State: **NAGALAND**

Agriculture Contingency Plan for District: DIMAPUR

1.0 District Agriculture profile				
1.1	**Agro-Climatic/Ecological Zone**	Tropical to sub-tropical Zone		
	Agro Ecological Sub Region (ICAR)	North-Eastern Hills (Purvachal), Warm Perhumid Eco-sub region (17.1)		
	Agro-Climatic Zone (Planning Commission)	Eastern Himalayan Region (II)		
	Agro Climatic Zone (NARP)	Mid Tropical Hill (AZ52)		
	List all the districts or part thereof falling under the NARP Zone	Peren, Dimapur, Wokha, Mokokchung, Longleng, Mon, Kohima, Zunheboto, Tuensang, Phek, Kiphire		
	Geographic coordinates of district headquarters	Latitude	Longitude	Altitude
		25° 54' 0" N	93° 44' 0" E	135-300msl
	Name and address of the concerned **ZRS/ ZARS/ RARS/ RRS/ RRTTS**	ICAR Research Complex for NEH Region, Jharnapani, Medziphema, Nagaland 797 106		
	Mention the KVK located in the district	KVK Dimapur, ICAR Research Complex for NEH Region, Nagaland Centre		

1.2	**Rainfall**	**Normal RF(mm)**	**Normal Rainy days (number)**	**Normal Onset**	**Normal Cessation**
	Pre-monsoon/ Summer (March – May)	318.75	20.45	-	-
	Monsoon (South west)June- Sept.	1066.94	56.55	1st week of June	2nd week of October
	Post monsoon (Oct – Dec)	145.02	10.50	1st week of October	1st week of December
	Winter (Jan- Feb)	31.6	-		
	Annual	1562.31	96.23	-	-

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)	92.7	61.2	27.8	3.42	-	0.26	0.85	0.28	6.36	-

1. 4	**Major Soils (common names like red sandy loam deep soils (etc.,)***	**Area (‘000 ha)**	**Percent (%) of total**
	Loamy sand (block Medziphema)	34.5	37.2
	Sandy loam (block Dhansiripar, Niuland, Kuhuboto)	58.2	62.8

Soil depth of Dimapur moderately shallow (60-75 cm) to moderately deep (75-100 cm) and deep (>100cm). Topography is gently sloping to rolling, plateau, ridges, steep land, undulating land. Particle size coarse loamy to fine loamy, sub groups are Natrudalfs,paleudalfs,paleudalufs,udorthents,tupic dystrochrepts, umbric dystrachrepts. soil erosion is moderately to very light.

1.5	**Agricultural land use**	**Area (‘000 ha**)	**Cropping intensity %**
	Net sown area	24.95	113.6
	Area sown more than once	3.40	
	Gross cropped area	28.36	

1.6	**Irrigation**	**Area ('000 ha)**		
	Net irrigated area	14.44		
	Gross irrigated area	28.36		
	Rainfed area	46.8		
Source : Statistical Hand Book of Nagaland 2011 source - * SREP ATMA, Dimapur				
	Sources of Irrigation	**Number**	**Area ('000 ha)**	% of total irrigated area
	Canals**			
	Tanks **			
	Open wells**			
	Bore wells**			
	Lift irrigation schemes**			
	Micro-irrigation**			
	Other sources(Stream flow)		14.44	100%
	Total Irrigated Area		28.36	
	Pump sets	50***		
	No. of Tractors	11***		
	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			
	Critical			
	Semi- critical			
	Safe	4	100%	The quality of ground water is generally safe, as these chemicals are with in the normal range
	Wastewater availability and use	-		
	Ground water quality	The quality of ground water is generally safe, as these chemicals are with in the normal range		
***over-exploited: groundwater utilization > 100%; critical: 90-100%; semi-critical: 70-90%; safe: <70%**				

