State: NAGALAND
Agriculture Contingency Plan for District: TUENSANG

1.0 District Agriculture profile				
1.1	Agro-Climatic/Ecological Zone	Temperate Alpine to Sub tropical		
	Agro Ecological Sub Region (ICAR)	Warm to hot moist (humid to per humid eco sub region)		
	Agro-Climatic Zone (Planning Commission)	North Eastern Hill Region		
	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
		$26^0$14' N	$94^0$48' E	1565 msl
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	ICAR Research Complex for NEH Region, Umiam, Umroi Road, Meghalaya 793 103		
	Mention the KVK located in the district	KVK Tuensang		

1.2	Rainfall	Normal RF(mm)	Normal Rainy days (number)	Normal Onset (specify week and month)	Normal Cessation (specify week and month)
	Pre- Monsoon (March- April)	1700-2300 mm	14	1st June	Mid October
	Monsoon (June- September)		25		
	Post-Monsoon (October-December)		5.3		

1.3	Land use pattern of the district (latest statistics)	Geographical area ('000 ha)	Cultivable area ('000 ha)	Forest area ('000 ha)	Land under non-agricultural use ('000 ha)	Permanent Pastures ('000 ha)	Cultivable wasteland ('000 ha)	Land under Misc. tree crops and groves ('000 ha)	Barren and uncultivable land ('000 ha)	Current Fallows ('000 ha)	Other fallows ('000 ha)
	Area ('000 ha)	250.0	127.8	70.1	20.7	--	7.4	10.4	2.5	20.3	21.5

1. 4	Major Soils (common names like red sandy loam deep soils (etc.,)*	Area ('000 ha)	Percent (%) of total
	1 Red clayey soils		
	2 Lateritic soils		
	3 Alluvial colluvial soils (partly saline)		
	4 Alluvial-colluvial soils		
	5 Lateritic gravelly soils		
	6 Rock land and water bodies		
	7 Medium deep black soils		
	8 Red gravelly loam soils		
	9 Red gravelly clay loam soils		
	Others (specify): Black soil Sandy loam others	 151.30 88.65 10.05	 60.52 35.46 4.02

1.5	Agricultural land use	Area ('000 ha)	Cropping intensity %
	Net sown area	21.07	109
	Area sown more than once	2.05	
	Gross cropped area	23.12	
Source: District wise area, production and yield of Nagaland, Anticipated achievements.			

1.6	Irrigation	Area ('000 ha)		
	Net irrigated area	6.50		
	Gross irrigated area	7.94		
	Rainfed area	16.50		
	Source: Statistical Handbook of Nagaland, 2007-08			
	Sources of Irrigation	Number	**Area ('000 ha)**	**% of total irrigated area**
	Canals			
	Tanks			
	Open wells			
	Bore wells			
	Lift irrigation schemes			
	Micro-irrigation			

	Other sources (please specify)			
	Total Irrigated Area			
	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			
	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 (as per latest figures) (*Specify year 2011-12 source Deptt. of Agriculture*)

1.7a	**Major field crops cultivated**	**Area ('000 ha)**							
		Kharif			***Rabi***			**Summer**	**Grand total**
		Irrigated	**Rainfed**	**Total**	**Irrigated**	**Rainfed**	**Total**		
1	**Jhum paddy**		10.55	10.55					10.55
2	**TRC/WRC Paddy**		3.52	3.52					3.52
3	**Maize**		10.10	10.10					10.10
4	**Kholar/Rajmah**					2.35	2.35		2.35
5	**Ginger**		0.25	0.25					0.25
Others (specify)	**Potato**		0.91	0.91					0.91

1.7b	**Horticulture crops - Fruits**			
		Total	**Irrigated**	**Rainfed ('000 ha)**
1	Orange	**0.25**	**-**	**0.25**
2	Banana	**0.13**	**-**	**0.13**
Others (specify)				

1.7c	**Horticulture crops - Vegetables**	**Total area ('000 ha)**	**Irrigated area ('000 ha)**	**Rainfed area ('000 ha)**
1	**Chilli**	0.08	-	0.08
2	Bean	0.40	-	0.40
3	**cabbage**	**0.30**	**-**	**0.30**
4	**colocassia**	**0.10**	**-**	**0.10**
Others (specify)				

