STATE: MANIPUR

Agriculture Contingency Plan for District: UKHRUL

1.0 District Agriculture profile				
1.1	Agro-Climatic/Ecological Zone			
	Agro Ecological Sub Region (ICAR)	North-Eastern Hills (Purvachal), Warm Perhumid Eco-sub region (17.2)		
	Agro-Climatic Zone (Planning Commission)	Eastern Himalayan Region (II)		
	Agro Climatic Zone (NARP)	Sub-Tropical Hill Zone (NEH-3)		
	List all the districts or part thereof falling under the NARP Zone	Myanmar in the East, Chandel District in the south, Imphal East and Senapati District in the west and Nagaland state in the North		
	Geographic coordinates of district headquarters	**Latitude**	**Longitude**	**Altitude**
		94E to 94.47E	24N to 25.41N	913 m-3114 m (MSL)
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	ICAR Research Complex for NEH Region, Manipur Centre, Lamphelpat		
	Mention the KVK located in the district	Ukhrul District, Hundung Village.		

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):	830.2	55	1st week of June	4th week of September
	NE Monsoon(Oct-Dec):	200.8	15	1st week of January	4th week of December
	Winter (Jan- March)	122.4	9		
	Summer (Apr-May)	316.3	21		
	Annual	1592.4	100		

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)	454.4	20.26	342.6	91.54	-	-	-	-	-	-

1. 4	**Major Soils (common names like red sandy loam deep soils (etc.,)***	**Area ('000 ha)**	**Percent (%) of total**
	Red clayey soils	-	-
	Lateritic soils	-	-
	Alluvial colluvial soils (partly saline)	-	-
	Alluvial-colluvial soils	-	-
	Lateritic gravelly soils	-	-
	Rock land and water bodies	-	-
	Medium deep black soils	-	-
	Red gravelly loam soils	-	-
	Red gravelly clay loam soils	-	-

1.5	**Agricultural land use**	**Area ('000 ha)**	**Cropping intensity %**
	Net sown area	13.24	153.02
	Area sown more than once	-	

	Gross cropped area	20.26	

1.6	**Irrigation**	**Area ('000 ha)**		
	Net irrigated area			
	Gross irrigated area			
	Rainfed area	Entire Area		
	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)	Stream water		
	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

1.7	**Major field crops cultivated**	**Area ('000 ha)**			
		Kharif	***Rabi***	**Summer**	**Grand**

		Irrigated	Rainfed	Total	Irrigated	Rainfed	Total		total
	Rice	-	13.4	13.4	-	-	-	-	13.4
	Pea	-	-	-	-	-	-	-	-
	Potato	-	-	-	-	-	-	-	-
	Maize	-	1.31	1.31	-	-	-	-	1.31
	Rapeseed mustard	-	-	-	-	-	-	-	-

1.7	Horticulture crops - Fruits			
		Total area ('000 ha)	Rainfed ('000 ha)	Irrigated ('000 ha)
	Banana	0.14	0.14	-
	Limon	0.63	0.63	-
	Pineapple	0.18	0.18	-
	Peach/Pear/Plum	0.09	0.09	-
	Passion Fruit	0.67	0.67	-
	Others(specify)	1.13	1.13	-

1.7	Horticulture crops - Vegetables	Total area ('000 ha)	Irrigated area ('000 ha)	Rainfed area ('000 ha)
	Cabbage	0.16	-	1.6
	Cauliflower	0.03	-	0.3
	Pea	0.13	-	1.3
	Tomato	0.02	-	0.2
	Chilies	0.25	-	2.55

		0.16	-	1.6
1.7	Medicinal and Aromatic crops	-	-	-
	Plantation crops	-	-	-
	Fodder crops	-	-	-
	Grazing land	-	-	-
	Sericulture etc	-	-	-

1.8	**Livestock (in number)**	**Male (‘000)**	**Female (‘000)**	**Total (‘000)**
	Non descriptive Cattle (local low yielding)	7.3	11.4	18.8
	Crossbred cattle	3.1	6.9	10.1
	Non descriptive Buffaloes (local low yielding)	7.5	10.5	18.0
	Graded Buffaloes			
	Goat	0.37	0.46	0.8
	Sheep	0.01	0.005	0.01
	Others (Camel, Pig, Yak etc.)			7.75
	Commercial dairy farms (Number)			
1.9	**Poultry**	**No. of farms**	**Total No. of birds (‘000)**	
	Commercial			
	Backyard		253.963	
1.10	**Fisheries (Data source: Chief Planning Officer of district)**			
	A. Capture			
	i) Marine (Data Source:	**No. of fishermen**	**Boats**	**Nets**	**Storage facilities**