** information not available ****Central/ State Ground Water Department, Nagaland

1.7 Area under major field crops & horticulture (2010-11)

1.7a	Major field crops cultivated	Area ('000 ha)							
		Kharif			*Rabi*			Summer	Grand total
		Irrigated	Rainfed	Total	Irrigated	Rainfed	Total		
	Jhum paddy	-	9.62	9.62	-	-	-	-	9.62
	TRC/WRC Paddy	-	35.31	35.31	-	-	-	-	35.3
	Maize	-	6.68	6.68	-	-	-	-	6.6
	Soybean	-	2.01	2.01	-	-	-	-	2.0
	Linseed	-			-	1.08	1.08	-	1.08
	Rapeseed/mustard	-			-	4.12	4.12	-	4.12
Source: Statistical Handbook of Nagaland 2011									

1.7b	Horticulture crops – Fruits			
		Total	Irrigated	Rainfed ('000 ha)
	Pineapple	1.90	-	1.90
	Banana	0.31	-	0.31
	Lemon	0.30	-	0.30
Source: Statistical Handbook of Nagaland 2011				

1.7c	Horticulture crops – Vegetables	Total area ('000 ha)	Irrigated area ('000 ha)	Rainfed area ('000 ha)
1.	Leafy vegetable	0.50	-	0.50
	Colocasia	0.30	-	0.30
	Chilli	0.30	-	0.30
	Pea	0.22	-	0.22
	Onion	0.20	-	0.20
	Cabbage	0.11	-	0.11
	Tomato	0.10	-	0.10
Source: Statistical Handbook of Nagaland 2011				
1.7d	**Medicinal and Aromatic crops**	**Total area ('000 ha)**	**Irrigated area ('000 ha)**	**Rainfed area ('000 ha)**
	Medicinal and Aromatic crops	0.10*	-	0.10*
* For the year 2009-10				
1.7e	**Plantation crops**	**Total area ('000 ha)**	**Irrigated area ('000 ha)**	**Rainfed area ('000 ha)**
	Coconut	0.53	-	0.53
	Cashew	0.25	-	0.25
1.7f	**Fodder crops**	-	-	-

1.7g	**Grazing land**	-	-	-	-

1.8	**Livestock (in number)**	**Male ('000)**	**Female ('000)**	**Total ('000)**
	Non descriptive Cattle (local low yielding)	23.82	34.25	58.07
	Crossbred cattle	49.62	101.14	150.76
	Non descriptive Buffaloes (local low yielding)	8.51	9.35	17.86
	Graded Buffaloes	-	-	-
	Goat	28.20	39.71	67.91
	Others (Camel, Pig, Yak etc.)			
	(i) Pig	82.35	72.25	154.60
	Commercial dairy farms (Number)	-	-	
1.9	**Poultry**	**No. of farms**	**Total No. of birds ('000)**	
	Commercial	63	211.38	
	Backyard	-	593.89	

Source: Livestock census 2007, Statistical Handbook of Nagaland 2011

1.10	**Fisheries (**Data source**:** Statistical Handbook of Nagaland 2011**)**					
	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)
		Not applicable				
	ii) Inland (**Data Source: Fisheries Department**)	**No. Farmer owned ponds**	**No. of Reservoirs**	**No. of village tanks**	**No of ponds& tanks**	
					6188.00	
	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)	1334.10	2.82	3.762		
	Others					

1.7h	**Sericulture etc**	0.26	-	0.26	

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)										
	Jhum paddy	17.17	1790	-		-	-	17.17	1790	-
	TRC/WRC Paddy	85.61	2430	-		-	-	85.61	2430	-
	Maize	13.12	1970	-		-	-	13.12	1970	-
	Soybean	2.49	1240	-		-	-	2.49	1240	-
	Linseed	-	-	0.87	810	-	-	0.87	810	-
	Rapeseed/mustard	-	-	4.13	1010		-	4.13	1010	-
Major Horticultural crops (Crops to be identified based on total acreage)										
	Pineapple									
	Banana									
	Lemon									
Major Vegetable crops										
	Leafy vegetables			1.00	2000	-	-	1.00	2000	-
	Colocasia	2.00	6670	-		-	-	2.00	6670	-
	Chill	2.10	7000			-	-	2.10	7000	-
	Pea			1.50	6820	-	-	1.50	6820	-
	Onion	-		0.256	1280	-	-	0.256	1280	-
	Cabbage			1.0	9090			1.0	9090	-
	Tomato			0.50	5000			0.50	5000	-

