: local Phaphra: local Barley: Dolma	Life saving irrigation Gap filling with higher (15-20%)	Mulching with local grasses Appropriate weed control	
		Millets (Ogla/ Phaphra)- Barley Ogla: local Phaphra: local Barley: Dolma	Life saving irrigation Gap filling with higher (15-20%)	Mulching with local grasses Appropriate weed control	

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	Major Farming situation	Normal Crop/cropping system	Crop management	Soil nutrient & moisture conservation measues	Remarks on Implementation
At flowering/ fruiting stage	Dry temperate High Hills	Maize- Fallow Maize: local	Life saving irrigation	Critical irrigations through glacial melts	Link Department of Agriculture and KVK to provide awareness amongst famers and also Link MGNERAGA for the support of water harvesting structures Use of local ITKs
		Rajmash- Fallow Rajmash: Kanchan, Jawala			
		Peas- Fallow Pea: Lincoln and AP-1			
		Potato- Fallow Potato: Kufri Jyoti			
		Millets (Ogla/ Phaphra)- Barley Ogla: local Phaphra: local Barley: Dolma			
		Apple			

	High Hills Temperate Dry and Cold Deserts	Apple Standard Varieties, Royal Delicious, Kalidevi, Seed Rootstock Plants Apple	Training and pruning of apple orchards Thinning of fruits in apple Use of Standard high colour varieties of apple drought resistant varieties viz., Red chief, Use of spur type cultivars of apple Use of Clonal rootstocks viz., Malling and Merton of apple	Use of Mulching (plastic and hay mulch) Manual weeding Clean basin cultivation Use of drip irrigation foliar spray of urea @ 0.5 % to replace soil application Use of drippers and sprinkler irrigation	The Department of Agriculture and Horticulture to provide awareness amongst famers Use of local ITKs
		Vegetables	Life saving irrigation	Critical irrigations through glacial melts	
		Millets (Ogla/ Phaphra)- Barley Ogla: local Phaphra: local Barley: Dolma			

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
	Dry temperate High Hills	Maize- Fallow Wheat- Fallow Barley- Fallow Rajmash- Fallow Peas- Fallow Potato- Fallow Ogla- Fallow	Life saving irrigation Regular weeding Maintenance of soil cover with mulching Early harvesting at physiological maturity at a reasonable yield level	Plan for land preparation and sowings of rabi crops like Barley, Milletts (Ogla, Phaphra), buckwheat , vegetables Pea (October Month)	Link Department of Agriculture, Horticulture, KVKs and NGOs for awarenss on technologies and trainings amongst the farmers Use of local ITKs
	High Hills Temperate Dry and Cold Deserts	Apple Vegetables Milletts (Ogla/ Phaphra)- Barley Ogla: local Phaphra: local Barley: Dolma	Use of maize as fodder If the damage is very severe		

Actionable Comprehensive Plans for Contingency

State	HIMACHAL PRADESH	District	KULLU
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	548	More than 19%	Less than 443.88
June	86.9		
July	178.2		
August	170.7		
September	112.2		

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

Irrigation info:

Net irrigated area:	1870	Gross irrigated area:	2109
Net Rainfed area	34739	Gross rainfed area	48283

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	-	-
Wells	-	-
Tanks	105	118
Other sources	1765	1991

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	0	0	
2	Jowar	-	-	
3	Maize	10573	64	10509
4	Bajra	-		
5	Ragi	-		

Pulses & Oilseeds

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

Fibre

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

Other crops

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

Agriculture Contingency Plan for District: KULLU

Condition	Suggested Contingency measures				
Early season drought (delayed onset)	Major Farming situation	Normal Crop / Cropping system	Change in crop / cropping system including variety	Agronomic measures	Remarks on Implementation
Delay by 4 weeks 1 st week of August	Shallow to deep loamy soils - Low and mid hills and valley areas with mild temperate climate	Maize Maize + Pulses	Fodder: Maize/ Sorghum (up to 30 th Aug); African Tall/ composites / local varieties Baby corn (up to 15 th Aug):VL 78 Blackgram: Kullu 4/ Palampur 93/ UG 218/ Pant U 19 Cowpea: : Himachal lobia 1(C475) / C 519	➤ Addition of organic manures (FYM/ compost) to the soil at least 5-10 t/ha. ➤ Soil moisture conservation measures with locally available mulches ➤ Plug/ Smear the field bunds to avoid water and nutrient leakage loss. ➤ Cultivation across the slope: All agricultural	Seed supply through ISOPOM, RKVY

			French bean: French Bean bush Type in rain Shadow belts (up to 1000-1500m) Pole Type in Valley areas (up to 1000m)	operations including ploughing and sowing should be done across the slope	
	Shallow to deep loamy soils - High Hills, temperate climate	Maize Maize +Pulses	Babycorn (up to 15 th Aug):VL 78 Blackgram :- Kullu 4/ Palampur 93/ UG 218/ Pant U 19 Cowpea: Himachal lobia 1 (C475) / C 519 French bean: French Bean bush Type in rain Shadow belts (up to 1000-1500m)		

