State: Madhya Pradesh

Agriculture Contingency Plan for District: Ujjain

1.0 District Agriculture profile					
1.1	**Agro-Climatic/Ecological Zone**				
	Agro Ecological Sub Region (ICAR)	5th			
	Agro-Climatic Zone (Planning Commission)	Xth : Malwa Plateau			
	Agro Climatic Zone (NARP)	AZ79; Malwa Plateau			
	List all the districts or part thereof falling under the NARP Zone	Ujjain			
	Geographic coordinates of district headquarters	Latitude		Longitude	Altitude
		23.43^{0}N - 23.36^{0}N		75^{0}E – 75.30^{0}E	527 m
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Regional Agricultural Research Station, Near Vikram Nagar Railway Station-Ujjain			
	Mention the KVK located in the district	Ujjain			
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):	890	40	2nd Week of June	
	NE Monsoon(Oct-Dec):	-	-		
	Winter (Jan- March)	-	-	-	-
	Summer (Apr-May)	-	-	-	-
	Annual	890	70	-	-

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)	609.874	489.025	3.1	57.6	39.3	5.8	NA	NA	0.8	1.9

1. 4	**Major Soils (common names like red sandy loam deep soils (etc.,)***	**Area ('000 ha)**	**Percent (%) of total**
	1. Deep soil	539.60	88.68
	2. Medium deep soil	11.40	1.90
	3. Shallow Soil	57.20	9.42

1.5	**Agricultural land use**	Area ('000 ha)	Cropping intensity %
	Net sown area	489.1	163
	Area sown more than once	289.1	
	Gross cropped area	778.2	

1.6	**Irrigation**	Area ('000 ha)		
	Net irrigated area	199.8		
	Gross irrigated area	199.8		
	Rainfed area	289.3		
	Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
	Canals	34	3.57	1.78
	Tanks	43	0.92	0.50
	Open wells	33390	44.26	22.15
	Bore wells	47753	131.27	65.70
	Lift irrigation schemes			
	Micro-irrigation			
	Other sources (please specify)		19.77	9.9
	Total Irrigated Area		199.79	
	Pump sets	83597		
	No. of Tractors	10926		

	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		109%	
	Critical			
	Semi- critical			
	Safe			
	Wastewater availability and use			
	Ground water quality	Good		
*over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%				

1.7 Area under major field crops & horticulture (as per latest figures) (Specify year :2008-09)

1.7	**S.No.**	**Major field crops cultivated**	**Area ('000 ha)**							
			Kharif			***Rabi***				
			Irrigated	**Rainfed**	**Total**	**Irrigated**	**Rainfed**	**Total**	**Summer**	**Grand total**
	1	Soybean	-	443.583	443.583					443.583
	2	Maize	-	7.433	7.433					7.433
	3	Sorghum	-	3.925	3.925					3.925
	4	Wheat	-			98.796	-	98.796		98.796
	5	Gram				163.321	-	163.321		163.321
	Others (specify)	Mustard					2.541	2.541		2.541
		Horticulture crops - Fruits								
		Mango								0.246
		Guava								0.639
		Orange+ Sweet lime								0.575+0.025 = 0.600
		Lemon								0.720
		Grapes								0.160
		Pomegranate								0.050
		Custard Apples								0.140
		Papaya								0.250
		Others								0.160
		Horticulture crops - Vegetables								
		Tomato								0.114
		Potato								2.190

		Lady's Finger								0.268
		Brinjal								0.196
		Green Peas								1.650
		Sweet Potato								1.340
		Cauliflower								0.133
		Bitter guard								0.060
		All guard								0.192
		Others								2.856
		Horticulture crops - Spices								
		Coriander								3.002
		Chilly								4.298
		Garlic								3.700
		Onion								4.000
		Fenugreek seeds								2.000
		Others								1.000
		Horticulture crops – Flowers								
		Marigold								0.212
		Navrang								0.145
		Bijli								0.035
		Aster								0.005
		Guldawadi								0.136
		Others								0.052
		Medicinal and Aromatic crops								
		Ashwa Gandha								0.122
		Ajwain, Isabgol, Basil, Kalmegh, Musli, Lemon Grass								0.010+0.010+0.076+0.005+0.002+0.005 =0.792
		Aamla								0.120

Source - Department of Horticulture, Ujjain Division, Ujjain (M.P.)