1.7d	**Medicinal and Aromatic crops**	**Total area ('000 ha)**	**Irrigated area ('000 ha)**	**Rainfed area ('000 ha)**
1	Medicinal and Aromatic crops			
2				
Others (specify)				
1.7e	**Plantation crops**	**Total area ('000 ha)**	**Irrigated area ('000 ha)**	**Rainfed area ('000 ha)**
1	Large Cardamom	0.05	-	0.05
2				
Others(Specify)	Eg., industrial pulpwood crops			
1.7f	**Fodder crops**	**Total area ('000 ha)**	**Irrigated area ('000 ha)**	**Rainfed area ('000 ha)**
1				
Others(Specify)				
1.7g	**Grazing 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)	3.80	8.31	12.11
	Crossbred cattle	3.00	12.23	15.23
	Non descriptive Buffaloes (local low yielding)	0.12	0.14	0.26
	Graded Buffaloes	-	-	-
	Goat	3.28	6.52	9.80
	Sheep	0.01	0.03	0.04
	Others (Camel, Pig, Yak etc.)			
	(i) Pig	33.04	18.51	51.55
	(ii) Mithun	2.53	4.17	6.70
	Commercial dairy farms (Number)			

1.9	**Poultry**	**No. of farms**	**Total No. of birds (‘000)**
	Commercial	1	0.92
	Backyard	-	156.71

1.10	**Fisheries (Data source: Chief Planning Officer of district)**						
	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)	104	2.41	0.252
	Others			

1.11 Production and Productivity of major crops (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)										
1	Jhum paddy	19.99	1580					19.99	1580	
2	TRC/WRC Paddy	8.40	2456					8.40	1621	
3	Maize	14.77	1670					8.90	1670	
4	Kholar/Rajmah			2.97	1263			2.97	1263	
Others	Potato	8.21	9021					8.21	9021	
	Ginger	2.28	9120					2.28	9120	
Major Horticultural crops (Crops to be identified based on total acreage)										
1	Orange	125	500	-	-	-	-	125	500	
2	Banana	460	3622	-	-	-	-	460	3622	
Others	Large cardamom	10	3000	-	-	-	-	10	3000	

1.12	**Sowing window for 5 major field cropsn(start and end of normal sowing period)**	**Crop 1 : Jhum Paddy**	**Crop 2: TRC**	**Crop 3: Maize**	**Crop 4: Potato**	**Crop 5: French Bean Kholar**
	Kharif- Rainfed	March- October	June-December.	March-November.	Febuary- Aug	March-Aug
	Kharif-Irrigated					
	Rabi- Rainfed			Sept. - Jan	August-January	Aug – December.
	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)			✓
	Others (specify)			

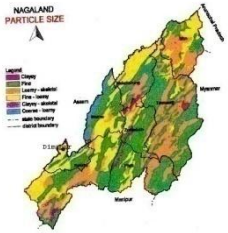
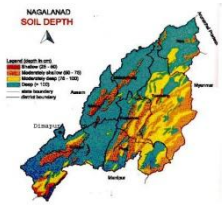
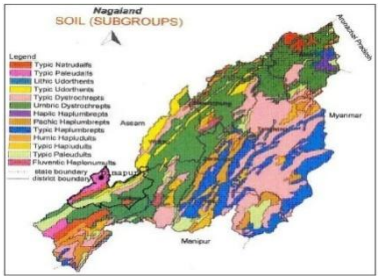
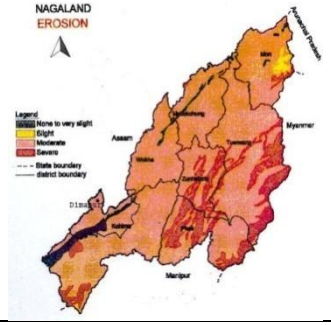
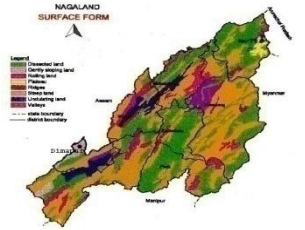
6 out of 10 years = Regular

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: No
		Soil map as Annexure 3	Enclosed: Yes

Annexure – 1: LOCATION MAP OF TUENSANG DISTRICT IN NAGALAND

(Data Source: Soil Resource Maps of NBSS&LUP).