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		Cauliflower-Cauliflower-Pea	Short duration crops : French bean, cabbage may be sown	• Add 20-25 t/ha of FYM/Compost to the soil • Split application of Nitrogen doses • Avoid top dressing during water scarcity period • Intercropping with legumes • Add locally available organic material as mulch • Dust mulching may be done by just scrubbing the top soil.	
		Tomato-cauliflower-Pea	Short duration crops French bean (bush Type) French bean : Palam Mridula, Contender etc.		
		French bean-Tomato-Cauliflower	French bean-Tomato-Cauliflower		

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	Not Applicable				
Non release of water in canals under delayed onset of monsoon in catchment	Not Applicable				
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	Not Applicable				

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	Not Applicable				

Actionable Comprehensive Plans for Contingency

State	HIMACHAL PRADESH	District	MANDI
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	1097.5	More than 19%	Less than 888.975
June	171.5		
July	371.7		
August	381.2		
September	173.1		

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

Irrigation info:

Net irrigated area:	14778	Gross irrigated area:	26457
Net Rainfed area	73324	Gross rainfed area	130969

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	-	-
Wells	85	152
Tanks	-	-
Other sources	14693	26305

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	0	0	
2	Jowar	215	-	
3	Maize	44285	2271	42014
4	Bajra	-		
5	Ragi	643		643

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	-		
2	Groundnut	-		
3	Sesamum	15		15
4	SOyabean	351	142	209
5	Sunflower	-		
6	Castor	-		

Fibre

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

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	-		
2	Tobacco	-		
3	Guar seed	-		1033
4	Other Fodder crops	1514	481	1033

Agriculture Contingency Plan for District: MANDI

Condition	Suggested Contingency measures				
Early season drought (delayed onset)	Major Farming situation	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Delay by 4 weeks 3 rd week of July	Upland Shallow to medium deep loamy soils	Rice (Direct seeded) (Rice-wheat system)	Rice (Direct seeded: VL-221)	Increase the seed rate (25%) Addition of organic manures (FYM/compost) @ 5-10 t/ha	Dept. of Agriculture, ISOPOM
		Maize (Maize-wheat system)	Maize (Double Decalb, PSCL-4642, PSCL-4640, PSCL-3438, HQPM-1, Early Composite, Girija) Baby Corn: VL 78/ Early Composite	Increase the seed rate (25%) Addition of organic manures (FYM/compost) @ 5-10 t/ha	

			Black gram (UG-218, Himachal Mash-1)	Increase the seed rate (25%)	
		Cowpea, Finger-millet (Finger millet/pulse-wheat system)	Black gram (Himachal Mash-1, UG-218)	Increase the seed rate (25%)	
	Lowland Deep loamy skeletal soils to deep loamy soils	Rice (Direct seeded) (Rice-wheat system)	Maize (Double Decalb, PSCL-4642, PSCL-4640, PSCL-3438, HQPM-1, Early Composite, Girija)	Proper drainage, higher seed rate, addition of organic manures (FYM/compost) @ 5-10 t/ha	
			Cowpea (C-475, C-519)	Increase the seed rate (25%)	
			Black gram (UG-218, Himachal Mash-1)	Increase the seed rate (25%)	
Condition	Suggested contingency measures				
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	Major farming situation	Crop/cropping system	Crop management	Soil nutrient & moisture conservation measure	Remarks on implementation
At vegetative stage	Upland Shallow to medium deep loamy soils	Rice (Transplanted/Direct seeded) (Rice-wheat system)	Gap filling, use anti-transpirants, life saving irrigation if available	Foliar N management (1% urea spray) instead of top dressing of N	Construction of rain water harvesting ponds through IWMP and MNREGS
		Maize (Maize-wheat system)		Efficient weed management and their <i>in-situ</i> mulching	
		Finger-millet (Finger millet-wheat system)		Use local available plant material for mulch	
		Cowpea, blackgram (Rice-wheat system)			
	Lowland Deep loamy-skeletal soils to deep loamy soils	Rice (Transplanted/Direct seeded) (Rice-wheat system)	Gap filling, use anti-transpirants, life saving irrigation if available	Foliar N management (1% urea spray) instead of top dressing of N	
				Efficient weed management and their <i>in-situ</i> mulching Use local available plant material for mulch	

Condition	Suggested contingency measures				
Mid season drought (long dry spell)	Major Farming situation	Crop/cropping system	Crop management	Soil nutrient & moisture conservation measure	Remarks on Implementation