1.8	**Livestock**	**Male ('000)**	**Female ('000)**	**Total ('000)**
	Non descriptive Cattle (local low yielding)			334.536
	Crossbred cattle			19.621
	Non descriptive Buffaloes (local low yielding)			251.068
	Graded Buffaloes			57.722
	Goat			196.115
	Sheep			5.603
	Others (Camel, Pig, Yak etc.)			(0.081, 1.437)
	Commercial dairy farms (Number)			

1.9	**Poultry**	**No. of farms**	**Total No. of birds ('000)**
	Commercial		109.830
	Backyard		

1.10 **Fisheries** (Data source: Chief Planning Officer)

A. Capture

i) Marine (Data Source: Fisheries Department) **N.A.**	**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)	
	876	**-**	**850**	**1750**	**-**	**-**

ii) Inland (Data Source: Fisheries Department)	**No. Farmer owned ponds**	**No. of Reservoirs**	**No. of village tanks**
	40	**32**	**148**

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)	2568	1050	793
Others			

1.11 Production and Productivity of major crops (2008-09;)

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)										
	soybean	599.42	1350					599.42	1350	
	Maize	17.2	2550					17.2	2550	
	Sorghum	4.79	1350					4.79	1350	
	Wheat			356.12	3000			356.12	3000	
	Gram			215.30	1100			215.30	1100	
	Mustard			2.15	1000			2.15	1000	
Major Horticultural crops (Crops to be identified based on total acreage)										
	Mango	18.45	7500							
	Guava	83.07	13000							
	Orange+ Sweet lime	75.62	27500							
	Lemon	118.80	16500							
	Grapes	2.24	1400							
	Pomegranate	5.25	10500							
	Custard Apples	14.00	10000							
	Papaya	62.50	25000							
	Others	24.00	15000							
	Horticulture crops - Vegetables									
	Tomato	29.21	25400							
	Potato	459.90	21000							
	Lady’s Finger	24.17	9020							
	Brinjal	38.22	19500							
	Green Peas	37.125	2250							
	Sweet Potato	298.40	22000							
	Cauliflower	33.25	25000							
	Bitter guard	6.07	10120							
	All guard	22.08	11500							
	Others	228.48	8000							

	Horticulture crops - Spices									
	Coriander	**43.22**	**1440**							
	Chilly	223.49	5200							
	Garlic	37.00	1000							
	Onion	780.00	19500							
	Fenugreek seeds	780.00	3900							
	Others	30.00	3000							
	Horticulture crops – Flowers									
	Marigold	11.02	5200							
	Navrang	6.52	4500							
	Bijli	1.41	4040							
	Aster	0.375	7500							
	Guldawadi	14.96	11000							
	Others	5.46	10500							
	Medicinal and Aromatic crops									
	Ashwa Gandha	1.70	1400							
	Ajwain, Isabgol, Basil, Kalmegh, Musli, Aamla, Lemon Grass	0.10+0.15+ 1.14+0.065 +0.048+9.1 9+0.15=10. 843	1000+1500+150 0+1300+2400+7 660+3000= 18360							
	Plantation crops									
	Eg., industrial pulpwood crops etc.									
	Fodder crops									
	Total fodder crop area									
	Grazing land									
	Sericulture etc									
	Others (specify)									

Source - Department of Horticulture, Ujjain Division, Ujjain (M.P.)

1.12	**Sowing window for 5 major field crops** (start and end of normal sowing period)	Crop 1: Soybean	2: Maize	3: Gram	4: Wheat
	Kharif- Rainfed	20th June – 7th July	20th June – 15th July		
	Kharif-Irrigated	-	-		
	Rabi- Rainfed			15th Oct- 7th Nov.	20th Oct- 5th Nov.
	Rabi-Irrigated			1st week Nov – 15 Dec.	Nov – 15 Dec.

1.13	**What is the major contingency the district is prone to?** (Tick mark)	**Regular**	**Occasional**	**None**
	Drought	V		
	Flood			V
	Cyclone			V
	Hail storm		V	
	Heat wave		V	
	Cold wave		V	
	Frost		V	
	Sea water intrusion			V
	Pests and disease outbreak (specify)Soybean: Girdle Beetle, Semilooper	V		
	Others (specify) Gram: Gram Pod Borer	V		

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

Annexure I
Location map of Ujjain district

Annexure II
Mean annual rainfall

Annexure III
Soil map

(Source: NBSS&LUP, Amravati Road, Nagpur)

