

State: Uttarakhand

Agriculture Contingency Plan for District: Champawat

1.0	District Agriculture profile				
1.1	Agro-Climatic/Ecological Zone :				
	Agro Ecological Sub Region (ICAR)		Western Himalayas, warm subhumid (to humid with inclusion of perhumid) ecoregion (14.2)		
	Agro-Climatic Zone (Planning Commission)		Western Himalayan Region (I)		
	Agro Climatic Zone (NARP)		Hill Zone- 105 NARP clarification (Brown hills seslup/R AZ 25) western Hills (4) of ACRP		
	List all the districts falling under the NARP Zone* (*>50% area falling in the zone)		Nainital, Udham Singh nagar, Haridwar, Dehradun, Almora, Pithoragarh, Chamoli, Champawat, Bageshwar, Pauri, Tehri, Uttarkashi		
	Geographic coordinates of district headquarters		Latitude	Longitude	Altitude
			29 ⁰ 5' & 29 ⁰ 30' N	79 ⁰ 59' & 80 ⁰ 3' E	1615 m
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS		Dr A K Singh, Zonal Project Director, GT Road, Rawatpur, Near Vikas Bhawan, Kanpur 0512-2550927(O)		
	Mention the KVK located in the district with address		Dr. M. P. Singh KVK, Lohaghat, P.O.- Gulchora, Distt.-Champawat-262524 05965-234820 (O) 7500241507 (M), email-officerinchargekvklohaghat@gmail.com		
Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro-advisories in the Zone		Dr H S Kushwaha, Professor, Agro meteorology, GBPUA&T, Pantnagar-263145 U S Nagar (UK) India			
1.2	Rainfall	Normal RF(mm)	Normal Rainy days (number)	Normal Onset (specify week and month)	Normal Cessation (specify week and month)
	SW monsoon (June-Sep):	1335.9			
	NE Monsoon(Oct-Dec):	104.9			
	Winter (Jan- March)	125.0		-	-
	Summer (Apr-May)	82.5		-	-
	Annual	1648.3		-	-

1.3	Land use pattern of the district (latest statistics)	Geographical area	Cultivable area	Forest area	Land under non-agricultural use	Permanent pastures	Cultivable wasteland	Land under Misc. tree crops and groves	Barren and uncultivable land	Current fallows	Other fallows
	Area ('000 ha)	235.4	24.0	132.3	4.7	19.1	15.2	26.5	5.4	2.9	6.8

<http://champawat.nic.in/files/patrika2007/table17.pdf>

1.4	Major Soils (common names like red sandy loam deep soils (etc.,))*	Area ('000 ha)**	Percent (%) of total geographical area
	1.		
	2.		
	3.		
	4.		
	5.		
	Others (specify):		

* mention colour, depth and texture (heavy, light, sandy, loamy, clayey etc) and give vernacular name, if any, in brackets (data source: Soil Resource Maps of NBSS & LUP)

1.5	Agricultural land use	Area ('000 ha)	Cropping intensity %
	Net sown area	24.0	163.8
	Area sown more than once	15.3	
	Gross cropped area	39.3	

1.6	Irrigation	Area ('000 ha)		
	Net irrigated area	2.2		
	Gross irrigated area	4.0		
	Rainfed area	23.3		
	Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
	Canals	-	0.7	33.8
	Tanks	1291	0.4	18.4
	Open wells	-	-	

	Bore wells	13	0.7	33.9
	Lift irrigation schemes		-	
	Micro-irrigation		-	
	Other sources (please specify)		0.5	23.1
	Total Irrigated Area		2.2	100.0
	Pump sets			
	No. of Tractors	20		
	Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	No. of blocks/ Tehsils	(%) area	Quality of water (specify the problem such as high levels of arsenic, fluoride, saline etc)
	Over exploited			Overall Groundwater quality is good for domestic and irrigation purpose. There is no groundwater problem and issues except the shortage of water in villages situated at higher reaches. Proper management of springs is required, as they are main source of water for all uses.
	Critical			
	Semi- critical			
	Safe			
	Wastewater availability and use			
	Ground water quality	Source: http://cgwb.gov.in/District_Profile/Uttarakhand/champawat.pdf		
*over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%				

<http://champawat.nic.in/files/patrika2007/table17.pdf>

1.7 Area under major field crops & horticulture (2006-07)

Major field crops cultivated	Area ('000 ha)							
	<i>Kharif</i>			<i>Rabi</i>			Summer	Grand total
	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total		
Wheat	-	-	-	2.1	9.9	12.0	-	12.0
Barnyard millet	-	11.7	11.7	-	-	-	-	11.7
Rice	2.1	7.8	9.9	-	-	-	-	9.9
Finger millet	-	7.3	7.3	-	-	-	-	7.3
Potato	-	2.5	2.5	-	-	-	-	2.5
Soybean	-	1.1	1.1	-	-	-	-	1.1
Horticulture crops - Fruits	Area ('000 ha)							
	Total			Irrigated			Rainfed	
Citrus	2.2							
Mango	2.1							
Pear	1.0							
Plum	0.9							

Walnut	0.8		
Apple	0.6		
Horticulture crops - Vegetables	Total	Irrigated	Rainfed
Tomato	0.8		
Veg. Pea	0.5		
Frenchbean	0.5		
Cabbage	0.5		
Capsicum	0.3		

1.8	Livestock	Male ('000)	Female ('000)	Total ('000)		
	Indigenous cattle (Cow)	4.1	37.2	41.3		
	Improved / Crossbred cattle (Cow)	4.5	7.9	12.4		
	Buffaloes (local low yielding)	8.2	29.4	37.6		
	Graded Buffaloes					
	Goat			48.9		
	Sheep			0.1		
	Others (Camel, Pig, Yak, horse, mule, donkey etc.)					
	Commercial dairy farms (Number)					
1.9	Poultry	No. of farms	Total No. of birds ('000)			
	Commercial					
	Backyard		56.3			
1.10	Fisheries (Data source: Chief Planning Officer)					
	A. Capture					
	i) Marine (Data Source: Fisheries Department)	No. of fishermen	Boats		Nets	Storage facilities (Ice plants etc.)
			Mechanized	Non-mechanized	Mechanized (Trawl nets, Gill nets)	
	ii) Inland (Data Source: Fisheries Department)	No. Farmer owned ponds		No. of Reservoirs		No. of village tanks
		215		1		1
B. Culture						
			Water Spread Area (ha)	Yield	Production ('000 tons)	

			(t/ha)	
	i) Brackish water (Data Source: MPEDA/ Fisheries Department)			
	ii) Fresh water (Data Source: Fisheries Department)	2.15	4.5	0.009675
	Others			

1.11 Production and Productivity of major crops (Average of last 5 years: 2004, 05, 06, 07, 08; specify years)

1.11	Name of crop	Kharif		Rabi		Summer		Total		Crop residue as fodder ('000 tons)
		Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	
Major Field crops (Crops to be identified based on total acreage)										
	Rice	11.6	1180					11.6	1180	
	Fingermillet	10.2	1400					10.2	1400	
	Wheat	19.4	1620					19.4	1620	
	Soybean	1.8	1690					1.8	1690	
	Barnyard millet	1.6	1380					1.6	1380	
	Potato	42.5	17000					42.5	17000	
Major Horticultural crops (Crops to be identified based on total acreage)										
	Citrus	4.3	2000							
	Mango	2.6	1200							
	Pear	3.2	3250							
	Plum	1.2	1380							
	Walnut	0.2	220							
	Apple	0.6	1050							