At reproductive stage	Upland Shallow to medium deep loamy soils	Rice (Transplanted/Direct seeded) (Rice-wheat system) Maize, Finger-millet (maize/fingermillet-wheat system) Cowpea, Blackgram (Pulse-wheat system)	Site-specific crop management technologies: - If crop stand is poor then use of crop as fodder. - If grain setting has occurred in maize, the tassels can be cut down to reduce transpiration - Cowpea and Blackgram can be incorporated as green manure & conserve moisture for <i>Rabi</i> crops, - If rain comes Toria can be sown, in mid September - Thinning, life saving irrigation from rain water harvest ponds, Weeding and Weed mulching - Anti-transpirant spray - Harvesting at physiological maturity	Foliar N management (1 % urea spray) instead of top dressing of N, if the crop stand is still better Use local available plant material for mulch	Construction of rain water harvesting ponds through IWMP and MNREGS
	Lowland Deep loamy-skeletal soils to deep loamy soils	Rice (Transplanted/Direct seeded) (Rice-wheat system)	Site-specific crop management technologies: - Life saving irrigation, if available - Toria can be sown, in mid September (If rainfall receives) - Anti-transpirant spray - Harvesting at physiological maturity	Foliar N management (1 % urea spray) instead of top dressing of N application. Efficient weed management and their <i>in-situ</i> mulching Use local available plant material for mulch	Construction of rain water harvesting ponds through IWMP and MNREGS

Condition	Suggested contingency measures				
Terminal drought	Major Farming situation	Crop/cropping system	Crop Management	Rabi crop planning	Remarks on Implementation
	Upland Shallow to medium deep loamy soils	Rice (Transplanted/Direct seeded) (Rice-wheat system)	Site-specific crop management technologies: - If crop stand is poor use crop as fodder. - Cowpea and blackgram can be incorporated as green manure & conserve	<i>In-situ</i> moisture conservation and sowing of <i>Zaid</i> toria/Frenchbean if possible otherwise <i>Rabi</i> crops sowing would be done after the receiving of rainfall spell	Construction of rain water harvesting ponds through IWMP and MNREGS
		Maize (Maize-wheat system)			
		Cowpea (Pulse-wheat system)			
		Blackgram (Pulse-wheat system)			
		Finger-millet			

		(Finger millet-wheat system)	moisture for <i>Rabi</i> crops, • Weeding and weed mulching • Anti-transpirant spray • Harvest whatever crop is available and immediately conserve the soil moisture for <i>Rabi</i> crops		
	Lowland Deep loamy-skeletal soils to deep loamy soils	Rice (Transplanted/Direct seeded) (Rice-wheat system)	Site-specific crop management: • Harvesting at physiological maturity • Harvest whatever crop is available and immediately conserve the soil moisture for <i>Rabi</i> crops	<i>In-situ</i> moisture conservation and sowing of toria/ French bean if possible otherwise. <i>Rabi</i> crops sowing should be done after the rainfall spells are received	

Actionable Comprehensive Plans for Contingency

State	HIMACHAL PRADESH	District	SHIMLA
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	627.5	More than 19%	Less than 508.275
June	110.4		
July	203.4		
August	186.5		
September	127.2		

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

Irrigation info:

Net irrigated area:	2310	Gross irrigated area:	3006
Net Rainfed area	67236	Gross rainfed area	77885

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	-	-
Wells	-	-
Tanks	-	-
Other sources	2310	3006

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	0	0	
2	Jowar	-	-	
3	Maize	4001	354	3647
4	Bajra	12	3	9
5	Ragi	101	5	96

Pulses & Oilseeds

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

Fibre

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

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	-		
2	Tobacco	-		
3	Guar seed	-		191
4	Other Fodder crops	223	32	191

Agriculture Contingency Plan for District: SHIMLA

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 4th week of July	Scanty Rainfall Sandy loam to clay loam Soils	a.Maize-Wheat b.Maize+Pulses-Wheat c.Maize-Barley	Maize-Wheat ; a.Maize+Wheat b.Maize+Pulses+Wheat c.Maize+Barley Intercropping with legumes like moong , rajmash, beans, cowpea Maize; DKH -9705,L-118,Him-123,PSCL-4640,Sartaj, Early Composite,PSCL-3438	Mulching with lantana, pine needles (5 tonnes per ha) Deep Sowing	Link department of agriculture, NSC, SAU for the supply of seed and KVK for need based training for the farmers

			Wheat : HPW-184, 155,89-147,240,HPW-42, Raj-3777,HS-295 Rajmash : K-198, HP-12,HPR-35,SRC-74,Him-1,KRC-8 Mash:UPU-0031,UG-218,Pant U-19,T-9,Palampur-93 Barley: HBL_276,HBL-113,Dolma,HBL-87,HBL-316,HBL-391		
		Paddy-Wheat Paddy-Barley	Paddy-Wheat Paddy-Barley Paddy: HPR-1156,HPR-2143,VL Dhan-221China-988,R-575	Transplanting Mulching with lantana, pine needles (5 tonnes per ha)	
		Cabbage-pea	Paddy-Wheat Paddy-Barley Paddy: HPR-1156,HPR-2143,VL Dhan-221China-988,R-575	-	
		Potato-pea	Potato+pea Potato: Kufri Jyoti, Kufri Chandermukhi Pea:Lincolon,Arkel,PB-89,Azad P-1	Delay in sowing by 2 weeks Gap filling with improved variety	
		Tomato+pea	Tomato+pea Tomato:Solan Gola, Naveen,Roma,Palam Pride,MTH-15,Solan Vajar,Rupali Pea:Lincolon,Arkel,PB-89,Azad - Tomato+pea	Mulching with lantana, pine needles (5 tonnes per ha)	