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]**
1	2	3	4	5	6
Delay by 2 weeks (June 4th week) month)*	Deep black soil	Soybean-Wheat	Soybean/urad/Mung/ Tur/Maize/ Wheat	Apply 20 % higher seed rate and 20% reduced fertilizers	-link SAU,NSC And farmers societies for the good quality seed
		Soybean-Gram	Soybean/urad/Mung/ Tur/Maize/Gram	Apply 20 % higher seed rate and 20% reduced fertilizers	
	Shallow Soil	Soybean-Gram	Urad/Mung/ Maize/Hyb. Sorghum/Gram	Apply moisture conservation practices, conservation tillage, use presoaked & deep seeding, foliar application of nutrients	

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]**
1	2	3	4	5	6
Delay by 4 weeks (Specify month)	Deep black soil	Soybean-Wheat	early maturing var. of soybean *i.e.*JS 93-05, JS 95-60 followed by wheat	Apply 20 % higher seed rate	link SAU,NSC And farmers societies for the good quality seed
		Soybean-Gram	Soybean/urad/Mung/ Tur/Maize/Gram	Apply 20 % higher seed rate and 20% reduced fertilizers	
	Shallow Soil	Soybean-Gram	Urad(JU-86) followed by gram var. *i.e.* JG-74, U-21	Apply 20 % higher seed rate and 20% reduced fertilizers	

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]**
1	2	3	4	5	6
Delay by 6 weeks (Specify month)	Deep black soil	Soybean-Wheat	Soybean-Wheat	early maturing var. of soybean *i.e.*JS 93-05, JS 95-60 followed by wheat	link SAU,NSC And farmers societies for the good quality seed
		Soybean-Gram	Grow Urad/Mung/Til followed by Safflower	Apply 20 % higher seed rate	
	Shallow Soil	Soybean-Gram	Urad-Til intercropping followed by safflower	Apply 20 % higher seed rate and 20% reduced fertilizers then recommended level, conservation tillage, use presoaked & deep seeding	

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]**
1	2	3	4	5	6
Delay by 8 weeks (Specify month)	Deep black soil	Soybean-Wheat	Til-Toria	Conservation tillage, use presoaked & deep seeding, foliar application of nutrients.	link SAU,NSC And farmers societies for the good quality seed
		Soybean-Gram			
	Shallow Soil	Soybean-Gram	Fellow-Gram		

***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 1st wk	June 3rd wk	July 1st wk	July 3rd wk	Aug 1st wk
June 2nd wk	June 4th wk	July 2nd wk	July 4th wk	Aug 2nd wk
June 3rd wk	July 1st wk	July 3rd wk	Aug 1st wk	Aug 3rd wk
June 4th wk	July 2nd wk	July 4th wk	Aug 2nd wk	Aug 4th wk
July 1st wk	July 3rd wk	Aug 1st wk	Aug 3rd wk	Sep 1st wk
July 2nd wk	July 4th wk	Aug 2nd wk	Aug 4th wk	Sep 2nd wk

Condition			**Suggested Contingency measures**		
Early season drought **(Normal onset)**	**Major Farming situation[a]**	**Normal Crop/ cropping system[b]**	**Crop management[c]**	**Soil nutrient & moisture conservation measues[d]**	**Remarks on Implementation[e]**
1	2	3	4	5	6
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	Deep black soil	Soybean – Wheat	Gap filling with improved varieties Apply Kulpa for moisture conservation and weed management,	Use organic mulch in crop rows soil mulch through interculture Life saving irrigation Ridges and furrow/ BBF system	link SAU,NSC And farmers societies for the good quality seedLink watersheds and MGNREGA for farm pond technology
		Soybean - Gram			
	Shallow Soil	Soybean - Gram			

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]**
1	2	3	4	5	6
At vegetative stage	Deep black soil	Soybean – Wheat	Foliar application of 2% urea or MOP during the dry spell Apply Kulpa for weed management	Dust mulch through frequent interculture Organic mulch in crop rows Ridges and furrows/BBF system Life saving irrigation	Proper training and guidance to the farmer by the extension officers information by linking KVK and ATMA. link SAU,NSC And farmers societies for the good quality seed. Link watersheds and MGNREGA for farm pond technology
		Soybean - Gram	Foliar application of antitransparent and growth regulators		
	Shallow Soil	Soybean – Gram	Foliar application of antitransparent and growth regulators		