1.12	Sowing window for 5 major field crops (start and end of normal sowing period)	Jhum paddy	TRC/WRC Paddy	Maize	Soybean	Rapeseed/ mustard	Linseed	Cabbage
	Kharif- Rainfed	April-May.	May-July	April-Aug.	July-August	-	-	-
	Kharif-Irrigated	-	-	-	-	-	-	
	Rabi- Rainfed	-	-	October-November	-	October-November	October-November	October-November

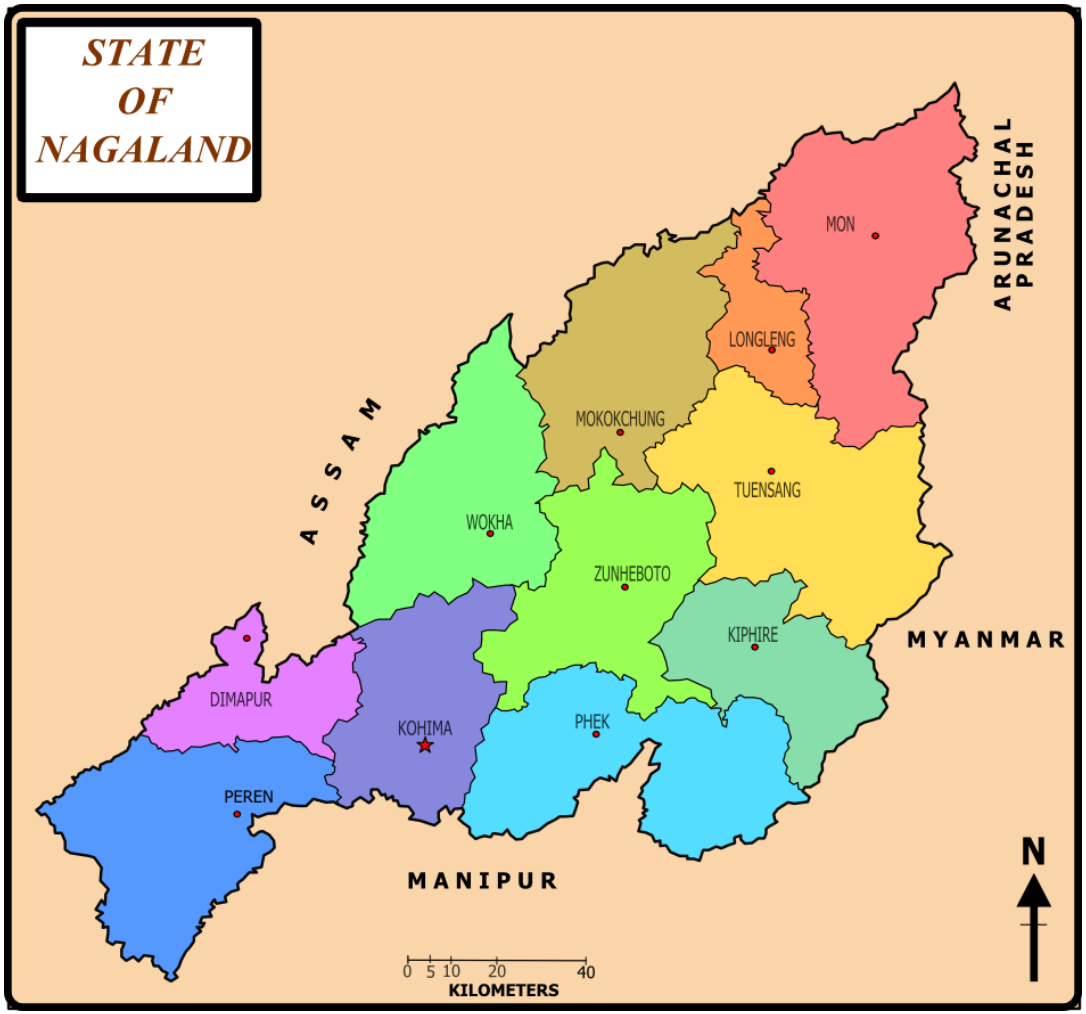
	Rabi-Irrigated	-	-	-	-	-	-	-
	Zaid- Rainfed			February	-	-	-	-