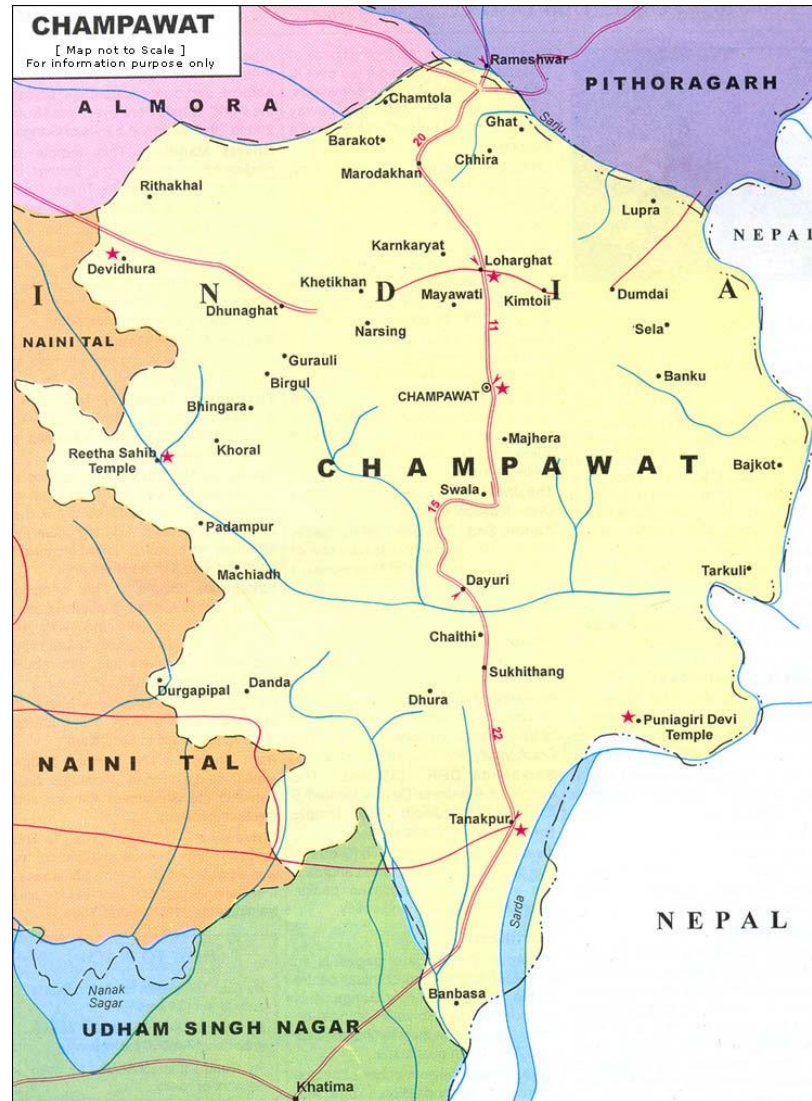
1.12	Sowing window for 5 major field crops	Rice	Fingermillet	Wheat	Soybean	Barnyard millet
	Kharif- Rainfed	i) 2 nd fortnight of March to 1 st fortnight of April (spring rice) ii) 2 nd fortnight of May to 1 st fortnight of June (Jethi Dhan)	i) 2 nd fortnight of May to 1 st fortnight of June		i) 2 nd fortnight of May to 2 nd fortnight of June (Jethi Dhan)	i) 2 nd fortnight of March to 1 st fortnight of April (spring

						rice)
	Kharif-Irrigated	Nursery sowing 1 st fortnight of May Transplanting 2 nd fortnight of June				
	Rabi- Rainfed			i) 1 st fortnight of October to 2 nd fortnight of November ii) 2 nd fortnight of October to 1 st fortnight of Dec.		
	Rabi-Irrigated			1) 1 st fortnight of November to 2 nd Dec. of November		

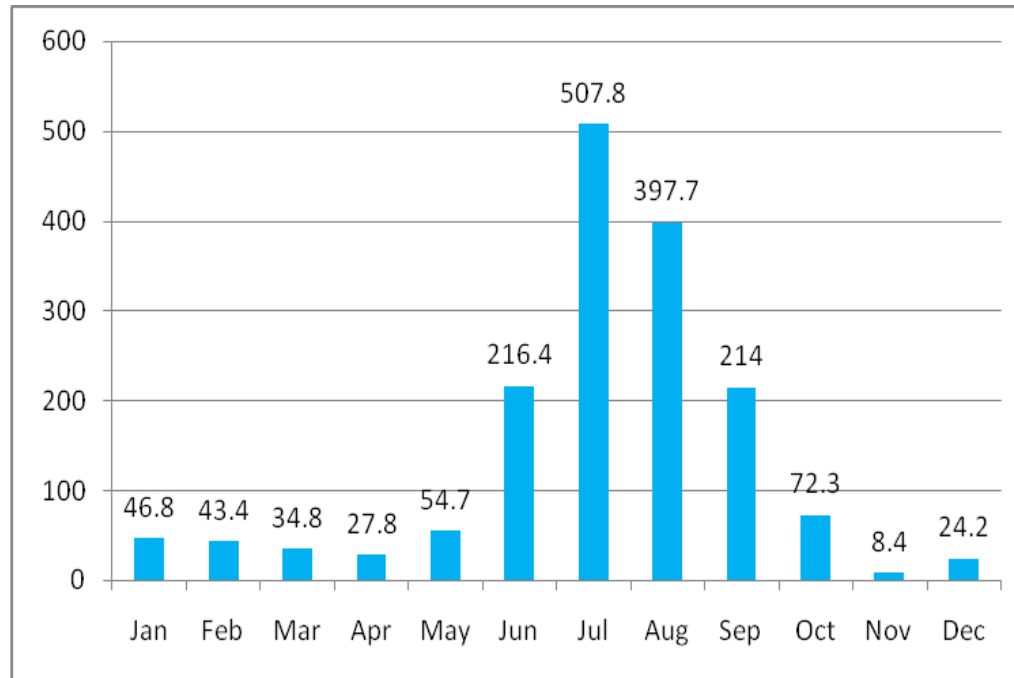
1.13	What is the major contingency the district is prone to? (Tick mark)	Regular	Occasional	None
	Drought	√		
	Flood			
	Cyclone			
	Hail storm		√	
	Heat wave			
	Cold wave			
	Frost October- November	√		
	Sea water intrusion			
	Pests and disease outbreak (specify) White grub	√		
	Others (like fog, cloud bursting etc.)			

1.14	Include Digital maps of the district for	Location map of district within State as Annexure I	Enclosed: Yes
		Mean annual rainfall as Annexure 2	Enclosed: Yes
		Soil map as Annexure 3	Enclosed: Yes / No

Annexure 01 : Location map of the Uttarakhand state and district Champawat



Annexure 02 : Mean annual rainfall (mm) of district Champawat



2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation

Condition			Suggested Contingency measures			
Early season drought (delayed onset)	Major Farming situation ^a	Normal Crop / Cropping system ^b	Change in crop / cropping system ^c including variety	Agronomic measures ^d	Remarks on Implementation ^e	
Delay by 2 weeks (June 3 rd week)*	Rain fed lower hills	Cropping system 1: Rice- Wheat- Soybean- Fellow Spring rice: VL-207, VL-208, VL—209 Jethi Rice: VL Dhan-221, VL Dhan-163	VL-207, VL-208, VL-209 Jethi rice is replaced by maize or Rice bean Maize: Ganga-11, Ganga- 9 Rice bean: PRR-1, PRR-2	Bunding of terraces, increase seed rate	Supply of seeds through TDC/ NSC	
		Cropping system 2: Soybean- Wheat-Fingermillet-Fellow Soybean: PS-1092, VLS-47 Fingermillet: VL Mandua-324, VL Mandua-149	Soybean is replaced by Bhindi Bhindi: Pusa sawni, VL Bhindi-1	-	Supply of seeds through TDC/ NSC	
	Rain fed mid hill	Cropping system 1: Rice- Wheat- Fingermillet- Fellow Jethi Rice: VL Dhan-221, VL Dhan-163 Fingermillet: VL Mandua-324, VL Mandua-149	Rice is replaced by horse gram Horse gram: Local, VLG-1	Wide spacing in Ragi transplanting should be done by uprooting plants with in the field	Seed given by under RKVY	
		Cropping system 2: Potato-Wheat Potato: Kufri jyoti, Kufri Giriraj	Frenchbean Frenchbean: Pant Anupma, VL bean- 2	-	Seed given by under RKVY	
	Rain fed High hills	Cropping system 1: Amaranth- wheat Amaranth: PRA-1, PRA-2, PRA-3	Delayed sowing of Amaranth/ Buck wheat Buck wheat: PRB-1, PL-7	-	Supply of seeds through TDC/ NSC	
		Cropping system 2: Potato-Wheat Potato: Kufri jyoti, Kufri Giriraj	Delayed sowing of Rajma Rajma: Local, VL Rajam-63	-	Supply of seeds through TDC/ NSC	
	Condition			Suggested Contingency measures		
	Early season	Major	Normal Crop/cropping system ^b	Change in	Agronomic measures ^d	Remarks on