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 measues[d]**	**Rem arks on Implementation[e]**
1	2	3	4	5	6
At flowering/ fruiting stage	Deep black soil	Soybean – Wheat		Dust mulch through frequebnt interculture organic mulch in crop rows Life saving irrigation of farm pond water	Proper training and guidance to the farmer by the extension officers information by linking KVK and ATMA. link SAU, NSC and farmers societies for the good quality seed Link watersheds and MGNREGA for farm pond technology
		Soybean - Gram	Foliar application of cycocel or 2% urea /MOP during the dry spell Weed management		
	Shallow Soil	Soybean - Gram	Foliar application of cycocel or 2% urea /MOP during the dry spell Weed management		

Condition			Suggested Contingency measures		
Terminal drought (Early withdrawal of monsoon)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management[c]**	**Rabi Crop planning[d]**	**Remarks on Implementation[e]**
1	2	3	4	5	6
	Deep black soil	Soybean - Wheat		If the damage is severe, Plan for land preparation of chickpea/mustard apply dry sowing for gram/mustard and use moisture conservation tillage	Proper training and guidance to the farmer by the extension officers information by linking KVK and ATMA. link SAU, NSC and farmers societies for the good quality seed Link watersheds and MGNREGA for farm pond technology
		Soybean – Gram	Foliar application of cycocel/ urea @% during the dry spell Life saving rrigation		
	Shallow Soil	Soybean – Gram			

2.1.2 Drought - Irrigated situation: N.A.

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]
1	2	3	4	5	6
Delayed release of water in canals due to low rainfall	Mention source of irrigation, topography (upland/lowland) and soil colour & depth Eg; canal irrigated shallow red soils; tankfed medium deep black soils	**N.A.**			

Condition			Suggested Contingency measures		
	Major Farming situation[f]	Normal Crop/cropping system[g]	Change in crop/cropping system[h]	Agronomic measures[i]	Remarks on Implementation[j]
Non release of water in canals under delayed onset of monsoon in catchment	**N.A.**				

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	Deep black soils	Gram / Mustard	Gram/ Mustard intercropping with safflower Intercropping: Gram-Linseed Gram – Safflower Mustard - Gram	Select short duration varieties Sowing on ridges and furrows/ BBF system	Create awareness on technologies to the farmers through KVK and ATMA

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	Deep black soils	Gram/ Mustard	use dei chickpea varieties *i.e.*JG-11, JG-74, & U-21	Ridge and furrowseeding, Give irrigation at crtical crop growth stages Irrigation in Alternate furrows	Create awareness on technologies to the farmers through KVK and ATMA
Any other condition (specify)	**NA**				

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[k]**	**Flowering stage[l]**	**Crop maturity stage[m]**	**Post harvest[n]**
1	2	3	4	5
Crop1 (specify) Soybean	• Drain excess water • Top dressing with N 10-20 kg/ha at optimum soil moisture	• Drain excess water • Intercultivation to loosen the soil and improve aeration • Foliar spray with 2% urea/DAP to regain lost vigour	• Drain excess water • Harvesting on a clear sunny day • Shift the produce to safer place	Maintain optimum moisture content in grain910-12%) by drying before bagging and marketing
Crop2 Maize	Drain the excess water as early as possible Apply 20 kg N + 10 kg K /ha after draining excess water Take up inter cultivation and at optimum soil moisture condition to loosen and aerate the soil and to control weeds Earthenup the crop for anchorage Spray KNO_3 1 % or water soluble fertilizers like 19-19-19,	Drain the excess water as early as possible Apply 20 kg N + 10 kg K /ha after draining excess water Spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition Take up timely control measures for sheath blight and post flowering stalk rots	Drain the excess water as early as possible Allow the crop to dry completely before harvesting	Harvest the cobs after the they are dried up properly. Dry the grain to optimum moisture condition before storing