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)			✓
	Others (specify)		2009-10, 43% less rain fall	

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: Yes

Annexure – 1


STATE
OF
NAGALAND
ARUNACHAL
PRADESH
MON
LONGLENG
MOKOKCHUNG
TUENSANG
ASSAM
WOKHA
ZUNHEBOTO
KIPHIRE
MYANMAR
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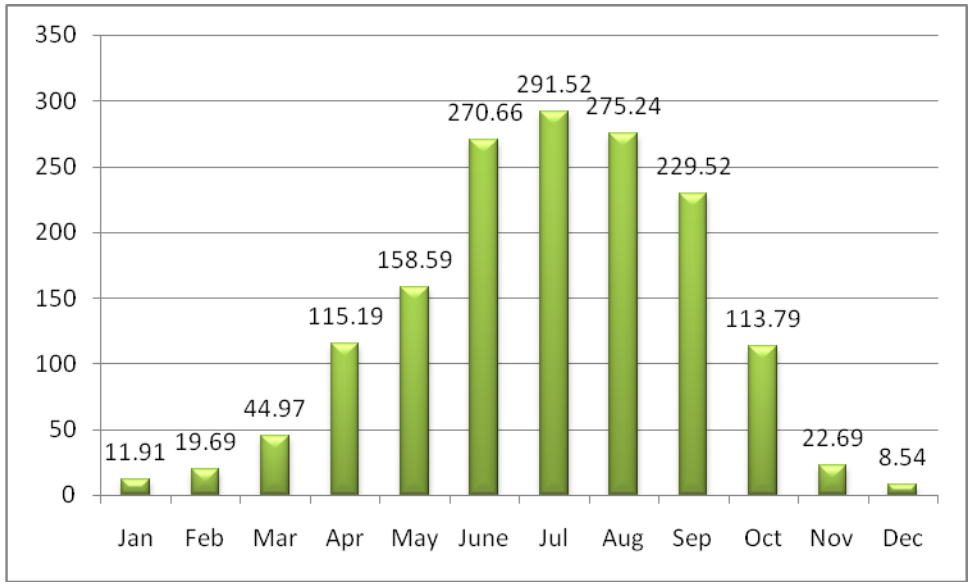
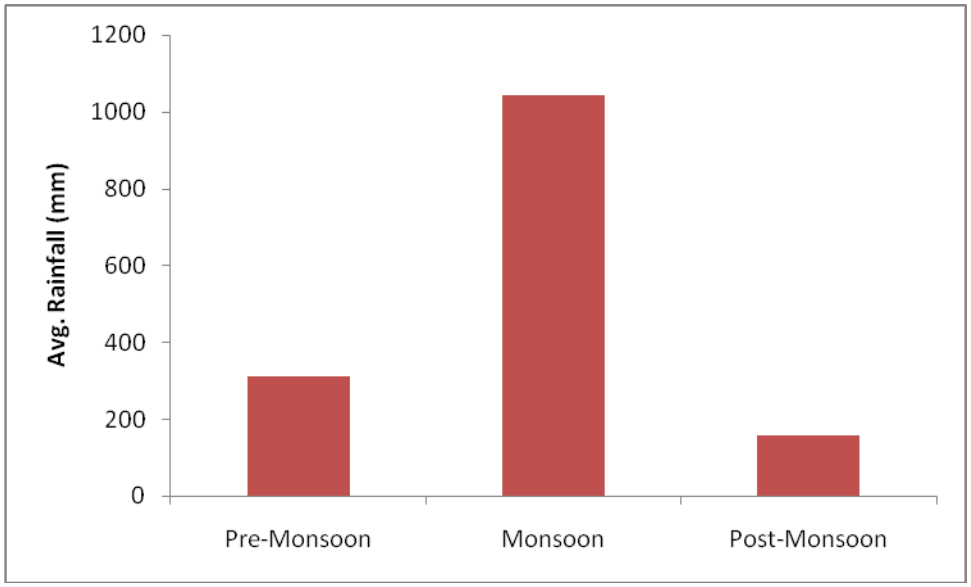
KILOMETERS