drought (delayed onset)	Farming situation^a		crop/cropping system^c		Implementation^e
Delay by 4 weeks (July 1 st week)	Rain fed lower hills	Cropping system 1: Rice- Wheat- soybean- Fellow Jethi Rice: VL Dhan-221, VL Dhan-163 Soybean: PS-1092, VLS-47	Rice is replaced by horse gram or Finger millet+ black soybean Horse gram: Local, VLG-1	Increase seed rate, inter cropping of black soybean with finger millet	Supply of seeds through TDC/ NSC
	Rain fed mid hills	Cropping system 1: Rice-whet-Finger millet- fellow Jethi Rice: VL Dhan-221, VL Dhan-163 Fingermillet: VL Mandua-324, VL Mandua-149	Rice replaced by Horse gram Horse gram: Horse gram: Local, VLG-1	Increase seed rate	Seed given by under RKVY
	Rain fed High hills	Cropping system 1: Rajma- wheat Amaranth- wheat Rajma- VL Bean-2, coriander, Pant Anupma Amaranth: PRA-1, PRA-2, PRA-3	Replaced by buck wheat Buck wheat: PRB-3	Spraying of Monocrotophos 0.2% for control of leaf webber in Amaranth	Supply of seeds through TDC/ NSC
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 6 weeks (July 3 rd week)	Rain fed Lower hills	Cropping system 1: Rice- Wheat- finger millet- Fellow Jethi Rice: VL Dhan-221, VL Dhan-163 Soybean: PS-1092, VLS-47 Fingermillet: VL Mandua-324, VL Mandua-149	Rice is replaced by Bhindi Bhindi: Pusa sawni, VL Bhindi-1 Finger millet is replaced by sesamum Sesamum: T-4, T-12, T-78	Bunding of terraces, increase seed rate	Supply of seeds through TDC
	Rain fed Mid hills	Cropping system 1: Rice-wheat-Finger millet- Fellow Jethi Rice: VL Dhan-221, VL Dhan-163 Fingermillet: VL Mandua-324, VL Mandua-149	Rice is replaced by buck wheat/ rice bean Buck wheat: PRA-1 Rice bean: PRA-, PRA-2		
	Rain fed High hills	Cropping system 1: Amaranth+ Finger millet- wheat	Delayed sowing of buck wheat		

		Amaranth: PRA-1, PRA-2, PRA-3 Fingermillet: VL Mandua-324, VL Mandua-149	Buck wheat: PRA-1		
		Cropping system 2: Rajma-wheat	Rajma is replaced by veg. pea Veg. Pea: PSM-3, Arcle, VL-Matar-9	Ridge sowing	Supply of seeds through TDC
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 8 weeks (Aug 1st week)	Rain fed Lower hills	Cropping system 1: Rice- Wheat- soybean- Fellow Jethi Rice: VL Dhan-221, VL Dhan-163 Soybean: PS-1092, VLS-47	Sowing of French bean/ Bhindi Frenchbean: Pant Anupma, VL bean- 2 Bhindi: Pusa sawni, VL Bhindi-1	Ridge bed sowing	Supply of seeds through TDC
	Rain fed Mid hills	Cropping system 1: Rice-wheat-Finger millet- Fellow Jethi Rice: VL Dhan-221, VL Dhan-163 Fingermillet: VL Mandua-324, VL Mandua-149	Sowing of veg. pea, cow pea, veg. rai Veg. Pea: PSM-3, Arcle, VL-Matar-9 Cow pea: Pant lobia-1 Veg. rai: Hathi Kan, Jhurmuri	Ridge sowing Inter culture operation	Supply of seeds through TDC
	Rain fed High hills	Cropping system 1: Amaranth- wheat Amaranth: PRA-1, PRA-2, PRA-3	Sowing of radish, veg. rai Radish: Dunagiri local, Japani white, Pusa Himani	Spraying of Monocrotophos 0.2% for control of leaf webber in Amaranth & management of late blight of potato	Supply of seeds through TDC/ NSC
		Cropping system 2: Potato- wheat Potato: Kufri jyoti, Kufri Giriraj			

***Matrix for specifying condition of early season drought due to delayed onset of monsoon (2, 4, 6 & 8 weeks) compared to normal onset (2.1.1)**

Normal onset (Month and week)	Month and week for specifying condition of early season drought due to delayed onset of monsoon
	Delay in onset of monsoon by

	2 wks	4 wks	6 wks	8 wks
June 1 st wk	June 3 rd wk	July 1 st wk	July 3 rd wk	Aug 1 st wk
June 2 nd wk	June 4 th wk	July 2 nd wk	July 4 th wk	Aug 2 nd wk
June 3 rd wk	July 1 st wk	July 3 rd wk	Aug 1 st wk	Aug 3 rd wk
June 4 th wk	July 2 nd wk	July 4 th wk	Aug 2 nd wk	Aug 4 th wk
July 1 st wk	July 3 rd wk	Aug 1 st wk	Aug 3 rd wk	Sep 1 st wk
July 2 nd wk	July 4 th wk	Aug 2 nd wk	Aug 4 th wk	Sep 2 nd wk

Condition	Major Farming situation ^a	Normal Crop/cropping system ^b	Suggested Contingency measures			
			Crop management ^c	Soil nutrient & moisture conservation measues ^d	Remarks on Implementation ^e	
Early season drought (Normal onset)						
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	Rain fed Lower hills	Cropping system 1: Rice-wheat-Finger millet- Fellow Jethi Rice: VL Dhan-221, VL Dhan-163 Fingermillet: VL Mandua-324, VL Mandua-149	Re sowing, inter-culture operation & gap filling	Spray the crop 2% urea, life saving irrigation if possible	Preparation of water harvesting ponds through MNREGA Preparation of	
		Finger millets mixed with black soybean/ Horse gram	Re sowing of Pulse of finger millet Transplanting of finger millet	Bunding		
	Rain fed Mid hills	Cropping system 1: Rice-wheat-Finger millet- Fellow Jethi Rice: VL Dhan-221, VL Dhan-163 Fingermillet: VL Mandua-324, VL Mandua-149	Re sowing of Pulse of finger millet Transplanting of finger millet			
		Cropping system 2: Potato-wheat Potato: Kufri jyoti, Kufri Giriraj	Sowing of French bean Frenchbean: Pant Anupma, VL bean- 2	Nutrient application in split doses in potato		
	Rain fed High hills	Cropping system 1: Amaranth- wheat Amaranth: PRA-1, PRA-2, PRA-3	Re-sowing , inter-culture operation & gap filling	Bunding		
		Cropping system 2: Rajma-wheat	Inter-culture operation & gap filling			

		Rajma- VL Bean-2, coriander, Pant Anupma			
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Condition			Suggested Contingency measures		
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period)	Major Farming situation^a	Normal Crop/cropping system^b	Crop management^c	Soil nutrient & moisture conservation measues^d	Remarks on Implementation^e
At vegetative stage	Rain fed Low hills	Cropping system 1: Rice- wheat soybean- fellow	Inter-culture operation life saving irrigation if possible, sowing of radish on bunds	Spray of 2% urea, bunding	Preparation of water harvesting ponds through MNREGA Supply of seeds through TDC
	Rain fed Mid hills	Cropping system 1: Rice-wheat-finger millet-fellow Jethi Rice: VL Dhan-221, VL Dhan-163 Fingermillet: VL Mandua-324, VL Mandua-149	Re-sowing, inter-culture operation & life saving irrigation if possible	Mulching by dry uprooted weed	
		Cropping system 2: Potato- wheat Potato: Kufri jyoti, Kufri Giriraj	Sowing of rajma	Life saving irrigation if possible Mulching in potato	
	3	Cropping system 1: Amaranth- wheat Amaranth: PRA-1, PRA-2, PRA-3	Re-sowing, inter-culture operation & life saving irrigation if possible	Spraying of monocrotophos 36 EC (0.15%) for the control of leaf webber	
		Cropping system 2: Rajma-wheat Rajma- VL Bean-2, contender, Pant Anupma	Gap filling in rajma	inter-culture operation	
4					
Condition			Suggested Contingency measures		