	20-20-20, 21-21-21 at 1% to support nutrition Take up timely control measures for Pink stem borer, sheath blight and Turcicum leaf blight			
Crop3 Gram	Drain excess water Foliar spray with 2% urea after ceasation of rains	Drain excess water Foliar spray with 2% urea after ceasation of rains	Drain excess water Harvest of the produce on clear sunny day	Dry the grain at optimum moisture content before bagging and marketing
Crop4 Wheat	Drain excess water with proper drainage Take up interculture at optimum moisture to loosen and aerate the soil and also to control weeds Top dressing of 20-30 kg N/ha at optimum moisture for better growth	Drain excess water with proper drainage Top dressing of 20-30 kg N/ha at optimum moisture for better growth Adopt need based plant proection measures	Drain excess water with proper drainage Allow the crop to completely dry before harvest Harvest the produce on clear sunny day	Well dry the produce up to 10- 12% moisture before storage
Crop5				
Horticulture				
Crop1 (specifyFruits	Proper drainage and removal of excess water from root zone Staking of plants Nutrient application at optimum moisture for better growth	Prop Proper drainage and removal of excess water from root zone Staking of plants Nutrient application at optimum moisture for better growth	Proper drainage and removal of excess water from root zone Spray fungicide like Bavastin @1gm/lit of water after rain as a preventive measure to control fungus disease Go for staking if needed Harvest mature produce on clear sunny day Fallen fruits may be collected, graded and marketed if feasible	Store fruits in well ventilized temporary structures before marketing Market the fruits as early as possible
Crop2 Vegetables	Proper drainage and removal of excess water from root zone	Proper drainage and removal of excess water from root zon Spraying the crop with cypermithrin@0.1% to contron fruit borer	Proper drainage and removal of excess water from root zone	

Heavy rainfall with high speed winds in a short span[2]				
Crop1 (specify) Soybean	• Drain excess water • Top dressing with N 10-20 kg/ha at optimum soil moisture	• Drain excess water • Intercultivation to loosen the soil and improve aeration • Foliar spray with 2% urea/DAP to regain lost vigour	• Drain excess water • Harvesting on a clear sunny day • Shift the produce to safer place	Maintain optimum moisture content in grain910-12%) by drying before bagging and marketing
Crop2 Maize	Drain the excess water as early as possible Apply 20 kg N + 10 kg K /ha after draining excess water Take up inter cultivation and at optimum soil moisture condition to loosen and aerate the soil and to control weeds Earthenup the crop for anchorage Spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition Take up timely control measures for Pink stem borer, sheath blight and Turcicum leaf blight	Drain the excess water as early as possible Apply 20 kg N + 10 kg K /ha after draining excess water Spray KNO_3 1 % or water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 at 1% to support nutrition Take up timely control measures for sheath blight and post flowering stalk rots	Drain the excess water as early as possible Allow the crop to dry completely before harvesting	Harvest the cobs after the they are dried up properly. Dry the grain to optimum moisture condition before storing
Crop3 Gram	Drain excess water Foliar spray with 2% urea after ceasation of rains	Drain excess water Foliar spray with 2% urea after ceasation of rains Apply flowering promoting hormonal spray(GA3)ins	Drain excess water Harvest of the produce on clear sunny day	Dry the grain at optimum moisture content before bagging and marketing
Crop4 Wheat	Drain excess water with proper drainage Take up interculture at optimum moisture to loosen and aerate the soil and also to control weeds Top dressing of 20-30 kg N/ha at optimum moisture for	Drain excess water with proper drainage Top dressing of 20-30 kg N/ha at optimum moisture for better growth Adopt need based plant proection measures	Drain excess water with proper drainage Allow the crop to completely dry before haevest Harvest the produce on clear sunny day	Well dry the produce up to 10- 12 moisture before storage

	better growth			
Horticulture				
Crop1 (specifruits	Proper drainage and removal of excess water from root zone Staking of plants Nutrient application at optimum moisture for better growth	Prop Proper drainage and removal of excess water from root zone Staking of plants Nutrient application at optimum moisture for better growth	Proper drainage and removal of excess water from root zone Spray fungicide like Bavastin @1gm/lit of water after rain as a preventive measure to control fungus disease Go for staking if needed Harvest mature produce on clear sunny day Fallen fruits may be collected, graded and marketed if feasible	Store fruits in well ventilized temporary structures before marketing Market the fruits as early as possible
Crop2 vegetables	Proper drainage and removal of excess water from root zone	Proper drainage and removal of excess water from root zon Spraying the crop with cypermithrin@0.1% to contron fruit borer	Proper drainage and removal of excess water from root zone	
Outbreak of pests and diseases due to unseasonal rains				
Crop1 (specify) Soybean	• Early planting to minimize the incidence of girdle beetle and green semilooper • Foliar spray with 5% NSKE or dimethoate 30EC 1 ml/l to protect against semilooper	• Monitor adult moth activity of Spodoptera through pheromone traps (10 traps/ha) • Apply Quinalphos 25 EC 2ml/l or Emamectin benzoate 5 SG 4g/10 lit to control spodoptera	apply spray of insecticides & fungicide for protecting from fungus	
Crop2 Maize	Spray imidachloprit 0.3 ml/l or Dimethoate 1.0 ml/l to control leaf hopper	Foliar application of Mancozeb @0.25 - 0.4% at 8-10 days interval to control *Turcicum* leaf blight	Trichoderma mixed with FYM @ 10 g/kg at 10 days prior to its use in the field can be applied to control stalk rot incidence which is likely during post flowering	