SOIL MAP OF Tuensang:

				
Particle size map of Nagaland	**Soil depth map of Nagaland**	**Soil sub groups of Nagaland**	**Soil erosion of Nagaland**	**Surface maps of Nagaland**

Dominant Soil Types of Tuensang

Tuensang	Moderately sloping side slopes of hills	Fine Typic Paleudults	Deep excessively drained fine soils with moderate erosion and slight stoniness
	Moderately steeply sloping side slopes of hills	Fine loamy Umbric Dystrochrepts	Deep well drained fine loamy soils with moderate erosion and moderate stoniness
	Gently sloping side slope of hills	Fine Typic Dystrochrepts	Deep excessively drained fine soils with moderate erosion and slight stoniness
	steeply sloping hill tops	Fine Typic Dystrochrepts	Moderately deep excessively drained fine soils with moderate erosion
	Moderately steeply sloping side slope of hills	Fine loamy Typic Hapludults	Deep excessively drained fine loamy soils with moderate erosion
	Steeply sloping side slope of hills	Loamy skeletal Typic Dytrochrepts	Moderately deep somewhat excessively drained loamy skeletal soils with moderate erosion
	Moderately sloping side slope of hills	Fine Typic Dytrochrepts	Deep excessively drained fine soils with moderate erosion
	Moderately steep sloping hill	Fine Pachic Haplumbrepts	Deep somewhat excessively drained fine soils with moderate erosion
	Steeply sloping hill slopes	Clayey skeletal Typic Dystrudepts	Deep somewhat excessively drained clayey skeletal soils with severe erosion
	Steeply sloping hill slopes	Fine Pachic Haplumbrepts	Moderately shallow somewhat excessively drained fine soils with severe erosion and moderate stoniness

Source : NBSS &LUP, Regional centre Jorhat

2.0 Strategies for weather related contingencies (Tuensang District)

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[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 (2^{nd} to 3^{rd} week of April)**	1. Moderately sloping side slope of hills-Deep fine to fine loamy soils	Maize	No change	Sowing in ridge and furrow, Mulching, Inter cropping with Kholar/Rajmah	Line dept. schemes/ RKVY
		Jhum paddy	Short duration vars. Like Bhalum-3,4 and SARS-1, 2, 4	Increase seed rate, Sowing by dibbling method, Re-sowing if germination is less than 30%	Line dept. schemes/ RKVY/ NFSM
		French bean (Kholar/Rajmah)	No change	Increase seed rate, Bio-fertilizer application. Inter cropping with Kharif Maize	Line dept. schemes/ RKVY
	2. Gently sloping side slope of hills- deep fine soils	Jhum paddy	Short duration vars. Like Bhalum-3,4 and SARS-1, 2,3	Increasing seed rate Sowing by dibbling method	Line dept. schemes/ RKVY/ NFSM
		Maize	Short duration varieties	Sowing in ridge and furrow, Mulching	Line dept. schemes/ RKVY/ NFSM
		Potato	No change	Mulching, lifesaving Irrigation, Earthing up, Spraying of 0.2% urea.	Line dept. schemes/ RKVY
		Ginger	No change	Sowing in ridge and furrow, Mulching	Line dept. schemes/ RKVY
		French bean (Kholar/Rajmah)	Inter cropping with Pre Kharif Maize	Increase seed rate, Bio-fertilizer application.	Line dept. schemes/ RKVY
	3. Steeply sloping side of hills slopes-moderately shallow fine soils (Noklak, Shamator; 60-70% gradient)	Maize	Monocropping	increase seed rate, line sowing	Line dept. schemes/ RKVY

Horticultural crops

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 (2^{nd} to 3^{rd} week**	1. Moderately sloping side slope of hills-Deep fine to fine loamy soils	Orange	Integration of legumes in the orchard	Bamboo drip irrigation, intercropping of legumes initially during the first five years.	Line deptt., RKVY, HTM
		Banana	Intercropping with cowpea (Local cultivar)	Mulching	Line deptt., RKVY, HTM

of April)		French bean	Intercropping with cabbage (Pusa Rareball)	Increase of seed rate, systemic planting	Line deptt., RKVY, HTM
		Chilli	No change	Short duration varieties, Irrigation at initial and developmental stage	Line deptt., RKVY, HTM
		Colocasia	Blight resistant variety var. Muktakeshi	Increase sowing depth	Line deptt., RKVY, HTM
	2. Gently sloping side slope of hills- deep fine soils	French bean	Intercropping with cabbage (Pusa Rareball)	Increase of seed rate, systemic planting	Line deptt., RKVY, HTM
		Chilli	No change	Short duration varieties, Irrigation at initial and developmental stage	Line deptt., RKVY, HTM
		Colocasia	Blight resistant variety var. Muktakeshi	Increase sowing depth	Line deptt., RKVY, HTM
		Cabbage	No change	Use of banana sheath as crop cover from direct sunlight for reducing evapo transpiration	Line deptt., RKVY, HTM
	3. Steeply sloping side of hills slopes- moderately shallow fine soils (give the block name, elevation)	NA			