Mid season drought (long dry spell)	Major Farming situation ^a	Normal Crop/cropping system ^b	Crop management ^c	Soil nutrient & moisture conservation measures ^d	Remarks on Implementation ^e
At flowering/ fruiting stage	Rain fed Lower hills	Cropping system 1: Rice- wheat- soybean- fellow Jethi Rice: VL Dhan-221, VL Dhan-163 Soybean: PS-1092, VLS-47	Inter-culture operation life saving irrigation through conserved water pond sowing of radish on bunds	Foliar spray of 2% urea	Preparation of water harvesting ponds through MNREGA -
		Cropping system 2: Finger millet/ Horse gram Fingermillet: VL Mandua-324, VL Mandua-149 Horse gram Horse gram: Horse gram: Local, VLG-1	Sowing of radish Radish: Dunagiri local, Japani white, Pusa Himani	-	
	Rain fed Mid hills	Cropping system 1: Rice- wheat- soybean- fellow Jethi Rice: VL Dhan-221, VL Dhan-163 Soybean: PS-1092, VLS-47	Sowing of radish Radish: Dunagiri local, Japani white, Pusa Himani		
		Cropping system 2: Potato- wheat Potato: Kufri jyoti, Kufri Giriraj	Management of late blight & white grub in potato	Mulching	
	Rain fed High hills	Cropping system 1: Amaranth- wheat Amaranth: PRA-1, PRA-2, PRA-3	Spray of monocrotophos 36 EC (0.015 %) for manage of leafwebber		
		Cropping system 2: Rajma-wheat Rajma- VL Bean-2, contender, Pant Anupma	Manage cut worm		

Condition	Major Farming situation ^a	Normal Crop/cropping system ^b	Suggested Contingency measures		
			Crop management ^c	Rabi Crop planning ^d	Remarks on Implementation ^e
Terminal drought (Early withdrawal of monsoon)	Rain fed Lower hills	Cropping system 1: Rice- wheat- soybean/ finger millet- fellow Jethi Rice: VL Dhan-221, VL Dhan-163 Soybean: PS-1092, VLS-47 Finger millet: VL Mandua-324, VL Mandua-149	Harvest crop for fodder purpose	Go for early sowing of rain fed wheat lentil, toria with conservation measures	Supply of seed through TDC, NSC
	Rain fed Med hills	Cropping system 1: Rice- wheat- finger millet- fellow Jethi Rice: VL Dhan-221, VL Dhan-163 Finger millet: VL Mandua-324, VL Mandua-149	Harvest at physiological maturity stage	Go for early crop varieties toria (PT-303), lentil (PL-4)	
		Cropping system 2: Potato- wheat Potato: Kufri jyoti, Kufri Giriraj	Harvesting of potato	Go for early crop varieties toria (PT-303), lentil (PL-4)	
	Rain fed High hills	Cropping system 1: Amaranth- wheat Amaranth: PRA-1, PRA-2, PRA-3	Harvest at physiological maturity stage	Go for early crop varieties toria (PT-303)	
		Cropping system 2: Rajma-wheat Rajma- VL Bean-2, contender, Pant Anupma	Harvest at physiological maturity stage	Go for early crop varieties toria (PT-303)	

2.1.2 Rainfed situation (Rabi season)

Condition	Major Farming situation	Normal Crop/cropping system	Suggested contingency measure		
			Change in crop/cropping system	Agronomic measure	Remarks on implementation
Delay by 2 weeks 1 st week of January (Normal onset)	Rainfed lower hills and Valley	Vegetable Pea Cheti/Spring Rice (End March-Mid April)-Veg Pea Finger Millet-Veg. Pea	No change	Addition of organic manures (FYM/compost) @ 5-10 t/ha, adopt soil moisture conservation measures with locally available mulch materials Use of short duration varieties. Gap filling Use of organic manure at sowing Timely application of fungicides for control of diseases Timely application of insecticides for the control of insect vectors. Timely weeding Conserve residual moisture for sowing Kharif crops	
		Lentil Finger millet-Lentil	No change		
		Wheat Rice-Wheat/Barley, Finger millet-Wheat	Intercropping Late sown Wheat (VL 892, HS-420, HPW42, Raj 3777)		
		Onion, Garlic, Pea, Rai, Late Cauliflower	No change		
		Mango, Citrus, Pomgranate	No change		
	High & Mid hills North aspect	Vegetable Pea Cheti/Spring Rice (End March-Mid April)-Veg Pea Finger Millet-Veg. Pea	No change	Use of short duration varieties. Gap filling Use of organic manure at sowing Timely application of fungicides for control of diseases Timely application of insecticides for the control of insect vectors. Timely weeding	
		Lentil Finger millet-Lentil	No change		
		Wheat Rice-Wheat/Barley, Finger millet-Wheat	Intercropping Late sown Wheat (VL 892, HS-420, HPW42, Raj 3777)		
		Onion, Garlic, Pea, Rai, Late Cauliflower	No change		

				Conserve residual moisture for sowing Kharif crops	
		Apple (Spur type), Pear, Peach, Walnut, Apricot	Planting of Temperate fruit orchard of Apple (Spur type), Pear, Peach, Walnut, Apricot	Digging of pits and plantation of elite saplings of desired fruit crops. Incorporation of organic + inorganic manures at the time of planting in the pits. Incorporation of pesticides before planting in the pits. Timely irrigation to the young plants as and when required. Use of antitranspirants, use of mulching	
High & Mid hills South aspect		Vegetable Pea Cheti/Spring Rice (End March-Mid April)-Veg Pea Finger Millet-Veg. Pea	No change	Use of short duration varieties. Gap filling Use of organic manure at sowing	
		Lentil Finger millet-Lentil	No change	Timely application of fungicides for control of diseases	
		Wheat Rice-Wheat/Barley, Finger millet-Wheat	Intercropping Late sown Wheat (VL 892, HS-420, HPW42, Raj 3777)	Timely application of insecticides for the control of insect vectors.	
		Onion, Garlic, Pea, Rai, Late Cauliflower	No change	Timely weeding Conserve residual moisture for sowing Kharif crops	
		Mango, Pear, Peach, Walnut, Apricot	Planting of Temperate fruit orchard of Apple (Spur type), Pear, Peach, Walnut, Apricot	Digging of pits and plantation of elite saplings of desired fruit crops. Incorporation of organic + inorganic manures at the time of planting in the pits. Incorporation of pesticides before planting in the pits. Timely irrigation to the young plants as and when required. Use of antitranspirants, use of mulching	

Condition	Major Farming situation	Normal Crop/cropping system	Suggested contingency measure		
			Change in crop/cropping system	Agronomic measure	Remarks on implementation
Delay by 4 weeks (3 rd week of January)	Rainfed lower hills and Valley	Vegetable Pea Cheti/Spring Rice (End March-Mid April)-Veg Pea Finger Millet-Veg. Pea	No change	Addition of organic manures (FYM/compost) @ 5-10 t/ha, adopt soil moisture conservation measures with locally available mulch materials Soil solarization/Soil fumigation with formaldehyde three week before nursery sowing Filling of poly bags (with the mixture of soils, sand and FYM in the ratio of 1:1:1) and seed sowing of cucurbitaceous crops. Frequent irrigation in nursery Control of pest and diseases	
		Lentil Finger millet-Lentil	No change		
		Wheat Rice-Wheat/Barley, Finger millet-Wheat	Late sown wheat (VL 892) Potato (Kufri Jyoti), Green Coriander, Spinach		
		Pea, Onion, Garlic, Rai, Late Cauliflower	Sowing of Tomato, Capsicum, Brinjal, Chilli, Summer squash, Bottle gourd, Cucumber, Bittergourd in Nursery under low cost polytunnels and polyhouses		
	High & Mid hills South aspect	Vegetable Pea Cheti/Spring Rice (End March-Mid April)-Veg Pea, Finger Millet-Veg. Pea	No change	-	
		Lentil Finger millet-Lentil	No change		
		Wheat Rice-Wheat/Barley, Finger millet-Wheat	Late sown wheat (VL 892) Potato (Kufri Jyoti), Green Coriander, Spinach		
		Pea, Onion, Garlic, Rai, Late Cauliflower	Sowing of Tomato, Capsicum, Brinjal, Chilli, Summer squash, Bottle gourd, Cucumber, Bittergourd in		

