State: Jammu and Kashmir

Agriculture Contingency Plan for District: Ganderbal

1.0 District Agriculture profile						
1.1	Agro-Climatic/Ecological Zone					
	Agro Ecological Sub Region (ICAR)	Humid western himalayan region (temperate)				
	Agro-Climatic Zone (Planning Commission)	Western Himilayan region temperate				
	Agro Climatic Zone (NARP)	Western Himilayan region				
	List all the districts or part thereof falling under the NARP Zone	Srinagar, Kupwara, Shopian, Bandipora, Kulgam, Budgam, Pulwama, Anantnag, Baramulla				
	Geographic coordinates of district headquarters	Latitude		Longitude		Altitude
		34^0 12' N		74^0 46'E		5213 ft
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	SKUAST-K Suhama Ganderbal				
	Mention the KVK located in the district	KVK Suhama				
1.2	**Rainfall**	**Normal RF(mm)**	**Normal Rainy days (number)**	**Normal Onset (specify week and month)**		**Normal Cessation (specify week and month)**
	No concept of SW and NE Monsoon. Precipitation in the form of Snow and Rain					
	Annual	676	67			

1.3	Land use pattern of the district (latest statistics)	Geographical area	Cultivable area (‘000 ha)	Forest area	Land under non-agricultural use (‘000 ha)	Permanent Pastures (‘000 ha)	Cultivable wasteland (‘000 ha)	Land under Misc. tree crops	Barren and uncultivable land (‘000 ha)	Current Fallows (‘000 ha)	Other fallows (‘000 ha)

								and groves (‘000 ha)			
	Area (‘000 ha)	39.304	18.121	0.988	5.758	1.674	1.162	0.776	3.734	7.357	3.746

1. 4	**Major Soils**	**Area (‘000 ha)**	**Percent (%) of total**
	Forest and hill soils	24	58
	Clay loam	92.86	85
	Sandy loam	68.4	74

1.5	**Agricultural land use**	**Area (‘000 ha)**	**Cropping intensity %**
	Net sown area	14.109	128
	Area sown more than once	4.012	
	Gross cropped area	18.121	

1.6	**Irrigation**	**Area (‘000 ha)**		
	Net irrigated area	10.672		
	Gross irrigated area	13.877		
	Rainfed area	4.012		
	Sources of Irrigation	Number	**Area (‘000 ha)**	**% of total irrigated area**
	Canals/Small Canals	221		
	Tanks			
	Open wells			
	Bore wells			
	Lift irrigation schemes			
	Micro-irrigation			
	Other sources (please specify)			

	Total Irrigated Area			100 %
	Pump sets			
	No. of Tractors			
	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	4	54.59	
	Critical			
	Semi- critical			
	Safe			
	Wastewater availability and use			
	Ground water quality			
***over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%**				

1.7 Area under major field crops & horticulture (year 2008-2009)

1.7a	**Major field crops cultivated**	**Area ('000 ha)**							
		Kharif			***Rabi***			**Summer**	**Grand total**
		Irrigated	**Rainfed**	**Total**	**Irrigated**	**Rainfed**	**Total**		
	Rice	8.079	-	-	-	-	-	-	-
	Maize	-	3.585	-	-	-	-	-	-
	Wheat	-	-	-	-	-	-	-	-
	Blackgram, Beans, Peas etc	-	0.231	-	-	-	-	-	-
	Fodder (Oats)	0.544	-	-	-	-	-	-	-
	Oilseeds	-	-	-	-	1.630	-	-	-
	Millets	-	0.059	-	-	-	-	-	-
1.7b	**Horticulture crops -**								

	Fruits	Total	Irrigated	Rainfed (‘000 ha)
	Apple	**3.866**	**-**	-
	Cherry	0.480	-	-
	Pear	**0.218**	**-**	-
	Plum	**0.110**	**-**	-
	Apricot	**0.071**	**-**	
	walnut	**3.626**	**-**	-
	Almond	**0.065,**	**-**	**-**