Condition			Suggested Contingency measures		
			Crop management	Soil nutrient & moisture conservation measues	Remarks on Implementation
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	Major Farming situation	Normal Crop/cropping system			
At vegetative stage	Scanty Rainfall Sandy Loam/ Clay Loam Soils	Maize-Wheat ; a.Maize+Wheat b.Maize+Pulses+Wheat c.Maize+Barley	Life saving irrigation Resowing/ Gap filling with higher (15-20%) Seed Rate	Addition of FYM and organic manures) (2-3 tonnes /ha) Mulching	
		Paddy-Wheat Paddy-Barley			

			Maintenance of soil cover Intercropping with legumes Thinning Ridge and furrow cultivation	Mulching in crop rows with green materials Spray 2% urea to pulses during the dry spell	
		Cabbage+pea	Life saving irrigation		
		Potato+pea			
		Tomato+pea	Resowing/ Gap filling with higher (15-20%) Seed Rate Maintenance of soil cover Intercropping with legumes Thinning Ridge and furrow cultivation		
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	Scanty Rainfall Sandy Loam/ Clay Loam Soils	Maize-Wheat ; a.Maize+Wheat b.Maize+Pulses+Wheat c.Maize+Barley	Life saving irrigation Maintenance of soil cover	Addition of high doses of FYM and organic manures) (2-3 tonnes /ha) Mulching_ in crop rows	
		Paddy-Wheat Paddy-Barley	Thinning		
		Cabbage+pea	Ridge and furrow cultivation		
		Potato+pea			
		Tomato+pea			
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
	Scanty Rainfall Sandy Loam/ Clay Loam Soils	Maize-Wheat ; a.Maize+Wheat b.Maize+Pulses+Wheat c.Maize+Barley	Life saving irrigation Harvest at physiological maturity	If the damage is severe, harvest as fodder and plan for land preparation and sowings of rabi crops like oil seeds/ pulses based:	Link department of agriculture, NSC,
		Paddy-Wheat Paddy-Barley			
		Cabbage+pea			
		Potato+pea			

		Tomato+pea		Toria, Gobhi Sarson, Brown Sarson, Gram, Masoor (Sep-Oct)	
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Irrigated situation (through *Kuhls*)

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 <i>kuhls</i> due to low rainfall	Not applicable as it is a community resource and water is release from Glaciers melt or local rivers/ nallas directly				

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 <i>kuhls</i> due to low rainfall	Scanty Rainfall Sandy Loam/ Clay Loam Soils, Steep topography, Perennial/ seasonal rivers, streams, springs, tanks	Maize-Wheat; a.Maize+Wheat b.Maize+Pulses+Wheat c.Maize+Barley	Maize+Pulses+Wheat	Life saving irrigation from constructing tanks (mini ponds lined with LDPE sheets of 1000 gauge), Use of micro-irrigation systems	Supply of seeds through Govt. Agencies Supply of seed drills and farm machinery through govt. agencies Supply of drought tolerant and HYV seeds Supply of LDPE sheets for farm pond lining through Govt. agencies like District Rural Development Agencies, MNERAGA, Horticulture Mission projects of Department of Horticulture , other projects of Agriculture
		Paddy-Wheat Paddy-Barley	Oilseeds+Wheat		
		Cabbage+pea	Cabbage+Capsicum+pea	Mulching in crop rows Regular weeding Ridge and furrow cultivation	
		Potato+pea	Potato+Capsicum+pea	Contour planting Mulching in crop rows Life saving irrigation through water harvesting systems Use of micro irrigation systems	

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 <i>kuhls</i> under delayed onset of monsoon in catchment	Not Applicable as it is a community resource				

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 ^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	Not Applicable				

Actionable Comprehensive Plans for Contingency

State	HIMACHAL PRADESH	District	SIRMAUR
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	1183.8	More than 19%	Less than 958.878
June	165.8		
July	422.2		
August	381.2		
September	214.6		

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

Irrigation info:

Net irrigated area:	13931	Gross irrigated area:	26816
Net Rainfed area	24838	Gross rainfed area	46202

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	2754	5301
Wells	2662	5124
Tanks	-	-
Other sources	8515	16391

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	0	0	
2	Jowar	-	-	
3	Maize	16452	4256	12196
4	Bajra	-		
5	Ragi	182	47	135

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	-		
2	Groundnut	5	3	2
3	Sesamum	1	1	0
4	SOyabean	42	9	33
5	Sunflower	-		
6	Castor	-		

Fibre

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

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	446	294	152
2	Tobacco	-		
3	Guar seed	-		696
4	Other Fodder crops	1707	1011	696

Contingency plan for the District: Sirmaur

Early season drought (delayed onset)	Major Farming situation	Normal Crop / Cropping system	Change in cropping systems including variety	Agronomic measures*	Remarks on Implementation
Zone II&III Ishillai, Sangrah, Pachhad & Rajgarh)					
Delay by 4 weeks (Normal onset 22 nd June ±10 days) 3 rd week of July		Ginger-Potato	No change	Summer ploughing, mulch with leaves for Ginger. Plough the field just after harvesting of ginger crop conserve residual moisture for sowing of Potato.	Training skills for farmers through KVK