			Nursery under low cost polytunnels and polyhouses	sowing Filling of poly bags (with the mixture of soils, sand and FYM in the ratio of 1:1:1) and seed sowing of cucurbitaceous crops.	
		Walnut, Peach, Plum	Digging of pit and planting of saplings of desired fruit crops	Digging of pits and plantation of elite saplings of desired fruit crops. Incorporation of organic + inorganic manures at the time of planting in the pits. Incorporation of pesticides before planting in the pits. Timely irrigation to the young plants as and when required. Use of antitranspirants	
	High-Mid hills North aspect	Vegetable Pea Cheti/ Spring Rice (End March-Mid April)-Veg Pea,Finger Millet-Veg. Pea	No change	-	
		Lentil Finger millet-Lentil	No change		
		Wheat Rice-Wheat/Barley, Finger millet-Wheat	Late sown wheat (VL 892) Potato (Kufri Jyoti), Green Coriander, Spinach		
		Pea, Onion, Garlic, Rai, Late Cauliflower	Sowing of Tomato, Capsicum, Brinjal, Chilli, Summer squash, Bottle gourd, Cucumber, Bittergourd in Nursery under low cost polytunnels and polyhouses	Soil solarization/Soil fumigation with formaldehyde three week before nursery sowing Filling of poly bags (with the mixture of soils, sand and FYM in the ratio of 1:1:1)	

				and seed sowing of cucurbitaceous crops. Frequent irrigation in nursery	
		Apple (Spur varieties), Walnut, Peach, Plum	Digging of pit and planting of saplings of desired fruit crops	Digging of pits and plantation of elite saplings of desired fruit crops. Incorporation of organic + inorganic manures at the time of planting in the pits. Incorporation of pesticides before planting in the pits. Timely irrigation to the young plants as and when required. Use of antitranspirants, use of mulching	

Condition	Major Farming situation	Normal Crop/cropping system	Suggested contingency measure		
			Change in crop/cropping system	Agronomic measure	Remarks on implementation
Delay by 6 weeks 1 st week of February	Rainfed lower hills and Valley	Vegetable Pea Cheti/Spring Rice (End March-Mid April)-Veg Pea Finger Millet-Veg. Pea	Change of crop Potato (Kufri Jyoti), Green Coriander, Spinach	Addition of organic manures (FYM/compost) @ 5-10 t/ha, adopt soil moisture conservation measures with locally available mulch materials	
		Lentil Finger millet-Lentil	Change of crop Potato (Kufri Jyoti), Green Coriander, Spinach		
		Wheat Rice-Wheat/Barley, Finger millet-Wheat	Potato (Kufri Jyoti), Green Coriander, Spinach		
		Pea, Onion, Garlic, Rai, Late Cauliflower	Sowing of Tomato, Capsicum, Brinjal, Chilli, Summer squash, Bottle gourd, Cucumber,	Soil solarization/Soil fumigation with formaldehyde three week	

			Bittergourd in Nursery under low cost polytunnels and polyhouses Planting of cucurbits in the field	before nursery sowing Filling of poly bags (with the mixture of soils, sand and FYM in the ratio of 1:1:1) and seed sowing of cucurbitaceous crops. Frequent irrigation in nursery Control of pest and diseases	
High-Mid hills South aspect	Vegetable Pea Cheti/Spring Rice (End March-Mid April)-Veg Pea Finger Millet-Veg. Pea	Change of crop Potato (Kufri Jyoti), Green Coriander, Spinach			
	Lentil Finger millet-Lentil	Change of crop Potato (Kufri Jyoti), Green Coriander, Spinach			
	Wheat Rice-Wheat/Barley, Finger millet-Wheat	Potato (Kufri Jyoti), Green Coriander, Spinach			
	Pea, Onion, Garlic, Rai, Late Cauliflower	Sowing of Tomato, Capsicum, Brinjal, Chilli, Summer squash, Bottle gourd, Cucumber, Bittergourd in Nursery under low cost polytunnels and polyhouses	Soil solarization/Soil fumigation with formaldehyde three week before nursery sowing Filling of poly bags (with the mixture of soils, sand and FYM in the ratio of 1:1:1) and seed sowing of cucurbitaceous crops. Frequent irrigation in nursery Control of pest and diseases		
	Walnut, Peach, Plum	Digging of pit and planting of saplings of desired fruit crops	Digging of pits and plantation of elite saplings of desired fruit crops. Incorporation of organic + inorganic manures at the time of planting in the pits. Incorporation of pesticides		

				before planting in the pits. Timely irrigation to the young plants as and when required. Use of antitranspirants, use of mulching	
	High-Mid hills North aspect	Vegetable Pea Cheti/Spring Rice (End March-Mid April)-Veg Pea Finger Millet-Veg. Pea	Change of crop Potato (Kufri Jyoti), Green Coriander, Spinach	-	
		Lentil Finger millet-Lentil	Change of crop Potato (Kufri Jyoti), Green Coriander, Spinach	-	
		Wheat Rice-Wheat/Barley, Finger millet-Wheat	Potato (Kufri Jyoti), Green Coriander, Spinach	-	
		Pea, Onion, Garlic, Rai, Late Cauliflower	Sowing of Tomato, Capsicum, Brinjal, Chilli, Summer squash, Bottle gourd, Cucumber, Bittergourd in Nursery under low cost polytunnels and polyhouses	Soil solarization/Soil fumigation with formaldehyde three week before nursery sowing Filling of poly bags (with the mixture of soils, sand and FYM in the ratio of 1:1:1) and seed sowing of cucurbitaceous crops. Frequent irrigation in nursery Control of pest and diseases	
		Apple (Spur varieties), Walnut, Peach, Plum	Digging of pit and planting of saplings of desired fruit crops	Digging of pits and plantation of elite saplings of desired fruit crops. Incorporation of organic + inorganic manures at the time of planting in the pits. Incorporation of pesticides before planting in the pits. Timely irrigation to the young plants as and when required.	

				Use of antitranspirants, use of mulching	
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Condition	Major Farming situation	Normal Crop/cropping system	Suggested contingency measure		
			Change in crop/cropping system	Agronomic measure	Remarks on implementation
Delay by 8 weeks 3 rd week of February	Rainfed lower hills and Valley	Vegetable Pea Cheti/Spring Rice (End March-Mid April)-Veg Pea Finger Millet-Veg. Pea	Change of crop Potato (Kufri Jyoti), Green Coriander, Spinach	Addition of organic manures (FYM/compost) @ 5-10 t/ha, adopt soil moisture conservation measures with locally available mulch materials	
		Lentil Finger millet-Lentil	Change of crop Potato (Kufri Jyoti), Green Coriander, Spinach	-	
		Wheat Rice-Wheat/Barley, Finger millet-Wheat	Potato (Kufri Jyoti), Green Coriander, Spinach	-	
		Pea, Onion, Garlic, Rai, Late Cauliflower	Sowing of Tomato, Capsicum, Brinjal, Chilli, Summer squash, Bottle gourd, Cucumber, Bittergourd in Nursery under low cost polytunnels and polyhouses	Soil solarization/Soil fumigation with formaldehyde three week before nursery sowing Filling of poly bags (with the mixture of soils, sand and FYM in the ratio of 1:1:1) and seed sowing of cucurbitaceous crops. Frequent irrigation in nursery Control of pest and diseases	
	High-Mid hills South aspect	Vegetable Pea Cheti/Spring Rice (End March-Mid April)-Veg Pea Finger Millet-Veg. Pea	Change of crop Potato (Kufri Jyoti), Green Coriander, Spinach		
		Lentil Finger millet-Lentil	Change of crop Potato (Kufri Jyoti), Green Coriander, Spinach		
		Wheat	Potato (Kufri Jyoti), Green		