1.7c	**Horticulture crops - Vegetables**	**Total area (‘000 ha)**	**Irrigated area (‘000 ha)**	**Rainfed area (‘000 ha)**
	Tomato	-	80%	20%
	Brinjal	-	-	-
	Cauliflower	-	-	**-**
	Cabbage	-	-	**-**
	Onion	-	-	**-**
	Radish,carrot,turnip and Saag	-	-	**-**
1.7d	**Medicinal and Aromatic crops**	**Total area (‘000 ha)**	**Irrigated area (‘000 ha)**	**Rainfed area (‘000 ha)**
	Medicinal and Aromatic crops	**NA**		
1.7e	**Plantation crops**	**Total area (‘000 ha)**	**Irrigated area (‘000 ha)**	**Rainfed area (‘000 ha)**
		NA		

1.7f	**Fodder crops**	**Total area ('000 ha)**	**Irrigated area ('000 ha)**	**Rainfed area ('000 ha)**
1.7g	**Grazing/Pasture land**	**-**	**-**	**-**
1.7h	**Sericulture etc**	-	-	**-**
1.7i	**Others (specify)**			

1.8	**Livestock (in number)**	**Male (‘000)**	**Female (‘000)**	**Total (‘000)**
	Non descriptive Cattle (local low yielding)	67.589		175.952
	Crossbred cattle (Crossbred + Local)			171.240
	Non descriptive Buffaloes (local low yielding)			
	Graded Buffaloes			2.145
	Goat			15.247
	Sheep			0.250
	Others (Camel, Yak etc.)			158.0
	Commercial dairy farms (Number)			
1.9	**Poultry**	**No. of farms**	**Total No. of birds (‘000)**	
	Commercial			
	Backyard (Local)	-	20.000	

1.10 Fisheries (Data source: Chief Planning Officer of district) **NA**

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)	Non-mechanized (Shore Seines, Stake & trap nets)	

ii) Inland (Data Source: Fisheries Department)	**No. Farmer owned ponds**	**No. of Reservoirs**	**No. of village tanks**

B. Culture

	Water Spread Area (ha)	**Yield (t/ha)**	**Production (‘000 tons)**
i) Brackish water (Data Source: MPEDA/ Fisheries Department)			
ii) Fresh water (Data Source: Fisheries Department)			
Others			

1.11 Production and Productivity of major crops

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)										
1	**Rice**	2.200	-	-	-	-	-	-	-	-
Major Horticultural crops (Crops to be identified based on total acreage)										
	Apple	34.913	-	--	-	-	-	-	-	-
	Cherry	1.155	-	-	-	-	-	-	-	-
	Pear	2.310	-	-	-	-	-	-	-	-
	Plum	0.893	-	-	-	-	-	-	-	-
	Apricot, almond	0.347,0.015	-	-	-	-	-	-	-	-
	Peach, walnut	0.284,6.458	-	-	-	-	-	-	-	-

1.12	**Sowing window for 5 major field crops (start and end of normal sowing period)**	**Rice**	**Maize**	**Pulses**	**Oil Seeds**	**Millets**
	Kharif- Rainfed	-	3rd week of April to 3rd week of May	3rd week of May to 2nd week of June	-	-
	Kharif-Irrigated	3rd week of April to 2nd week of May	1st week of April to 3rd week of May	3rd week of May to 2nd week of June	-	-
	Rabi- Rainfed	-	-	--	1st week of October to 2nd week of October	-
	Rabi-Irrigated	-	-	-		-