Annexure – 2
Mean Annual Rainfall of Dimapur





Seasonal Rainfall Distribution Pattern in Dimapur District

2.0 Strategies for weather related contingencies

2.1 Drought – Pre- monsoon (Last week of March to First week of April) Normal

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Normal Crop / Cropping system**	**Change in crop / cropping system including variety**	**Agronomic measures**	**Remarks on Implementation**
Delay **by 2 weeks** **(2nd to 3rd week of April)**	AES-II (Plain land- moderately deep to deep fine/ fine loamy soils)	Kharif maize,	No change Var. DA-61 A, RCM-75, RCM-76	Sowing in ridge and furrow Mulching	Line dept. schemes/ RKVY
		Turmeric	No change	Sowing in ridge and furrow Mulching	

		Cucurbits	Okra/ cowpea etc. Okra-A. Anamika/ Prabhani Kranti, Long yard beans		
	AES-I (Mid hills- moderately deep to deep fine/ fine loamy soils)	Jhum paddy	No change Short duration vars. Like Bhalum-3,4 and SARS-1, 2		
		Maize	DA-61 A, RCM-75, RCM-76		
		Ginger	No change	Sowing in ridge and furrow / Mulching	
		Turmeric	No change	Sowing in ridge and furrow / Mulching	

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[d]**	**Remarks on Implementation**
Delay **by 4 weeks** **(4th week of April to Ist week of May)**	AES-II (Plain land- moderately deep to deep fine/ fine loamy soils)	kharif maize,	No change Var. DA-61 A, RCM-75, RCM-76	Sowing in ridge and furrow / Mulching	Line dept. schemes/ RKVY
		Turmeric	No change	Sowing in ridge and furrow / Mulching	
		Cucurbits	Okra/ cowpea etc. Okra-A. Anamika/ Prabhani Kranti, Long yard beans	-	
	AES-I (Mid hills- moderately deep to deep fine/ fine loamy soils)	Jhum paddy	No change Short duration vars. Like Bhalum-3,4 and SARS-1, 2	-	
		Maize	No change Maize: DA-61 A, RCM-75, RCM-76	-	
		Ginger	No change	Sowing in ridge and furrow / Mulching	
		Turmeric	No change	Sowing in ridge and furrow / Mulching	

2.1.2 Rainfed situation – South west monsoon - normal (1st week of June)

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[d]**	**Remarks on Implementation**
Delay **by 2 weeks June 3rd week**	AES-II (Plain land- moderately deep to deep fine/ fine loamy soils)	Lowland Paddy	Medium duration vars. Shahsarnag-1, RCM-9 and RCM-11, RCM-5	Adopt SRI method of cultivation	NFSM, NHM
		Brinjal	No change		
		Chilli	No change		
	AES-I (Mid hills- moderately deep to deep fine/ fine loamy soils)	Terrace Rice Cultivation paddy	No change	Adopt SRI method of cultivation Intensive Crop Management	

2.1.3 Rainfed situation – South west monsoon - normal (1st week of June)

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[d]**	**Remarks on Implementation**
Delay by 4 weeks July 1st week	AES-II (Plain land- moderately deep to deep fine/ fine loamy soils)	Lowland Paddy	Short duration vars, RCM-5,	Adopt SRI method Direct sowing of paddy by using paddy drum seeder Integrated crop management	NFSM, NHM
		Brinjal	No change	-	
		Chilli	No change	-	
	AES-I (Mid hills- moderately deep to deep fine/ fine loamy soils)	Terrace Rice Cultivation paddy	Local vars. Nagaland Special etc.	Transplanting of 30-35 Days old seedlings	