Condition	Suggested contingency measures				
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	Major Farming situation	Normal Crop / Cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
At vegetative stage	Medium deep to deep loamy soils	1.Maize – wheat	Dust mulch through frequent interculture	Dust mulch through frequent interculture Or Spray 2% urea or 1% NPK (Soluble fertilizer) during the dry spell Formation of ridges and furrows Life saving irrigation from water harvesting structures	Link NSC,SAU, Department of agriculture for good quality seed Linkage with watershed, MGNREGA for the support of water harvesting technologies
		2 Paddy-wheat	Dust mulch through frequent interculture	Dust mulch through frequent interculture Or Spray 2% urea or 1% NPK (Soluble fertilizer) during the dry spell Formation of ridges and furrows Life saving irrigation from water harvesting structures	
		3.Maize- Toria - wheat	Dust mulch through frequent interculture	Dust mulch through frequent interculture Or Spray 2% urea or 1% NPK (Soluble fertilizer) during the dry spell Formation of ridges and furrows Life saving irrigation from water harvesting structures	
		4.Maize+Mash - Barley	Dust mulch through frequent interculture	Dust mulch through frequent interculture Or Spray 2% urea or 1% NPK (Soluble fertilizer) during the dry spell Formation of ridges and furrows Life saving irrigation from water harvesting structures	

Condition	Suggested contingency measures				
Mid season drought	Major Farming situation	Normal Crop / Cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
At flowering/ fruiting stage	Medium deep to deep loamy soils	1. Maize – wheat	Life saving irrigation from water harvesting structures	Spray 2% urea or 1% NPK (Soluble fertilizer) during the dry spell	Link watershed , MGNREGA for the support of water harvesting technologies
		2. Paddy- wheat	Life saving irrigation from water harvesting structures	Spray 2% urea or 1% NPK (Soluble fertilizer) during the dry spell	
		3. Maize- Toria -wheat	Life saving irrigation from water harvesting structures	Spray 2% urea or 1% NPK (Soluble fertilizer) during the dry spell	
		4. Maize+ Mash -Barley	Life saving irrigation from water harvesting structures	Spray 2% urea or 1% NPK (Soluble fertilizer) during the dry spell	

Condition	Suggested contingency measures				
Terminal drought (Early withdrawal of monsoon) Terminal drought	Major Farming situation	Normal Crop / Cropping system	Crop management	Rabi crop planning	Remarks on Implementation
	Medium deep to deep loamy soils	1. Maize – wheat	Life saving irrigation from water harvesting structures If the damage is severe, harvest for fodder or Harvest at physiological maturity	Plan for land preparation of <i>Rabi</i> crops like wheat, Barley, or mustard	
		2. Paddy- wheat	Life saving irrigation from water harvesting structures If the damage is severe, harvest for fodder or Harvest at physiological maturity	Plan for land preparation of <i>Rabi</i> crops like wheat, Barley, or mustard	
		3. Maize- Toria - wheat	Life saving irrigation from water harvesting structures If the damage is severe, harvest for fodder or Harvest at physiological maturity	Plan for land preparation of <i>Rabi</i> crops like wheat, Barley, or mustard	
		4. Maize+Mash -Barley	Life saving irrigation from water harvesting structures If the damage is severe, harvest for fodder or Harvest at physiological maturity	Plan for land preparation of <i>Rabi</i> crops like wheat, Barley, or mustard	

Irrigated situation (through *Kuhls/Tube wells/canal/natural springs*)

Condition	Suggested contingency measures				
	Major Farming situation ^f	Crop/cropping system	Change in crop/cropping system	Agronomic measures	Remarks on Implementation
Low water availability in <i>kuhl/ natural springs</i>	Medium to deep loamy soils	Assured irrigation supply by tube well available, hence, not applicable However, provide protective irrigation. Irrigate the crop keeping in view the physiological stage of crop. Use sprinkler method to increase WUE in case of limited release of water due to low rainfall. Follow soil moisture conservation measures			
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	Medium to deep loamy soils	Not applicable			
Insufficient groundwater recharge due to low rainfall	Medium to deep loamy soils	Not applicable			

Actionable Comprehensive Plans for Contingency

State	HIMACHAL PRADESH	District	SOLAN
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	874.3	More than 19%	Less than 708.183
June	137.3		
July	295.1		
August	272.2		
September	169.7		

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

Irrigation info:

Net irrigated area:	9409	Gross irrigated area:	19886
Net Rainfed area	22993	Gross rainfed area	32821

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	-	-
Wells	3339	7057
Tanks	202	427
Other sources	5868	12402

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	0	0	
2	Jowar	-	-	
3	Maize	19900	5460	14440
4	Bajra	41		41
5	Ragi	-		

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	-		
2	Groundnut	21	10	11
3	Sesamum	50	5	45
4	SOyabean	18		18
5	Sunflower	-		
6	Castor	-		