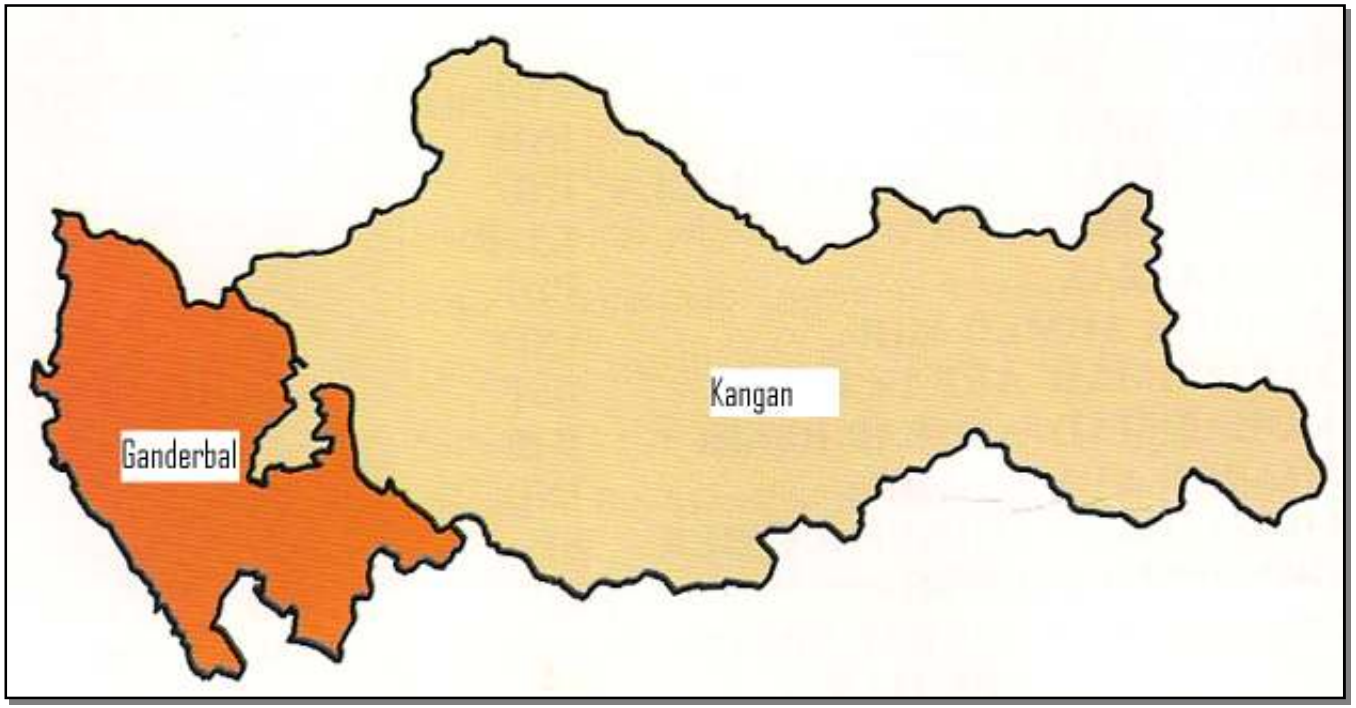
1.13	**What is the major contingency the district is prone to?** (Tick mark)	**Regular**	**Occasional**	**None**
	Drought		✓	
	Flood		✓	
	Cyclone			✓
	Hail storm		✓	
	Heat wave			✓
	Cold wave	✓		
	Frost		✓	
	Sea water intrusion			✓
	Pests and disease outbreak (specify)		✓	
	Locusts, Codling moth Aphids			✓