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[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 3rd week**	1. Moderately sloping side slope of hills-Deep fine to fine loamy soils	Terrace Rice Cultivation (paddy)	Medium duration varieties like Kolong, Shahsarnag-1, RCM-9 and 11, Ranjit	System of Rice Intensification using Medium duration varieties. Delay nursery raising but using pre-treated/ pre-sprouted seeds for quick nursery establishment, Community nursery	NFSM, RKVY
	2. Gently sloping side slope of hills- deep fine soils	Terrace Rice Cultivation (paddy)	RCM-9 and 11, Ranjit, SARS-6	System of Rice Intensification using Medium duration varieties. Delay nursery raising but using pre-treated/ pre-sprouted seeds for quick nursery establishment, IPM module	NFSM, RKVY
	3. Steeply sloping side of hills slopes- moderately shallow fine soils	-	-	-	-

Horticultural crops

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop / Cropping system[b]**	**Change in crop / cropping system including variety[c]**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay **by 2 weeks June 3rd week**	1. Moderately sloping side slope of hills-Deep fine to fine loamy soils	Banana	No change	Mulching, Intercropping with cowpea (Local cultivar)	Line deptt., RKVY, HTM
		French bean	No change	Gap filling, Re-sowing if germination is less than 30%	Line deptt., RKVY, HTM
		Chilli	No change	Short duration varieties, Irrigation at initial and developmental stage	Line deptt., RKVY, HTM
		Colocasia	Blight resistant var. Muktakeshi	Weeding, earthing up	Line deptt., RKVY, HTM
	2. Gently sloping side slope of hills-deep fine soils	French bean	No change	Gap filling, Re-sowing if germination is less than 30%	Line deptt., RKVY, HTM
		Chilli	No change	Short duration varieties, Irrigation at initial and developmental stage	Line deptt., RKVY, HTM
		Colocasia	Blight resistant variety var. Muktakeshi	Weeding, earthing up	Line deptt., RKVY, HTM
		Cabbage	No change	Weeding, Irrigation, mulching	Line deptt., RKVY, HTM
	3. Steeply sloping side of hills slopes- moderately shallow fine soils				

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation[a]**	**Normal Crop / Cropping system[b]**	**Change in crop / cropping system including variety[c]**	**Agronomic measures[d]**	**Remarks on Implementation[e]**
Delay **by 4 weeks July 1st week**	1. Moderately sloping side slope of hills-Deep fine to fine loamy soils	Terrace Rice Cultivation	System of Rice Intensification using Medium duration vars. Shahsarnag-1, RCM-9 and 11, Ranjit	Spraying of 0.2% urea for reviving the drought affect plants in the nursery	NFSM,
	2. Gently sloping side slope of hills- deep fine soils	Terrace Rice Cultivation	Short duration Local varieties, Mashuri,	Transplanting of 30-35 Days old seedlings	NFSM,

	3. Steeply sloping side of hills slopes- moderately shallow fine soils	-	-	-	-

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

Horticultural crops

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 4 weeks July 1st week**	1. Moderately sloping side slope of hills-Deep fine to fine loamy soils	Banana	No change	Earthing up, Mulching,	Line deptt., RKVY, HTM
		French bean	No change	Weeding	Line deptt., RKVY, HTM
		Chilli	No change	Weeding, Mulching	Line deptt., RKVY, HTM
		Colocasia	No change	No change	Line deptt., RKVY, HTM
	2. Gently sloping side slope of hills- deep fine soils	French bean	No change	No change	Line deptt., RKVY, HTM
		Chilli	No change	Rougeing of diseased plants	Line deptt., RKVY, HTM
		Colocasia	No change	Weeding, earthing up	Line deptt., RKVY, HTM
		Cabbage	No change	No change	Line deptt., RKVY, HTM
	3. Steeply sloping side of hills slopes- moderately shallow fine soils (give the block name, elevation)				