- **6-8 weeks delay of South west monsoon is not applicable in the district.**

2.1.4 Pre monsoon- Normal

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 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	AES-II (Plain land-moderately deep to deep fine/ fine loamy soils)	kharif maize	i. If there is poor germination (Less than 30%) re-sowing ii. Gap filling iii. life saving irrigation if possible iv. Weeding	In situ moisture conservation, mulching with locally available bio mass and life saving irrigation if possible	-
		Turmeric	-	i. Mulching	
	AES-I (Mid hills-moderately deep to deep fine/ fine loamy soils)	Jhum paddy	i. If there is poor germination (Less than 30%) re-sowing ii. Weeding	-	
		Maize	i. If there is poor germination (Less than 30%) re-sowing ii. Gap filling iii. Weeding	In situ moisture conservation, mulching with locally available bio mass	
		Ginger		i. Mulching	
		Turmeric		i. Mulching	

2.1.5 Pre-monsoon Normal

Condition			Suggested Contingency measures		
Mid season drought (Long dry spell consecutive 2 weeks rainless (>2.5 mm period)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**

Vegetative stage	AES-II (Plain land-moderately deep to deep fine/ fine loamy soils)	Kharif maize	**Weeding/ intercultural operations etc.**	In situ moisture conservation, mulching with locally available bio mass Foliar application of 2% Urea & MOP	-
		Turmeric	i. Weeding and earthing up	i. Mulching	
	AES-I (Mid hills-moderately deep to deep fine/ fine loamy soils)	Jhum paddy	**i.** Weeding	Foliar application of 2% Urea & MOP	
		Maize	**i. Weeding/ intercultural operations etc.**	In situ moisture conservation, mulching with locally available bio mass Foliar application of 2% Urea & MOP	
		Ginger	Weeding and earthling up	i. Mulching	
		Turmeric		i. Mulching	

2.1.6 Pre-monsoon Normal

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

fruiting stage	AES-II (Plain land-moderately deep to deep fine/ fine loamy soils)	kharif maize,	i. Weeding/ intercultural operations etc.	In situ moisture conservation Mulching with locally available bio mass Provide supplementary irrigation if possible	-
		Turmeric*	-	Plant protection measures for leaf spot	
	AES-I (Mid hills-moderately deep to deep fine/ fine loamy soils)	Jhum paddy	i. Weeding	-	
		Maize	i. Weeding/ intercultural operations etc.	In situ moisture conservation, mulching with locally available bio mass Provide supplementary irrigation if possible & plant protection measures for stem borer and aphids	
		Ginger *	-	Earthing up and soil drenching with *Trichoderma harzanium* to minimize soft rot	
		Turmeric*		Plant protection measures for leaf spot	

- Not Applicable

2.1.7 Terminal drought

Condition			**Suggested Contingency measures**		
Terminal drought (Early withdrawal of monsoon)	**Major Farming situation**	**Normal Crop/cropping system**	**Crop management**	**Rabi Crop planning**	**Remarks on Implementation**
	AES-II (Plain land-moderately deep to deep fine/ fine loamy soils)	Kharif maize,	i. Mulching ii. Life saving irrigation if possible	i. If grain filling is severely affected harvest for fodder ii. Land preparation for early rabi sowing of linseed, toria, buckwheat	
		Turmeric*		Harvest at physiological maturity	
	AES-I (Mid hills-moderately deep to	Jhum paddy		i. If grain filling is severely affected harvest for fodder	

	deep fine/ fine loamy soils)	Maize		i. If grain filling is severely affected harvest for fodder ii. Land preparation for sowing of linseed, toria, buckwheat	
		Ginger *		Harvest at physiological maturity	
		Turmeric*		Harvest at physiological maturity	