6 out of 10 years = Regular

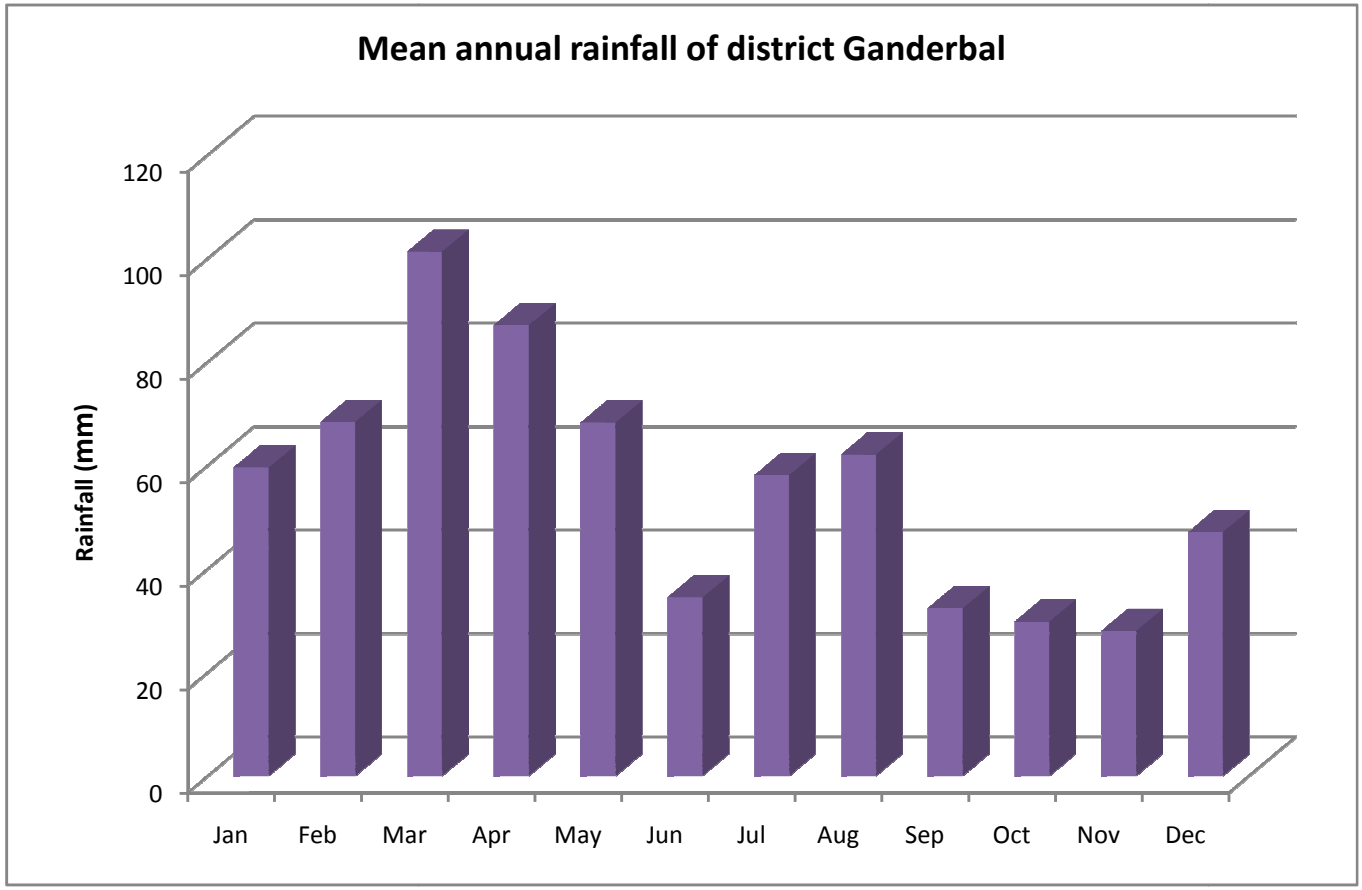
1.14	**Include Digital maps of the district for**	Location map of district within State as Annexure I	Enclosed: Yes
		Mean annual rainfall as Annexure 2	Enclosed: yes
		Soil map as Annexure 3	Enclosed: No

Annexure I

Map of Ganderbal



Annexure II


Mean annual rainfall of district Ganderbal
Rainfall (mm)
120
100
80
60
40
20
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

2.0 Strategies for weather related contingencies

2.1 Drought-Not Applicable

2.1.1 Rained situation

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**
Delayed by two weeks 3rd week of January	Pleistocene medium rainfall precipitation	a. Maize + Rajmash b. Maize + Greengram c. Maize + Rajmash **Maize:-** C_6 , C_8 **Rajmash:-** Canadian red **Greengram:-** Shalimar, moong-1	No change		
	Shallow soils high rainfall (high altitude)	a. Oats b .Maize c. Maize + Rajmash **Oats:** sabzar **Maize**: C15,SKG1, SKG2, Shalimar, maize hybrid1 **Rajmash:** Canadian red	No change		