Pre monsoon- Normal

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 measures[d]**	**Remarks on Implementation[e]**
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/ crop stand etc.	1. Moderately sloping side slope of hills-Deep fine to fine loamy soils	Maize	i. If there is poor germination less than 30%, Re-sowing should be done. ii. Gap filling iii. Manual weeding	Mulching with locally available bio mass, Life saving irrigation if possible	Line dept. schemes/ RKVY
		Jhum paddy	i. If there is poor germination less than 30%, re-sowing by dibbling method. ii. Manual weeding	Minimum tillage	Line dept. schemes/ RKVY/NFSM

		French Bean (Kholar/Rajmah)	No change	Stacking/ mulching if necessary	Line dept. schemes/ RKVY
	2. Gently sloping side slope of hills- deep fine soils	Jhum paddy	i. If there is poor germination less than 30%, re-sowing should be done ii. Manual weeding	*In situ* moisture conservation.	Line dept. schemes/ RKVY/NFSM
		Maize	i. If there is poor germination less than 30%, re-sowing should be done ii. Gap filling iii. Manual weeding	*In situ* moisture conservation, mulching with locally available bio mass	Line dept. schemes/ RKVy
		Potato	Intercultural operations with minimum soil disturbance. Spraying with 2% Urea for reviving the affected plants.	Mulching, Life-saving Irrigation if possible.	Line dept. schemes/ RKVY
		Ginger	Manual weeding	Mulching	Line dept. schemes/ RKVY
	3. Steeply sloping side of hills slopes-moderately shallow fine soils (Noklak, Shamator; 60-70% gradient)	Maize	Monocropping, RCM-76, DA-61	Increase seed rate, line sowing	Line dept. schemes/ RKVY

Horticultural crops

Condition			**Suggested Contingency measures**		
Early season drought (Normal onset)	**Major Farming situation[a]**	**Normal Crop/cropping system[b]**	**Crop management**	**Soil nutrient & moisture conservation measures[d]**	**Remarks on Implementation[e]**
Normal onset followed by 15-20 days dry spell after sowing leading to poor germination/crop stand etc.	1. Moderately sloping side slope of hills-Deep fine to fine loamy soils	**Orange**	Intercropping	Sowing of legumes crop as soil cover and green manuring crop	Line deptt., RKVY, HTM
		Banana	No change	Mulching, earthing up	Line deptt., RKVY, HTM
		French bean	No change	Soil application of biofertilizers	Line deptt., RKVY, HTM
		Chilli	No change	Application of wood ash	Line deptt., RKVY, HTM
		Colocasia	No change	Weeding, earthing up, mulching	Line deptt., RKVY, HTM
	2. Gently sloping side slope of hills-	**Colocasia**	Earthing up	Weeding, earthing up, mulching	Line deptt., RKVY, HTM

	deep fine soils	French bean	Intercropping with cabbage (Pusa Rareball)	Soil application of biofertilizers	Line deptt., RKVY, HTM
		Chilli	No change	Application of wood ash	Line deptt., RKVY, HTM
		Cabbage	No change	Weeding, Irrigation, mulching	Line deptt., RKVY, HTM
	3. Steeply sloping side of hills slopes- moderately shallow fine soils (give the block name, elevation)				

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 measures[d]**	**Remarks on Implementation[e]**
Vegetative stage	1. Moderately sloping side slope of hills- Deep fine to fine loamy soils	Maize	i. Manual weeding/ intercultural operations, IPM module, rougeing	In situ moisture conservation, mulching with locally available bio mass Spraying of 0.2% Urea and 0.2% Potash,	RKVY, NFSM, Line dept. schemes
		Jhum paddy	Manual weeding, IPM module	Spraying of 0.2% Urea Spraying of 0.2% Potash	
		French bean (Kholar/Rajmah)	Manual weeding, earthing up	Mulching, if necessary	Line dept. schemes/ RKVY
	2. Gently sloping side slope of hills- deep fine soils	Maize	i. Manual weeding/ intercultural operations etc.	In situ moisture conservation, mulching with locally available bio mass Spraying of 0.2% Urea and 0.2% Potash	Line dept. schemes/ RKVY
		Jhum paddy	Manual weeding	Spraying of 0.2% Urea and 0.2% Potash	Line dept. schemes/ RKVY/NFSM
		Potato	Weeding and earthing up	Mulching, lifesaving Irrigation.	Line dept. schemes/ RKVY
		Ginger	Weeding and earthing up	Mulching	Line dept. schemes/ RKVY