		Rice-Wheat/Barley, Finger millet-Wheat	Coriander, Spinach		
		Pea, Onion, Garlic, Rai, Late Cauliflower	Sowing of Tomato, Capsicum, Brinjal, Chilli, Summer squash, Bottle gourd, Cucumber, Bittergourd in Nursery under low cost polytunnels and polyhouses	Soil solarization/Soil fumigation with formaldehyde three week before nursery sowing Filling of poly bags (with the mixture of soils, sand and FYM in the ratio of 1:1:1) and seed sowing of cucurbitaceous crops. Frequent irrigation in nursery Control of pest and diseases	
		Walnut, Peach, Plum	Digging of pit and planting of saplings of desired fruit crops	Digging of pits and plantation of elite saplings of desired fruit crops. Incorporation of organic + inorganic manures at the time of planting in the pits. Incorporation of pesticides before planting in the pits. Timely irrigation to the young plants as and when required. Use of antitranspirants, use of mulching	
	High-Mid hills North aspect	Vegetable Pea Cheti/Spring Rice (End March-Mid April)-Veg Pea Finger Millet-Veg. Pea	Change of crop Potato (Kufri Jyoti), Green Coriander, Spinach	-	
		Lentil Finger millet-Lentil	Change of crop Potato (Kufri Jyoti), Green Coriander, Spinach	-	
		Wheat Rice-Wheat/Barley, Finger millet-Wheat	Potato (Kufri Jyoti), Green Coriander, Spinach	-	
		Pea, Onion, Garlic, Rai, Late Cauliflower	Sowing of Tomato, Capsicum, Brinjal, Chilli,	Soil solarization/Soil fumigation with	

			Summer squash, Bottle gourd, Cucumber, Bittergourd in Nursery under low cost polytunnels and polyhouses	formaldehyde three week before nursery sowing Filling of poly bags (with the mixture of soils, sand and FYM in the ratio of 1:1:1) and seed sowing of cucurbitaceous crops. Frequent irrigation in nursery Control of pest and diseases	
		Apple (Spur varieties), Walnut, Peach, Plum	Digging of pit and planting of saplings of desired fruit crops	Digging of pits and plantation of elite saplings of desired fruit crops. Incorporation of organic + inorganic manures at the time of planting in the pits. Incorporation of pesticides before planting in the pits. Timely irrigation to the young plants as and when required. Use of antitranspirants, use of mulching	

Condition	Major Farming situation	Normal Crop/cropping system	Suggested contingency measure		
			Change in crop/cropping system	Agronomic measure	Remarks on implementation
Early season drought followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	Rainfed lower hills and Valley	Vegetable Pea Cheti/Spring Rice (End March-Mid April)-Veg Pea Finger Millet-Veg. Pea	No change	Addition of organic manures (FYM/compost) @ 5-10 t/ha, adopt soil moisture conservation measures with locally available mulch materials	
		Lentil Finger millet-Lentil	No change	-	
		Wheat Rice-Wheat/Barley, Finger Millet-Wheat	Intercropping Late sown Wheat (VL892), HS-420, HPW-42, Raj 3777)	-	

	High-Mid hills South aspect	Vegetable Pea Cheti/Spring Rice (End March- Mid April)-Veg Pea Finger Millet-Veg. Pea	No change	Addition of organic manures (FYM/compost) @ 5-10 t/ha, adopt soil moisture conservation measures with locally available mulch materials
		Lentil Finger millet-Lentil	No change	-
		Wheat Rice-Wheat/Barley, Finger Millet-Wheat	Intercropping Late sown Wheat (VL892), HS-420, HPW-42, Raj 3777)	-
	High-Mid hills North aspect	Vegetable Pea Cheti/Spring Rice (End March- Mid April)-Veg Pea Finger Millet-Veg. Pea	No change	Addition of organic manures (FYM/compost) @ 5-10 t/ha, adopt soil moisture conservation measures with locally available mulch materials
		Lentil Finger millet-Lentil	No change	-
		Wheat Rice-Wheat/Barley, Finger Millet-Wheat	Intercropping Late sown Wheat (VL892), HS-420, HPW-42, Raj 3777)	-

Condition	Major Farming situation	Normal Crop/cropping system	Suggested contingency measure		
			Change in crop/cropping system	Agronomic measure	Remarks on implementation
Mid season drought [long dry spell, consecutive 2 weeks rainless (>2.5 mm) period] At vegetative	Rainfed lower hills and Valley	Vegetable Pea Cheti/Spring Rice (End March-Mid April)-Veg Pea Finger Millet-Veg. Pea	Site-specific crop	Addition of organic manures (FYM/compost) @ 5-10 t/ha, adopt soil moisture conservation measures with locally available mulch materials	

stage		Lentil Finger millet-Lentil Wheat Rice-Wheat/Barley, Finger Millet- Wheat	Mid season correction (thinning with in the row and between the row (remove every third row), praying of 2% urea and recommended concentration of other plant nutrient to take the advantage of favourable conditions, rationing of drought affected crops if subsequent rain is possible and use of anti-transpirant	Hoeing and weeding, organic mulching, windbreak and shelterbelts	
	High-Mid hills South aspect	Finger Millet/ Barnyard Millet/ Maize/ Tomato Amaranths/ Sesamum/ Soybean- Barley/ Lentil & Mustard/ Wheat/Toria/Potato/ Radish	Mid season correction (thinning with in the row and between the row (remove every third row), praying of 2% urea and recommended concentration of other plant nutrient to take the advantage of favorable conditions, ratooning of drought affected crops if subsequent rain is possible and use of antitranspirant	Hoeing and weeding, organic mulching, windbreak and shelterbelts	
	High-Mid hills North aspect	Irrigated Paddy /Rainfed Paddy/Finger millet/Finger millet+(Horse gram/ Urd/ Arhar) /Barnyard millet+ (Horse gram/Urd/Arhar) /Maize/ Amaranths/ Sesamum/Tomato - Wheat/Toria/Potato/Barley/Mustard/ Radish	Mid season correction (thinning with in the row and between the row (remove every third row), praying of 2% urea and recommended concentration of other plant nutrient to take the advantage of favorable conditions, ratooning of drought affected crops if subsequent rain is possible and use of antitranspirant	Hoeing and weeding, organic mulching, windbreak and shelterbelts	

2.1.3 Irrigated situation (Kharif Season)

Condition	Major Farming situation	Normal Crop/cropping system	Suggested contingency measure		
			Change in crop/cropping system	Agronomic measure	Remarks on implementation
Delay by 2 week	Lower hills & Valley	Rice-Wheat	Rice (VLD 81), VD82, VLD61, VD 62)	Foliar N management (1% NPK spray), addition of organic manures (FYM)/compost) @ 5-10 t/ha, soil moisture conservation measures with locally available mulch materials.	Supply of seeds through TDC, NSC Dept. of Agriculture and KVK
		Rice-Cabbage-Maize (Green cob), Rice-Cabbage-Potato	Rice (VLD 81), VD82, VLD61, VD 62)	Light irrigation, Timely weeding, addition of organic manures (FYM/compost) @ 5-10 t/ha	
		Tomato, Capsicum, Brinjal, Chilli, Potato, Apple, Peach, Walnut, Citrus	Cabbage, Cauliflower, Radish, Round radish, Rai, Coriander, Frenchbean, Pea, Plantation of Malta trees	Use of short duration varieties. Gap filling Use of organic manure at sowing Timely weeding Conserve residual moisture for sowing rabi crops	

Condition	Major Farming situation	Normal Crop/cropping system	Suggested contingency measure		
			Change in crop/cropping system	Agronomic measure	Remarks on implementation
Delay by 4 week 3 rd week of July	Lower hills & Valley	Rice-Wheat	Rice (VLD 81), VD82, VLD61, VD 62)	Foliar N management (1% NPK spray), addition of organic manures (FYM)/compost) @ 5-10 t/ha, soil moisture conservation measures with locally available mulch materials.	Supply of seeds through TDC, NSC Dept. of Agriculture and KVK
		Rice-Cabbage-Maize (Green cob), Rice-Cabbage-Potato	Rice (VLD 81), VD82, VLD61, VD 62)	Light irrigation, Timely weeding, addition of organic manures (FYM/compost) @ 5-10 t/ha	
		Tomato, Capsicum, Brinjal, Chilli, Potato, Apple, Peach, Walnut, Citrus	Cabbage, Cauliflower, Radish, Round radish, Rai, Coriander, Frenchbean,	Use of short duration varieties. Gap filling, Timely weeding Use of organic manure at	