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**

Delayed by four weeks and six week 1st week of February & 3rd week of February	Pleistocene medium rainfall precipitation	a. Maize + Rajmash b. Maize + Greengram c. Maize + Rajmash **Maize:-** C_6 , C_8 **Rajmash:-** Canadian red **Greengram:-**Shalimar, moong-1	No change	• Increase sowing depth of maize • Furrow sowing across the slope • Early sowing • Thinning in brown sarson and use as organic mulch	
	Shallow soils high rainfall (high altitude)	a. Oats b .Maize c. Maize + Rajmash **Oats:** sabzar **Maize**: C15,SKG1, SKG2, Shalimar, maize hybrid1 **Rajmash:** Canadian red	No change		

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**

Delayed by 8th weeks 1st week of March	Pleistocene medium rainfall precipitation Shallow soils high rainfall (high altitude)	a. Maize + Rajmash b. Maize + Greengram c. Maize + Rajmash **Maize:-** C_6 , C_8 **Rajmash:-** Canadian red **Greengram:** Shalimar, moong-1 a. Oats b .Maize c. Maize + Rajmash **Oats:** sabzar **Maize**: C15,SKG1, SKG2, Shalimar, maize hybrid1 **Rajmash:** Canadian red	Maize(local)-fallow Maize(local)+beans-fallow Maize(local)+greengram/Cow pea-fallow Maize-local Beans-canadian red Cowpea local Maize(local)-fallow Maize(local)+beans-fallow Maize(local)+greengram/cow pea-fallow	• Use local varieties • Follow water harvesting • Increase sowing depth • Early sowing • Use mulches • Increase quantity of organic manure	

Condition			**Suggested Contingency measures**		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Early season drought (delayed onset)	Pleistocene medium rainfall precipitation Shallow soils high rainfall (high altitude)	a. Maize + Rajmash b. Maize + Greengram c. Maize + Rajmash **Maize:-** C_6 , C_8 **Rajmash:-** Canadian red **Greengram:-** Shalimar, moong-1 a. Oats b .Maize c. Maize + Rajmash	Maize(local)-fallow Maize(local)+beans-fallow Maize(local)+moong/cowpea-fallow Maize-local Beans-canadian red Cowpea local Maize(local)-fallow Maize(local)+beans-fallow	• Use local varieties • Follow water harvesting • Increase sowing depth • Early sowing • Use mulches Increase quantity of organic manure	

		Oats: sabzar **Maize**: C15,SKG1, SKG2, Shalimar, maize hybrid1 **Rajmash:** Canadian red	Maize(local)+moong/cowpea-fallow		

Condition			**Suggested Contingency measures**		
Early season drought (Normal onset)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**
Normal onset followed by 20 day dry spell	Pleistocene medium rainfall precipitation	a. Maize + Rajmash b. Maize + Greengram c. Maize + Rajmash **Maize:-** C_6 , C_8 **Rajmash:-** Canadian red **Greengram:-** Shalimar, moong-1	• Thining and gap filling • Reseeding /gap filling Reseeding if germination fails	• Tillage mulching	
	Shallow soils high rainfall (high altitude)	a. Oats b .Maize c. Maize + Rajmash **Oats:** sabzar **Maize**: C15,SKG1, SKG2, Shalimar, maize hybrid1 **Rajmash:** Canadian red			

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

rainless (>2.5 mm) period)				**measues**	
	Pleistocene medium rainfall precipitation Shallow soils high rainfall (high altitude)	a.Maize + Rajmash b. Maize + Moong c.Maize + Rajmash **Maize:- C_6 , C_8** **Rajmash:-** Canadian red **Greengram:-** Shalimar moong-1 a. Oats b .Maize c. Maize + Rajmash **Oats:** sabzar **Maize**: C15,SKG1, SKG2, Shalimar, maize hybrid1 **Rajmash:** Canadian red	Life saving irrigation Weeding &mulching Delay application of N dose	Prepare furrow across the slope Spray urea	