Chickpea	Spray triazophos 40 % EC @ 1-1.5 l/ha in chickpea against pest incidence. · "T" shaped pegs placed in late sown chickpea field for biological control of pod borer and for chemical control spraying of Quinolphas 25 EC or Chlorpyriphos 20 EC C or Methyle Parathiyan 50 EC @ 600 ml dissolve in 500 L of water should be used. Dusting of Felvunerate 0.4% or Endosulphan 4% 15-20 kg or Quinolphas 1.5 WP 20-25 per hectare with duster			
Wheat	Spray 0.2 % mancozeb 76% WP against wheat rust.	Spray 0.2 % mancozeb 76% WP against wheat rust.	Trichoderma mixed with FYM @ 10 g/kg at 10 days prior to its use in the field can be applied to control stalk rot incidence which is likely during post flowering	
Horticulture	NA			

2.3 Floods: N.A.

Condition	**Suggested contingency measure[o]**			
Transient water logging/ partial inundation[1]	**Seedling / nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Horticulture	NA			
Continuous submergence for more than 2 days[2]	NA			
Horticulture				
Sea water intrusion[3]	NA			

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

Extreme event type	Suggested contingency measure[r]			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Heat Wave[p]				
Crop1 (specify) Soybean	protective irrigation for heat waves Wind breaks	protective irrigation for heat waves wind breaks	- protective irrigation for heat waves wind breaks	early maturing varieties
Crop2 Maize	protective irrigation for heat waves Wind breaks protective irrigation for heat waves	protective irrigation for heat waves	protective irrigation for heat waves wind breaks	early maturing varieties
Crop3 Gram	protective irrigation for heat waves Wind breaks protective irrigation for heat waves	-	protective irrigation & smoking from frost sheltering	terminal heat tolerant varieties
Crop4 Wheat	protective irrigation for heat waves Wind breaks	-	protective irrigation & smoking from frost sheltering	terminal heat tolerant varieties
Horticulture	NA			

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	Storage of feed & fodder, promotion of stall feeding	saving fodder, fodder bank establishment	supply of concentrate feed, to improve health, supply of fodder on subsidy
Drinking water	water dug/ tank establishment	clean & hygienic water supply	water well cleaning & pond tank use
Health and disease management	Storage of vaccines & medicines, vaccination of animals	Proper information to the pashupalak	To improve the health of animals balanced feed & additive supply.
Floods			
Feed and fodder availability	Store of fodder on high level	Animals should be kept free	General health check-up & vaccination
Drinking water	safe & clean water	Tank/ pond should be clean	

Health and disease management	Survey for contagious diseases and work plan for vaccination	Propaganda for disease prevention	General health check-up & Prasar
Cyclone	N.A.	N.A.	N.A.
Heat wave and cold wave			
Shelter/environment management	Animal shed / Pakka or Kachcha shed be made	Body resistant	Bath the animals regularly
Health and disease management		Additive or mineral supplement	prevent from direct sun-light

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	In-house storage	balance feed	Vaccination	
Drinking water	Clean water supply	Supply of water	Antibiotics in drinking water	
Health and disease management	Vaccination properly	disease, feed availability	General observations	
Floods				
Shortage of feed ingredients	Prevent from feed, moisture & infections	Birds & feed avoid from flood	Farm should be made clean	
Drinking water			Farm should be hygienic	
Health and disease management	Vaccination & pre-treatment	Hygeinic farm & birds	Treatment & Vaccination.	
Cyclone	N.A.	N.A.	N.A.	
Heat wave and cold wave				
Shelter/environment management	Prevent the poultry from excess cold & heat	Sufficient water availability & feed hygeinincally	Cooling system in hot & proper lightening in cold conditions	
Health and disease management				

2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event[a]	**During the event**	**After the event**
1. Drought			
A. Capture	All fisheries extract	Liming	Harvesting of fishes
(i) Shallow water depth due to insufficient rains/inflow	-	Aeration	Rain Gun (Oxygen)
B. Aquaculture			
(i) Shallow water in ponds due to insufficient rains/inflow	-	Aeration	Rain Gun (Oxygen)
2. Floods		N.A.	
3. Cyclone / Tsunami	-	N.A.	-
4. Heat wave and cold wave	-	N.A.	-