2.1.2 Drought - Irrigated situation-- 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]**
Delayed release of water in canals due to low rainfall	Not applicable				
Limited release of water in canals due to low rainfall	Not applicable				
Insufficient flow of water in streams	AES-II (Plain land-moderately deep to deep fine/ fine loamy soils)	Rice- Toria/ linseed	No change or Rice- fallow	Linseed- Parvati, Neelam Toria-M-27, TS-38 Relay cropping with lentil/pea in rice fallows	-
		Rice- Cabbage (Rabi)	Rice- pea/linseed	Relay cropping with lentil/pea in rice fallows	-

2.2 Unusual rains (untimely, unseasonal etc) (for both rainfed and irrigated situations) – **Not Applicable**

2.3 Floods: Not Applicable

2.4 Extreme events- Hailstorm

Extreme event type	**Suggested contingency measure[r]**			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Hailstorm				

Tomato	NA	NA	NA	Harvest and value addition
Pineapple	NA	NA	NA	Harvest and value addition
Cucurbits	NA	Remove the affected plants and top dress with urea	NA	NA
Heat wave	Not applicable			
Cold wave				
Frost				
Cyclone				

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/ Lean period (Oct-March)			
Feed and fodder availability	Encourage perennial fodder on bunds and waste land on community basis Establishing fodder banks, encouraging hedge row species for fodder crops Preparation of Hay	Utilizing fodder from perennial trees and Fodder bank reserves Transporting excess fodder from adjoining districts Use of non conventional fodders. Use of feed mixtures and feed blocks Culling unproductive livestock	Use of non conventional fodders. Use of feed mixtures and feed blocks Availing Insurance
Drinking water	Roof top water harvesting , Preserving water in the tank for drinking purpose	Judicious use of water, Using preserved water in the tanks for drinking purpose, recycling of household used water.	Maintenance/cleaning of community reservoirs/ village ponds
Health and disease management	Insurance, Veterinary preparedness with medicines and vaccines, organizing vaccination camps and mineral supplementation	Conducting mass animal Health Camps and treating the affected one, mineral supplementation.	Culling sick animals and mineral supplementation
Floods	Not applicable		
Feed and fodder availability			
Drinking water			
Health and disease management			
Cyclone	Not applicable		
Feed and fodder availability			
Drinking water			
Health and disease			

management			
Heat wave and cold wave	Not applicable		
Shelter/environment 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	Procurement and storage of feed ingredients, Establishing feed reserve Bank	Utilizing from feed reserve banks, nutritional supplementation to poultry	Nutritional supplementation to poultry	
Drinking water	Arrangement for drinking water, Roof top water harvesting , Preserving water in the tank for drinking purpose	Judicious use of water, providing B-complex and Vit.C in water		
Health and disease management	Insurance and Emergency Veterinary preparedness with medicines and vaccination to birds	Sanitation and Hygiene	Culling affected birds, Mass vaccination	
Floods	Not applicable			
Cyclone	Not applicable			
Heat wave and cold wave	Not applicable			

2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event	**During the event**	**After the event**
1) Dro			

ught			
A. Capture			
Marine			
Inland			
(i) Shallow water depth due to insufficient rains/inflow			
(ii) Changes in water quality			
(iii) Any other			
B. Aquaculture			
(i) Shallow water in ponds due to insufficient rains/inflow	De-silting, repair of bunds of existing ponds, rain water harvesting, liming and adopt low stocking density, deepening of ponds by 1.5 -2metres, restrict use of Manures and fertilizers, Channelsing water to pond if possible, Maintain proper water quality	Integrated farming, air breathing fish to be practiced, avoid fertilization and manuring on supplementary basis, feeding should be minimum to avoid organic loading, short term aquaculture with medium and minor carps, Maintain proper water quality	Prepare pond for the next crop after early harvest, Maintain proper water quality
(ii) Impact of salt load build up in ponds / change in water quality	Rain water harvesting, deepening,desilting of existing water bodies and removal of debris	Rain water harvesting, deepening,desilting of existing water bodies and removal of debris	Control feeding to avoid waste accumulation and eutrofication
(iii) Any other			
2) Floods	Not Applicable		
3. Cyclone / Tsunami	Not Applicable		
4. Heat wave and cold wave	Not Applicable		

[a] based on forewarning wherever available