Fibre

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

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	14	13	1
2	Tobacco	-		
3	Guar seed	-		575
4	Other Fodder crops	767	192	575

Agriculture Contingency Plan for District: Solan

Condition			Suggested Contingency measures		
Early season drought (delayed onset)	Major Farming situation	Normal Crop / Cropping system	Change in crop / cropping system including variety	Agronomic measures	Remarks on Implementation
Delay by 4 weeks 2nd week of August	Low hills and valley areas	Rainfed Maize-wheat Paddy wheat Maize- Toria- Wheat Maize+ Black gram- Wheat+ Brassica Tomato/Okra/Cucurbits/ Colocasia - Wheat	Cultivation of Short Duration Crops like Cabbage (Tokita – Boy – matures in 60 days) Cauliflower (Vigro – matures in 55days) Methi Inter-cropping of rajmash	Moisture Conservation measures Interculture Dry sowing 10-12 days before rains with higher seed rate	Link NSC,SAU,department of agriculture for getting good seed & KVK
	Low mid hills	Rainfed Maize-Wheat / Wheat + Brassica	Palak <i>In situ</i> sowing of walnut, pecan and aonla seeds in		

		- Maize – Barley - Maize + Black Gram / Horse Gram – Wheat / Wheat + Brassica - Tomato/Ginger/ Cucurbits- Wheat	September for better survival and success		
	High hills	Rainfed - Maize/Rajmash/M ash –Wheat/Barley - Tomato/Beans/Cu curbits/Ginger – Wheat/Barley - Maize – Cole crops/Peas/Potato	Maize: K-517, K-9451, K-25 and KH-2005 (K= Kanchan); Rajmash- Jawala and local;Pea-Arkel) Inter-cropping of Rajmash		

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 measure ^s	Remarks on Implementation
At vegetative stage	Low hills and valley areas	Rainfed Maize-wheat Paddy heat Maize+ Black gram Tomato/Okra/Cucurbits/ colocasia – Wheat	Gap filling with improved seeds when the plant population is around 70% of optimum Dry sowing of maize and line sowing Intercropping of black gram when there is a poor growth of existing maize	- Hand weeding in maize and paddy. - Mulching in between the rows in maize with materials like uprooted weeds or grass from fields - Foliar spray of urea @ 0.5 % to replace soil application - Life saving irrigation through water harvesting structures - Use of drippers and sprinkler irrigation - Removal of weeds from the field	Link NSC,SAU and department of agriculture for the supply of seed Link watershed, MNAREGA, RKY for the support of water harvesting struxtures
	Low mid hills	Rainfed - Maize-Wheat / Wheat + Brassica - Maize – Barley - Maize + Black Gram / Horse Gram – Wheat / Wheat + Brassica	- Dry sowing of maize and line sowing - Intercropping of black gram when there is a poor growth of existing maize	- Hand weeding in maize - mulching in between the rows in maize with materials like uprooted weeds or grass from fields - foliar spray of urea @ 0.5 % to replace soil application - Life saving irrigation from water harvesting structures	

		Tomato/Ginger/ Cucurbits- Wheat		- Use of drippers and sprinkler irrigation - Use of different type of mulches - Removal of weeds from the field	
	High mid hills	- Brassica - Tomato – Wheat-Maize – Potato/Peas/Cole crops	- Dry sowing of maize and line sowing - Intercropping of black gram when there is a poor growth of existing maize		
		- Maize + Rajmash- Wheat+ Oil seed - Rajmash- Jawala and local			
		- Maize-Cole crops/Pulses - wheat/pea - Pea-Arkel			
	High hills	Rainfed - Maize/Rajmash/Mash – Wheat/Barley - Tomato/Beans /Cucurbits/Ginger – Wheat/Barley - Maize – Cole crops/Peas/Potato	Dry sowing of maize and line sowing		

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	High hills to high mid hills	Apple	Training and pruning of apple orchards Thinning of fruits Use of Standard high colour varieties, drought resistant varieties viz., Red	Use of Mulching (plastic and hay mulch) Manual weeding Clean basin cultivation	Link KVK and department of agriculture and SAUs to create awareness camps, demonstrations and exposure visits and trainings to the farmers

			chief, Use of spur type cultivars, use of Clonal rootstocks viz., Malling and Merton	Water harvesting measures with half moonbasins Use of drip irrigation foliar spray of urea @ 0.5 % to replace soil application Use of drippers and sprinkler irrigation Use of different type of mulches	
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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
	Low hills and valley areas	Rainfed Maize-wheat Paddy wheat Maize- Toria- Wheat Maize+ Black gram- Wheat+ Brassica Tomato/Okra/Cucurbits/ Colocasia - Wheat	Life saving irrigation Harvest at physiological maturity stage Harvest for fodder If the damage will be severe	Plan for land preparation and sowings of rabi crops like Toria, Wheat, Barley, Pea (October Month)	Link KVK, Department of agriculture and SAUs, link watersheds, MNAREGA, Horticulture mission
	Low mid hills	Rainfed - Maize-Wheat / Wheat + Brassica - Maize – Barley - Maize + Black Gram / Horse Gram – Wheat / Wheat + Brassica Tomato/Ginger	Life saving irrigation Harvest at physiological maturity stage Harvest for fodder If the damage will be severe	Plan for land preparation and sowings of rabi crops likeToria, Wheat, Barley, Pea (October Month)	
	High mid hills	Rainfed Maize – Wheat + Brassica - maize + Black Gram- Wheat/Brassica/Gram - Maize – Peas - Paddy – Wheat - Tomato/Cucrbits/Ginger/Colocsia –Wheat - Black gram – Wheat Tomato – Wheat			
	High hills	Rainfed - Maize/Rajmash/Mash – Wheat/Barley - Tomato/Beans/Cucurbits/Ginger – Wheat/Barley - Maize – Cole crops/Peas/Potato			