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

	Pleistocene medium rainfall precipitation Shallow soils high rainfall (high altitude)	a. Maize + Rajmash b. Maize + Moong c.Maize + Rajmash **Maize:- C_6 , C_8** **Rajmash:-** Canadian red **Greengram:-:-** Shalimar moong-1 a. Oats b .Maize c. Maize + Rajmash **Oats:** sabzar **Maize**: C15,SKG1, SKG2, Shalimar, maize hybrid1 **Rajmash:** Canadian red	Life saving irrigation Tillage mulch Weeding Organic mulch Thing of plant stand to rationalize available moisture	Spray micro nutrients and urea and potash as Kcl mulching	

Condition			**Suggested Contingency measures**		
Terminal drought (Early withdrawal of monsoon)/ western disturbance	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Rabi Crop planning**	**Remarks on Implementation**
	Pleistocene medium rainfall precipitation	a. Maize + Rajmash b. Maize + Moong c.Maize + Rajmash **Maize:- C_6 , C_8** **Rajmash:-** Canadian red **Greengram:-** Shalimar moong-1	Life saving irrigation from water storages Harvest moong and beans for vegetable purpose Harvest maize for fodder purpose and save excessive biomass as hay	Lentil, brown sarson wheat vetch to be sown in the month of October followed by pre-sowing irribgation	
	Shallow soils high rainfall (high altitude)	a. Oats b .Maize c. Maize + Rajmash **Oats:** sabzar **Maize**: C15,SKG1, SKG2, Shalimar, maize hybrid1 **Rajmash:** Canadian red			

2.1.2 Drought - Irrigated situation

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Delayed release of water in canals due to low rainfall/snowfall	low land snow melt Streams.Alluvial soils	a.Rice-brown sarson	Dealyed released of water Is not situation as at early stages whatever snow is available water is released	• Pre-sowing irrigation • Proper puddling in rice fields • Irrigate rice after disappearance of ponded water • Pre-sowing irrigation • Proper puddling in rice fields • Irrigate rice after disappearance of ponded water. • Plastering of bunds	
		b.Rice-fodder oats			
		c.Rice- wheat			
	Tail ends of irrigated area.	a. Rice-brown sarson	Not required		
		b. Rice-fodder oats			
		c. Rice- wheat			
	Mid to high altitude Pleistocene soils	a. Rice-brown sarson			
		b.Rice-fodder oats			
		c.Rice- wheat			

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Limited release of water in canals due to low rainfall/snowfall		a.Rice-brown sarson b.Rice-fodder oats c.Rice- wheat	Maize+beans-brown sarson Maize+beans-oats Maize+moong/cowpea-brown sarson	• Pre-sowing irrigation • Plant local varities. • Early sowing recommended • Increase organic manure as per availability	
		a.Rice-brown sarson b.Rice-fodder oats c.Rice- wheat	Maize+beans-brown sarson Maize+beans-oats Maize+moong/cowpea-brown sarson		
		a. Rice-brown sarson	Maize		
		b.Rice-fodder oats	Fodder maize		

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
		c.Rice- wheat	MP cherry		

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping system**	**Agronomic measures**	**Remarks on Implementation**
Non release of water in canals under delayed onset of western disturbance in catchment	low land. snow melt Streams.Alluvial Soils Tail ends of irrigated area Mid to high altitude Pleistocene soils	**Conditions 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]**
Lack of inflows into tanks due to insufficient /delayed onset of monsoon	**1) Farming Situation**	**Condition not applicable**			

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping syste[h]**	**Agronomic measures**	**Remarks on Implementation**

Condition			Suggested Contingency measures		
	Major Farming situation	**Normal Crop/cropping system**	**Change in crop/cropping syste[h]**	**Agronomic measures**	**Remarks on Implementation**
Insufficient groundwater recharge due to low rainfall	**1) Farming Situation**	**Condition not applicable**			