			Pea, Plantation of Malta trees	sowing Conserve residual moisture for sowing rabi crops	
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Condition	Major Farming situation	Normal Crop/cropping system	Suggested contingency measure		
			Change in crop/cropping system	Agronomic measure	Remarks on implementation
Delay by 6 week	Lower hills & Valley	Rice-Wheat	Rice (VLD 81), VD82, VLD61, VD 62)	Foliar N management (1% NPK spray), addition of organic manures (FYM)/compost) @ 5-10 t/ha, soil moisture conservation measures with locally available mulch materials.	Supply of seeds through TDC, NSC Dept. of Agriculture and KVK
1st week of August		Rice-Cabbage-Maize (Green cob), Rice-Cabbage-Potato	Rice (VLD 81), VD82, VLD61, VD 62)	Light irrigation, Timely weeding, addition of organic manures (FYM/compost) @ 5-10 t/ha	
		Tomato, Capsicum, Brinjal, Chiilli, Potato	Tomato, Cabbage, Cauliflower, Radish, Frenchbean, Pea, Plantation of Malta trees	Use of short duration varieties. Gap filling Use of organic manure at sowing Timely weeding Conserve residual moisture for sowing rabi crops	

Condition	Major Farming situation	Normal Crop/cropping system	Suggested contingency measure		
			Change in crop/cropping system	Agronomic measure	Remarks on implementation
Delay by 8 week	Lower hills & Valley	Rice-Wheat	Rice (VLD 81), VD82, VLD61, VD 62)	Foliar N management (1% NPK spray), addition of organic manures (FYM)/compost) @ 5-10 t/ha, soil moisture conservation measures with locally available mulch materials.	Supply of seeds through TDC, NSC Dept. of Agriculture and KVK
3 rd week of August		Rice-Cabbage-Maize (Green	Rice (VLD 81), VD82,	Light irrigation, Timely	

		cob), Rice-Cabbage-Potato	VLD61, VD 62)	weeding, addition of organic manures (FYM/compost) @ 5-10 t/ha	
		Tomato, Capsicum, Brinjal, Chiilli, Potato, Apple, Peach, Wallnut, Citrus	Cabbage, Cauliflower, Radish, Round radish, Rai, Coriander, Frenchbean, Pea, Plantation of Malta	Use of short duration varieties. Gap filling, Timely weeding Use of organic manure at sowing Conserve residual moisture for sowing rabi crops	

2.1.4 Irrigated situation (Rabi Season)

Condition	Major Farming situation	Normal Crop/cropping system	Suggested contingency measure		
			Change in crop/cropping system	Agronomic measure	Remarks on implementation
Delay by 2 week					
1st ^d week of January	Lower hills & Valley	Wheat Rice-Wheat	Late sown Wheat (VL 892, HS-420, HPW-42, Raj 3777)	Foliar N management (1% NPK spray), addition of organic manures (FYM)/compost) @ 5-10 t/ha, soil moisture conservation measures with locally available mulch materials.	Supply of seeds through TDC, NSC Dept. of Agriculture and KVK
		Onion, Garlic, Pea, Rai, Late Cauliflower	No change	Use of short duration varieties. Gap filling Use of organic manure at sowing Timely application of fungicides for control of diseases Timely application of insecticides for the control of insect vectors. Timely weeding Conserve residual moisture for sowing Kharif crops	
		Mango, Citrus, Pomgranate	No change	Fumigation and maintaining appropriate moisture in the orchards to prevent the plant from frost damage	

Condition	Major Farming situation	Normal Crop/cropping system	Suggested contingency measure		
			Change in crop/cropping system	Agronomic measure	Remarks on implementation
Delay by 4 week 3 rd week of January	Lower hills & Valley	Wheat Rice-Wheat	Late sown Wheat (VL 892, HS-420, HPW-42, Raj 3777)	Foliar N management (1% NPK spray), addition of organic manures (FYM)/compost @ 5-10 t/ha, soil moisture conservation measures with locally available mulch materials.	Supply of seeds through TDC, NSC Dept. of Agriculture and KVK
		Pea, Onion, Garlic, Rai, Late Cauliflower	Sowing of Tomato, Capsicum, Brinjal, Chilli, Summer squash, Bottle gourd, Cucumber, Bittergourd in Nursery under low cost polytunnels and polyhouses	Soil solarization/Soil fumigation with formaldehyde three week before nursery sowing Filling of poly bags (with the mixture of soils, sand and FYM in the ratio of 1:1:1) and seed sowing of cucurbitaceous crops. Frequent irrigation in nursery Control of pest and diseases	
		Mango, Citrus, Pomgranate	No change	Fumigation and maintaining appropriate moisture in the orchards to prevent the plant from frost damage	

Condition	Major Farming situation	Normal Crop/cropping system	Suggested contingency measure		
			Change in crop/cropping system	Agronomic measure	Remarks on implementation
Delay by 6 week 1st week of February	Lower hills & Valley	Wheat Rice-Wheat	Change of Crop Potato (Kufri Jyoti), Green Coriander, Spinach	Foliar N management (1% NPK spray), addition of organic manures (FYM)/compost @ 5-10 t/ha, soil moisture conservation measures	Supply of seeds through TDC, NSC Dept. of Agriculture and KVK
		Pea, Onion, Garlic, Rai, Late Cauliflower	Sowing of Tomato, Capsicum, Brinjal, Chilli, Summer squash, Bottle gourd, Cucumber, Bittergourd in Nursery under low cost polytunnels and	Soil solarization/Soil fumigation with formaldehyde three week before nursery sowing Filling of poly bags (with the mixture of soils, sand and FYM	

			polyhouses Planting of cucurbits in the field	in the ratio of 1:1:1) and seed sowing of cucurbitaceous crops. Frequent irrigation in nursery Control of pest and diseases	
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Condition	Major Farming situation	Normal Crop/cropping system	Suggested contingency measure		
			Change in crop/cropping system	Agronomic measure	Remarks on implementation
Delay by 8 week					
3rd week of February	Lower hills & Valley	Wheat Rice-Wheat	Change of Crop Potato (Kufri Jyoti), Green Coriander, Spinach	Foliar N management (1% NPK spray), addition of organic manures (FYM)/compost @ 5-10 t/ha, soil moisture conservation measures with locally available mulch materials.	Supply of seeds through TDC, NSC Dept. of Agriculture and KVK
		Pea, Onion, Garlic, Rai, Late Cauliflower	Sowing of Tomato, Capsicum, Brinjal, Chilli, Summer squash, Bottle gourd, Cucumber, Bittergourd in Nursery under low cost polytunnels and polyhouses	Soil solarization/Soil fumigation with formaldehyde three week before nursery sowing Filling of poly bags (with the mixture of soils, sand and FYM in the ratio of 1:1:1) and seed sowing of cucurbitaceous crops. Frequent irrigation in nursery Control of pest and diseases	

2.2 Unusual rains (untimely, unseasonal etc) (for both rainfed and irrigated situations) Kharif Season

Condition	Suggested contingency measure			
	Vegetative stage ^k	Flowering stage ^l	Crop maturity stage ^m	Post harvest ⁿ
Continuous high rainfall in a short span leading to water logging				
Rice	Use wind break and shelter belts and sowing of crop parallel to the wind direction, minimum use of nitrogenous fertilizers and use of phosphatic fertilizers and avoid irrigation to the fields in situation of weather vagaries in irrigated	Drain out excess water through drainage channels, NPK foliar application after water draining	Drainage, avoid water stagnation in the plots Harvesting at physiological maturity	Store the produce under shed and dry using artificial sources like large fans and use mechanical drier.

	condition and use of short stature varieties Strengthening of field bundings, In water logged condition, form open drains about 60cm in depth and 45 cm width across in field			
Finger millet	From open drainage channels across the field	Drain out excess water through drainage channels,	Cob harvesting from standing crop, drain out excess water, Harvesting at physiological maturity	Proper drying and storage of grains
Barnyard millet	Proper drainage	Proper drainage	Drain out Harvesting at physiological maturity stage	Shift to safe place dry in shade and turn frequently, Safe storage against storage pest and disease
Soybean	Proper drainage	Proper drainage	Drain out Harvesting at physiological maturity stage	Shift to safe place dry in shade and turn frequently, Safe storage against storage pest and disease
Maize	Proper drainage	Proper drainage	Drain out Harvesting at physiological maturity stage	Shift to safe place dry in shade and turn frequently, Safe storage against storage pest and disease
Horticulture				
Malta	Plastic mulching	Plastic mulching	Harvesting & marketing	Value addition
Apple	Plastic mulching	Plastic mulching & spraying of endosulphan 35 EC to manage thrips	Harvesting & marketing	Value addition
Heavy rainfall with high speed winds in a short span²				
Crop1				
Horticulture				
Crop1 (specify)				
Outbreak of pests and diseases due to unseasonal rains				
Rice	Rice & Finger millet	Brown plant hopper : Drain the water before use of insecticides and direct the spray towards the base of the plants. Monocrotophos @ 1250ml/ha (or) Acephate 500 g/ha Stem Borer : Prolonged moist and humid condition leads to outbreak, Spray Cartap hydrochloride 25kg/ha	Brown plant hopper : Drain the water before use of insecticides and direct the spray towards the base of the plants. Monocrotophos @ 500 ml/ac (or) Acephate 200 g/ha Blast : Spray after observing initial infection of the disease, Carbendazim @	Stem Borer : Prolonged moist and humid condition leads to outbreak. Spray Cartap hydrochloride 25 kg/ha False smut in finger millet and rice : Spray cuprous hydroxide 0.25%