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 kuhls due to low rainfall	undulating lands and brown forest soils	Paddy (sub merged conditions)	Maize and Aerobic rice Millets	- Select short duration varieties of Aerobic rice and vegetables - Irrigation at critical crop growth stages - Alternate furrow irrigation - Drip irrigation - Foliar application of urea 2 %	Link extension agencies and kVKs to create awareness on technologies to the farmers
		Vegetables based cropping system (Capsicum, Potato, French Bean, Cabbage, Chilli, tomato)	Less area under vegetables and More area with Maize and Aerobic rice Millets		

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 kuhls in kuhls due to low rainfall	undulating lands and brown forest soils	Paddy (sub merged conditions) Vegetable based (Capsicum, Potato, French Bean, Cabbage, Chilli, tomato)	Continue vegetable-based system	Mulching in crop rows Ridge and furrow planting Irrigation at critical crop growth stages Alternate Furrow irrigation Drip irrigation	Link extension agencies and kVKs to create awareness on technologies to the farmers

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 kuhls under delayed onset of monsoon in catchment	undulating lands and brown forest soils	Paddy (sub merged conditions)	Millets	Select short duration varieties of millets Insitu conservation measures liker ridge and furrow Mulching in crop rows with organic materials Ranwater harvesting, storage and recycling methods	

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	undulating lands and brown forest soils	Paddy (sub merged conditions), tomato, vegetables	Maize, Aerobic rice and vegetables (Tomato, chilli and Brinjal)	Irrigation at critical crop growth stages Drip irrigation Spray 2% urea Control of insects and pests	Link extension agencies and kVKs to create awareness on technologies to the farmers

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	undulating lands and brown forest soils	Paddy (sub merged conditions)	Maize, Aerobic rice and vegetables (Tomato, chilli and Brinjal)	Irrigation at critical crop growth stages Hand weeding and mulching in crop rows Spray 2% urea Drip irrigation Control of insects and pests	Link extension agencies and kVKs to create awareness on technologies to the farmers

Actionable Comprehensive Plans for Contingency

State	HIMACHAL PRADESH	District	UNA
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Rainfall info (mm)

Month/season	Normal rainfall (mm)	Expected deficiency, %	Expected rainfall (mm)
June-Sep	953	More than 19%	Less than 771.93
June	103.8		
July	313.8		
August	357.8		
September	177.6		

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

Irrigation info:

Net irrigated area:	17408	Gross irrigated area:	29762
Net Rainfed area	22558	Gross rainfed area	47352

Source wise irrigation area details (ha)

Source of irrigation	Net	Gross
Canals	-	-
Wells	17394	29738
Tanks	-	-
Other sources	14	24

Crop Profile (Kharif)

Cereals

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Rice	0	0	
2	Jowar	-	-	
3	Maize	30851	7833	23018
4	Bajra	-		
5	Ragi	-		

Pulses & Oilseeds

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Arhar/ Redgram	-		
2	Groundnut	1	1	0
3	Sesamum	119	10	109
4	SOyabean	-		
5	Sunflower	-		
6	Castor	-		

Fibre

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

Other crops

S.No	Crop name	Total area (ha)	Irrigated area (ha)	Rainfed area (ha)
1	Sugarcane	138	39	99
2	Tobacco	-		
3	Guar seed	-		1395
4	Other Fodder crops	2774	1379	1395

Agriculture Contingency Plan for District: Una

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	Medium rainfall, Medium deep to deep, loamy-skeletal soils	Maize-wheat	Intercropping/mixed cropping Maize + Soybean (Harit Soya/ Shivalik) /blackgram (UG-218, Him Mash-1)/ Sesame (LTK-4) or Change of crop : Black Gram (Him mash-1, UG-218) up to 15 th July or Short duration varieties of maize viz. Bajaura Makka,	Increase row spacing, Thinning of crop, Immediate ploughing and planking the field in order to conserve soil moisture, Deep sowing with minimum soil load on seed, Prefer pre-soaked seed for sowing of wheat, Increase the seed rate of soyabean and blackgram by 10-15%	ISOPOM, RKVY