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

Condition	**Suggested contingency measure**			
Continuous high rainfall in a short span leading to water logging	**Vegetative stage**	**Flowering stage**	**Crop maturity stage**	**Post harvest**
Maize+beans	Provide surface drainage along the slope	Provide surface drainage	Drain field, Provide staking if lodging is seen, Harvest around at physiological maturity	Spread crop at dry and safer place
Beans/Greengram	do	do	Harvest crop by uprooting Not by picking	do
Fodder maize	do	Harvest crop as and when workable	-	-
Rice	Drain excessive water.	Provide drainage and take measures against rice blast(prophylactic measures)	-	-
Horticulture				
Apple	At dormant stage in case of heavy snowfall remove snow from trees In case of trunk			

	craking join splits by nuts and bolts to save trees			
Heavy rainfall with high speed winds in a short span				
Crop1				
Horticulture				
Crop1				
Outbreak of pests and diseases due to unseasonal rains				
		Need based plant protection IPDM for pluses		Safe storage against storage pest and diseases
Horticulture				
Crop1				

2.3 Floods : Not experienced / encountered

Condition	**Suggested contingency measure**			
Transient water logging/ partial inundation[1]	**Seedling / nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Rice	**NA**	**-Remove slit from the effected parts of field** **-Drain water from field**	**-Staking of lodged plants** **-Remove slit** **-Drain water** **-Prophylactic spray to control diseases**	**-Drain field** **-Remove slit** **-Harvest and take produce to safer place**
Continuous submergence for more than 2 days				
Sea water intrusion				

2.4 Extreme events: Heat wave / Cold wave/Frost/ Hailstorm /Cyclone : Not experienced / encountered

Extreme event type	Suggested contingency measure			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Heat Wave	NA			
Cold wave				
Rice	At nursery stage use low polythene tunnel to Grow rice nursery as standard method	Increase water level in the paddy fields	Keep water level up	
Horticulture				
Crop1				
Frost				
Crop1				
Horticulture				
Crop1				
Hailstorm				
Crop1				
Horticulture				
Crop1				
Cyclone				
Crop1				
Horticulture				
Crop1				

2.5 Contingent strategies for Livestock, Poultry & Fisheries

2.5.1 Livestock

	Suggested contingency measures

	Before the event[s]	During the event	After the event
Drought			
Feed and fodder availability	- Necessary arrangements to grow fodder on bunds/orchars and irrigated area as need based - Use excessive fodder for making hay and silage	-Keep animals under shade -Use urea molasses treated roughage -Use feed blocks prepared from crop residue And apple pomace -Ensure availability of mineral mixture	
Drinking water	Ensure storage of drinking water in storage tanks	Ensure storage of water	
Health and disease management	Arrangement and preparedness with required medicine stock	Vaccination for foot and mouth disease and other required dosage and vaccination if not done earlier	Culling sick and unproductive livestock.
Floods			
Feed and fodder availability	-	Take animals to safer places -Use feed blocks prepared from crop residue And apple pomace -Spread wet fodder at safer places to dry	
Drinking water			
Health and disease management			
Cyclone			
Feed and fodder availability			
Drinking water			
Health and disease management			
Heat wave and cold wave			
Shelter/environment	Provide heating and proper ventilation	Ensure live stock is not subjected to direct cold	

management			
Health and disease management			

[s] based on forewarning wherever available

2.5.2 Poultry

	Suggested contingency measures			Convergence/linkages with ongoing programs, if any
	Before the event[a]	**During the event**	**After the event**	
Drought				
Shortage of feed ingredients	Ensure stock of feed	Utilise damaged food grains Utilise stored feed	Culling of affected birds	
Drinking water	Storage in water reservoirs	Use stored water	-	
Health and disease management	Preparedness and arrangement of vaccination	Mass vaccination	Culling of diseased birds	
Floods				
Cyclone				
Heat wave and cold wave				

[a] based on forewarning wherever available

2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event[a]	**During the event**	**After the event**

1) Drought			
A. Capture	Prepare additional water reservoirs and exigency ponds	• Protect brood stock by making deep trenches in the middle of ponds. • Sale of additional stock • Provide aeration • Stop feeding/restrict feeding • Give chilling treatment	-
B. Aquaculture			
2) Floods			
A. Capture			
B. Aquaculture			
3. Cyclone / Tsunami			
A. Capture			
B. Aquaculture			
4. Heat wave and cold wave			
A. Capture			
B. Aquaculture			

[a] based on forewarning wherever available