			1g/l.	
Finger millet	Maize	Proper Drainage	Top N dress after rain spells	Filed drainage
Barnyard millet	Need based plant Protection IPDM	Need based plant Protection IPDM	Need based plant Protection IPDM	
Soybean	Need based plant Protection IPDM	Need based plant Protection IPDM	Need based plant Protection IPDM	
Maize	Need based plant Protection IPDM	Need based plant Protection IPDM	Need based plant Protection IPDM	
Horticulture				
Early Veg pea & Capsicum	Wilt in low lying water logged patches : Drench Carbendazim 1.0 g/l at the base of plants	Powdery mildew-spray any sulpher containing fungicide Aphid-Spray Dimethoate	Field drainage	
Apple	Apple scab : Folllow the recommended schedule for the control of Apple scab White root rot : Drain out excess water from the basin and drench the basin with Carbendazim 200g, or copper sulphate 100g/200l water (3-4 time at an interval of 15-20 days)	Blossom thrips – Spray Monocrotophos/Dimethoate Powdery Mildew – Spray any sulpher containing fungicide Scab : Spray Dithane M 45	Brown rot – Spray Dithane M 45	Proper storage and immediate transportation to market /godown
Peach	Aphid – Spray Metasystox/Dimethoate Peach leaf curl-spray COC/Dithane M 45	Powdery Mildew – Spray any sulpher containing fungicide		
Citrus	Aphid - Spray Metasystox/Dimethoate	Powdery Mildew – Spray any sulpher containing fungicide		

2.4 Floods: NA

2.5 Extreme events : Heat wave/ Cold wave/ Frost/ Hailstorm/ Cyclone

Extreme event type	Suggested contingency measure			
	Seedling/ nursery stage	Vegetative stage	Reproductive stage	At harvest
Heat wave				
Upland rice	-			
Transplanted rice	Light irrigation	Irrigation		
Finger millet	-	Irrigation		

Horticulture				
Fruit crop	Irrigation in the evening hours	Irrigation and mulching in tree basin	Mulching in tree basin	
Veg crop (Tomato, Capsicum, Cauliflower etc.)	Irrigation	Life saving irrigation in evening hours	-	
Cold wave				
Frost				
Wheat	-	Light irrigation, spray of 2@ urea, burning around the field		
Oilseed	-	Light irrigation, spray of 2@ urea, burning around the field		
Pulse	-	Light irrigation, spray of 2@ urea, burning around the field		
Horticulture				
Veg pea	-	Light irrigation and spray of karathane 1 ml/ltr water in January		
Potato	-	Light irrigation and two spray of Indofill M-45		
Mango	-	Fumigation by burning of waste material near orchard during Jan. in evening hour.		
Hailstorm				
Horticulture				
Apple	-	-	Cover the tree with halenet	
Pear	-	-	Cover the tree with halenet	
Peach	-	-	Cover the tree with halenet	
Plum	-	-	Cover the tree with halenet	
Cyclone	NA	NA	NA	NA
Horticulture				

3.1.1 Contingent strategies for Livestock, Poultry & Fisheries

Livestock

	Suggested contingency measures		
	Before the event ^s	During the event	After the event
Drought			
Feed and fodder availability	Increasing area under fodder production, Crops residues and tree fodder storage. Use managers, use chaff cutters, hay storage. Establishment of fodder banks and Stock sufficient Urea Molasses Mineral Block (UMMB), mineral and vitamin mix, 4% urea treatment of dry fodder. Prepare the silage of non-leguminous fodder crops for the scarcity period. Animal insurance	Utilization of fodder from Perennial & reserve sources. Open grazing in forests and alpine slopes/community lands Feeding of crop residues; use of managers and chaff cutters, feeding of household waste, Provide Urea Molasses Mineral Block (UMMB), mineral and vitamin mix, 4% urea treatment of dry fodder	Availing Insurance, culling undesirable Livestock; Raising of short duration fodder crop, replacement of unproductive animals with improved ones
Drinking water	Storage of water in tanks, Traditional water ponds, rivers	Utilization of stored water, Stall drinking	Rejuvenation of water sources
Health and disease management	Advance preparation with medicines. Vaccinate animals against common diseases like FMD, HS, BQ, Rabbits, awareness camps, distribution of first Aids kits.	Treatment of affected livestock by mass campaign, Modern veterinary care, Animal camps.	Proper veterinary care, awareness camps, capacity building of locals, trainings on health care management
Cold wave			
Shelter/environment management	Provision of conventional house, covering of roof with polythene or leaf straw of pines. Brought back from high hill pasture lands to lower hills; restricted open grazing	Keep the animal enclosed with proper heating of house with fire places. Group living, dry grass flooring, gunny bags curtains on windows & door, Jute bags wrapped on the back & belly of animals, restricted open grazing during cold days. Prevent water-logging conditions in animal houses. In Kachha houses, the floor should be elevated. Feeding of straw & hay to animals with concentrates and protect the young ones from cold.	Allow animal for pasture grazing. Massage of milking animals and other species, hot water bath of animals
Health and disease management	Vaccinate & de-worm animals, balanced feeding	Extra vitamins and minerals, extra allowance of balanced feed. Warm living conditions, avoid exposure to cold and rains/snow. The prophylactic and preventive measures for the control of diseases. Deworm animals against endo and ecto-parasites.	Health check-up of animals for any disease.

Poultry

	Suggested contingency measures		
	Before the event ^a	During the event	After the event
Drought			
Shortage of feed ingredients	Surplus storage of poultry feed; No special preparations if they are kept as backyard.	Utilization of stored feed; No impact as they are kept in captivity. Moreover If they are kept as backyard then household waste is sufficient for their keeping.	Availing Insurance for poultry Culling affected & unproductive birds.
Drinking water	Storage of water in tanks	Utilize stored water	Keep birds in open range system
Health and disease management	Advance preparation with medicines and vaccinate birds. Promote hardy and disease resistant poultry birds like broiler, guinea fowl and desi birds procured from reliable sources.	Deworm the birds. Local management	Keep as backyard activity and local health care
Cold wave			
Shelter/environment management	Closed housing with proper ventilation	Proper ventilation for fresh air. and provision of heater/blower during cold waves	Maintain or provide ambient temperature, proper ventilation, hygienic conditions in house
Health and disease management	Vaccination, de-worming	Extra vitamins, minerals and extra allowance of feed.	De-worming, clean environment, treatment if required.

^a based on forewarning wherever available

Fisheries :

	Suggested contingency measures		
	Before the event ^a	During the event	After the event
Drought			
Shallow water in ponds due to insufficient rains/inflows	Water harvesting structures with rain water impounding from catchment areas Keep a deeper portion as a refuge pond/depression/trench preferably at lower side of pond	Up to 50% of pond surface area may be covered with floating algae like azolla to reduce evaporation. Water to supplement at least 20% of the impoundment of pond to safeguard the stocked fish biomass may be arranged if available. Partial or complete fish harvesting may be done in extreme conditions to reduce the density & stress.	Water harvesting structures with rain water impounding from catchment areas; watershed development planning and implementations with focus on renovation and de-silting of pond
Heat wave and Cold wave			

Management of pond environment	Keep a deeper portion as a refugee pond/depression preferably at lower side of pond		
Health and disease management	Rapid mobile veterinary team (RMVT) may be formed		
Cyclone	Not applicable		
Floods	Not applicable		