	3. Steeply sloping side of hills slopes- moderately shallow fine soils (Noklak, Shamator; 60-70% gradient)	Maize	Weeding and earthing up, IPM module	Spraying of 0.2% Urea and 0.2% Potash	Line dept. schemes/ RKVY

Horticultural crops

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 measures[d]**	**Remarks on Implementation[e]**
Vegetative stage	1. Moderately sloping side slope of hills-Deep fine to fine loamy soils	Orange	No change	In situ mulching of green manuring crop, INM	Line deptt., RKVY, HTM
		Banana	No change	Mulching, earthing up, INM	Line deptt., RKVY, HTM
		French bean	No change	Soil application of biofertilizers, Foliar spray of 0.2% Urea and 0.2% Potash	Line deptt., RKVY, HTM
		Chilli	No change	Foliar spray of 0.2% Urea and 0.2% Potash	Line deptt., RKVY, HTM
		Colocasia	No change	Weeding, earthing up, mulching	Line deptt., RKVY, HTM
	2. Gently sloping side slope of hills- deep fine soils	Colocasia	Earthing up	Weeding, earthing up, mulching	Line deptt., RKVY, HTM
		French bean	Earthing up	Soil application of biofertilizers, Foliar spray of 0.2% Urea and 0.2% Potash	Line deptt., RKVY, HTM
		Chilli	No change	Foliar spray of 0.2% Urea and 0.2% Potash	Line deptt., RKVY, HTM
	3. Steeply sloping side of hills slopes- moderately shallow fine soils (give the block name, elevation)				

Condition			**Suggested Contingency measures**		
Mid season drought (Long dry spell consecutive 2 weeks rainless long dry)	**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	1. Moderately sloping side slope of hills-Deep fine to fine loamy soils	Maize,	Weeding/ intercultural operations etc.	In situ moisture conservation, mulching with locally available bio mass, supplement irrigation if possible	Line dept. schemes/ RKVY
		French bean (Kholar/Rajmah)	Harvesting of immature green pods/beans for vegetable purpose, planning for Rabi season crops	Mulching if necessary, lifesaving Irrigation	Line dept. schemes/ RKVY
		Potato	Disease management, dehaulming	Mulching, lifesaving Irrigation	Line dept. schemes/ RKVY
	2. Gently sloping side slope of hills-deep fine soils	Maize	Weeding/ intercultural operations, Spraying of 0.2% Urea Spraying of 0.2% Potash	In situ moisture conservation, mulching with locally available bio mass	Line dept. schemes/ RKVY
		Jhum paddy	Weeding, Spraying of 0.2% Urea Spraying of 0.2% Potash	No change	Line dept. schemes/ RKVY
		Ginger	Remove dry leaves and use as mulching.	Earthing up	Line dept. schemes/ RKVY

	3. Steeply sloping side of hills slopes-moderately shallow fine soils (Noklak, Shamator; 60-70% gradient)	Maize	Weeding, Spraying of 0.2% Urea Spraying of 0.2% Potash	Life saving irrigation	Line dept. schemes/ RKVY

- Not Applicable

Horticultural crops

Condition			**Suggested Contingency measures**		
Mid season drought (Long dry spell consecutive 2 weeks rainless long dry)	**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	1. Moderately sloping side slope of hills-Deep fine to fine loamy soil	Orange	No change	Irrigation where possible	Line deptt., RKVY, HTM
		Banana	No change	Mulching, earthing up, drip irrigation	Line deptt., RKVY, HTM
		French bean	No change	Irrigation	Line deptt., RKVY, HTM
		Chilli	No change	Irrigation	Line deptt., RKVY, HTM
		Colocasia	No change	No change	Line deptt., RKVY, HTM
	2. Gently sloping side slope of hills-deep fine soils	French bean	No change	Irrigation	Line deptt., RKVY, HTM
		Chilli	No change	Irrigation	Line deptt., RKVY, HTM
		Colocasia	No change	Irrigation	Line deptt., RKVY, HTM
	3. Steeply sloping side of hills slopes-moderately shallow fine soils (give the block name, elevation)				