			Vivek, HQPM1 and Early Composite		
	Medium rainfall, Shallow, sandy soils	Maize-Wheat	Intercropping/mixed cropping: Maize + Soybean (Harit Soya/ Shivalik) /blackgram (UG-218, Him Mash-1)/ Sesame (LTK-4) or Change of crop : Black Gram (Him mash-1, UG-218) up to 15 th July or Short duration varieties of maize viz. Bajaura Makka, Vivek, HQPM1 and Early Composite	Maize + Cowpea/ mash/ soybean/ sesame with good drainage for fodder purpose Immediate ploughing and planking the field in order to conserve soil moisture, Deep sowing with minimum soil load on seed, Prefer pre-soaked seed for sowing.	
	Medium rainfall, Medium deep to deep, loamy soils	Maize-wheat	Intercropping/mixed cropping Maize + Soybean (Harit Soya/ Shivalik) /blackgram (UG-218, Him Mash-1)/ Sesame (LTK-4) or Change of crop : Black Gram (Him mash-1, UG-218) up to 15 th July or Short duration varieties of maize viz. Bajaura Makka, Vivek, HQPM1 and Early Composite	Maize + Cowpea /mash /soybean /sesame with good drainage for fodder purpose Immediate ploughing and planking the field in order to conserve soil moisture, Deep sowing with minimum soil load on seed, Prefer pre-soaked seed for sowing.	

Condition	Suggested Contingency measures				
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	Major Farming situation	Normal Crop/ cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
At vegetative stage	Medium rainfall, Medium deep to deep, loamy-skeletal soils	Maize-wheat	Thinning (20%), Life saving irrigation if available, <i>In-situ</i> weed mulching	Inter-cultivation (soil mulching), Conservation Furrow, Foliar N management, Ridging in maize, don't use chemicals for weed management under stress	RKVY
		Paddy-wheat	Life saving irrigation	-	

	Medium rainfall, Shallow, sandy soils	Maize-wheat	Thinning (20%), Life saving irrigation if available, <i>In-situ</i> weed mulching	Inter-cultivation (soil mulching), Conservation Furrow, Foliar N management, Earthing at 30-35 DAS, spray of Kaolin @5%, spray of 1000ppm thiourea, foliar spray of 2% urea in maize.	
	Medium rainfall, Medium deep to deep, loamy soils	Maize-wheat	Thinning (20%), Life saving irrigation if available, <i>In-situ</i> weed mulching	Inter-cultivation (soil mulching), Conservation Furrow, Foliar N management	

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	Medium rainfall, Medium deep to deep, loamy-skeletal soils	Maize-wheat	Harvest the crop for fodder If grain setting has occurred in maize, the tassels can be cut down to reduce transpiration, Life saving irrigation, if available	Urea spray (1%) or KCl spray, Use local available plant material for mulch	Farm ponds through IWSM programme
		Paddy (irrigated)-wheat	No Change	Irrigation at hair line stage to increase water use efficiency	
	Medium rainfall, Shallow, sandy soils	Maize-wheat	Harvest the crop for fodder If grain setting has occurred in maize, the tassels can be cut down to reduce transpiration, life saving irrigation, if available	Urea spray (1%) or KCl spray, Use local available plant material for mulch	
	Medium rainfall, Medium deep to deep, loamy soils	Maize-wheat	Harvest the crop for fodder If grain setting has occurred in maize, the tassels can be cut down to reduce transpiration, Life saving irrigation, if available, removal of lower leaves for fodder /mulch in maize, harvest maize for babycorn if market is available.	Urea spray (1%) or KCl spray, Use local available plant material for mulch	

Condition	Suggested Contingency measures				
Terminal drought (Early withdrawal of monsoon)	Major Farming situation	Normal Crop/ cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
At flowering/ fruiting stage	Medium rainfall, Medium deep to deep, loamy-skeletal soils	Maize-wheat	Harvest whatever crop is available and immediately conserve the soil moisture for <i>Rabi</i> crops.	Relay cropping of Gobhi Sarson (Neelam, Sheetal, ONK-1) in mid November in the Toria (Bhawani) sown during mid September, Deep sowing with minimum soil load on seed, Prefer pre-soaked seed for Sowing, Drill half N and full P before sowing with pora method.	Crop insurance and conservation of farm ponds under MGNREGA and RKVY
		Paddy-wheat			
	Medium rainfall, Shallow, sandy soils	Maize-wheat	Harvest whatever crop is available and immediately conserve the soil moisture for <i>Rabi</i> crops.	Relay cropping of Gobhi Sarson (Neelam, Sheetal, ONK-1) in mid November in the Toria (Bhawani) sown during mid September, Deep sowing with minimum soil load on seed, Prefer pre-soaked seed for Sowing, Drill half N and full P before sowing with pora method.	
	Medium rainfall, Medium deep to deep, loamy soils	Maize-wheat	Harvest whatever crop is available and immediately conserve the soil moisture for <i>Rabi</i>	Relay cropping of Gobhi Sarson (Neelam, Sheetal, ONK-1) in mid November in the Toria (Bhawani) sown during mid September, Deep sowing with minimum soil load on seed, Prefer pre-soaked seed for Sowing, Drill half N and full P before sowing with pora method. If late season rains are there <i>rabi</i> crops like taramera and toria can be sown.	