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. Moderately sloping side slope of hills-Deep fine to fine loamy soils	Maize-kholar/pea	If grain filling is severely affected harvest for fodder	Land preparation for sowing of toria/mustard (M-27, TS-36, 38, Pusa bold), pea (Arkel, Azad P-1), relay cropping of kholar,	Line dept. schemes/ RKVY
		French bean (Kholar/Rajmah)	No change	Sowing of Rabi Kholar/rajmah	Line dept. schemes/ RKVY
	2. Gently sloping side slope of hills- deep fine soils	Jhum paddy	No change	No change	Line dept. schemes/ RKVY
		Maize	If grain filling is severely affected harvest for fodder	Land preparation for sowing of toria/mustard (M-27, TS-36, 38, Pusa bold)	Line dept. schemes/ RKVY
		Ginger *	No change	Harvest at physiological maturity	Line dept. schemes/ RKVY
	3. Steeply sloping side of hills slopes-moderately shallow fine soils (Noklak, Shamator; 60-70% gradient)	Maize	If grain filling is severely affected harvest for fodder	Land preparation for sowing of toria/mustard (M-27, Pusa bold)	Line dept. schemes/ RKVY

Horticultural Crops

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**
	1. Moderately sloping side slope of hills-Deep fine to fine loamy soils	**Orange**	Mulching	Irrigation where possible	Line deptt., RKVY, HTM
		Banana	Mulching	Intercropping with rabi pulse crop	Line deptt., RKVY, HTM
		French bean	Fruit picking	Relay cropping with pea	Line deptt., RKVY, HTM
		Chilli	Fruit picking	Crop rotation with cole crops	Line deptt., RKVY, HTM
		Colocasia	No change	No change	Line deptt., RKVY, HTM

	2. Gently sloping side slope of hills- deep fine soils	French bean	Fruit picking	Relay cropping with pea	Line deptt., RKVY, HTM
		Chilli	Fruit picking	Crop rotation with cole crops	Line deptt., RKVY, HTM
		Colocasia	No change	No change	Line deptt., RKVY, HTM
	3. Steeply sloping side of hills slopes- moderately shallow fine soils (give the block name, elevation)				

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	NA				
Condition			**Suggested Contingency measures**		
	Major Farm ing situation[f]	**Normal Crop/cropping system[g]**	**Change in crop/cropping system[h]**	**Agronomic measures[i]**	**Remarks on Implementation[j]**
Limited release of water in canals due to low rainfall	NA				

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	NA				

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	NA				
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]**

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	NA				

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 flow of water in streams	1. Moderately sloping side slope of hills-Deep fine to fine loamy soils	Rice- Toria	No change or Rice-fallow	Toria-M-27, TS-38 Relay cropping with pea/mustard in rice fallows	Line dept. schemes/ RKVY
		Rice- pea	Rice- Mustard/Toria	Relay cropping with pea/toria in rice fallows	Line dept. schemes/ RKVY
		Rice-cabbage	Rice-wheat	Minimum tillage	Line dept. schemes/ RKVY
	2. Gently sloping side slope of hills- deep fine soils	Rice- Toria	No change or Rice-fallow	Toria-M-27, TS-36, TS-38 Relay cropping with pea/mustard in rice fallows	Line dept. schemes/ RKVY
		Rice- pea	Rice- Mustard/ Toria	Relay cropping with pea/toria in rice fallows	Line dept. schemes/ RKVY
		Rice-cabbage	Rice-wheat	Minimum tillage	Line dept. schemes/ RKVY
	3. Steeply sloping side of hills slopes- moderately shallow fine soils (Noklak, Shamator; 60-70% gradient)	NA			

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

2.3 Floods: Not Applicable

2.4 Extreme events- Hailstorm

Extreme event type (Hailstorm)	**Suggested contingency measure[r]**			
	Seedling / nursery stage	**Vegetative stage**	**Reproductive stage**	**At harvest**
Jhum paddy	If occurs at early vegetative stage re-sowing should be done	NA	NA	NA
Maize	If severely affected re-sowing and partial affected gap filling	Remove affected vegetative parts and foiler application of urea	NA	Harvest and value addition
Potato	NA	Remove the affected plants and top dress with urea	Dehaulming should be done	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/ 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 vitamin-mineral supplementation	Conducting mass animal Health Camps and treating the affected one, vitamin-mineral supplementation.	Culling sick animals and vitamin-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			

[a] based on forewarning wherever available

2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event	**During the event**	**After the event**
1) Drought			
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, Channelising 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