	Fisheries Department)		Mechanized	Non-mechanized	Mechanized (Trawl nets, Gill nets)	Non-mechanized (Shore Seines, Stake & trap nets)	**(Ice plants etc.)**
	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)	7210	0.08	589
	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)										
	Rice	31.0	2315.6	-	-	-	-	31.0	2315.6	-
	Pea	-	-	-	-	-	-	0.93	-	-
	Potato	-	-	-	-	-	-	0.76	-	-
	Maize	3.0	2354.0	-	-	-	-	3.0	2354.0	-
Major Horticultural crops (Crops to be identified based on total acreage)										

	Cabbage	-	-	2.076	13542	-	-	2.076	13542	-
	Cauliflower	-	-	0.231	8261.7	-	-	0.231	8261.7	-
	Pea	-	-	0.746	6580	-	-	0.746	6580	-
	Tomato	-	-	0.122	7176.4	-	-	0.122	7176.4	-
	Chilies	-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	0.317	5,839.3	-

1.12	**Sowing window for 5 major field crops (start and end of normal sowing period)**	**Paddy**	**Maize**	**Cabbage**	**Soybean**	**Mustard/ Pea**
	Kharif- Rainfed	March-May	4th week of April-May	June-July	May- June	-
	Kharif-Irrigated	-	-	-	-	-
	Rabi- Rainfed	-	-	September-October (also cauliflower)	October-November	September-October
	Rabi-Irrigated	-	-	-	-	-

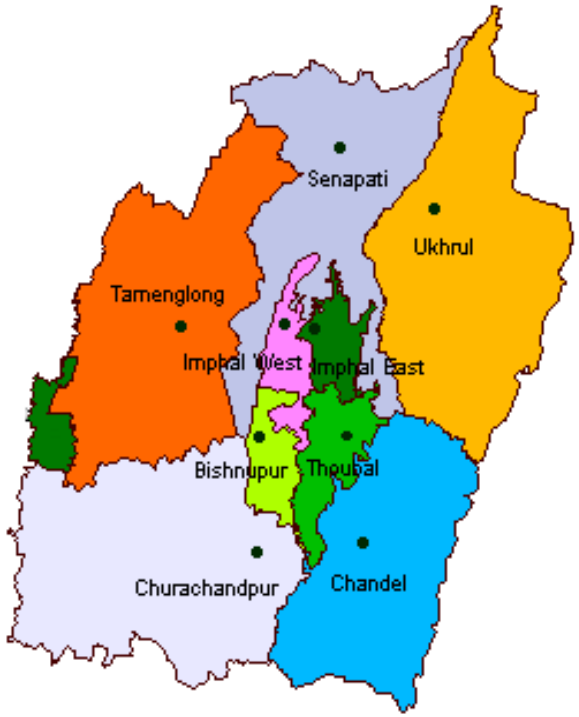
1.13	**What is the major contingency the district is prone to?** (Tick mark)	**Regular**	**Occasional**	**None**
	Drought		√	
	Flood			√
	Cyclone			√
	Hail storm		√	
	Heat wave			√
	Cold wave			√
	Frost	√		
	Sea water intrusion			√
	Pests and disease outbreak (specify)	√		

	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: No

Annexure I



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**	**Crop/cropping system**	**Change in crop/ cropping system**	**Agronomic measures**	**Remarks on implementation**
Delay by 2 weeks 3rd week of June	Rainfed uplands	Rice	Rice-mustard	Weed control	-
		Groundnut	Groundnut-Pea	Select suitable variety like ICGS-76, JL-24,TAG-24, Construction of water harvesting pond	
				Adopt line sowing for intercultural operations	
				Earthing up should be done before 40 days of sowing	
		Soybean	Soybean-mustard	Sow short duration variety JS-335 or local	
				Avoid top dressing	
				Intercultural operation should be done,	

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Crop/cropping system**	**Change in crop/ cropping system**	**Agronomic measures**	**Remarks on implementation**
Delay by 4 weeks July 1st week	Rainfed uplands	Rice	Rice-mustard	Transplanting of 4 weeks old seedlings with receipt of rains Direct seeding with medium duration varieties like RCM-5 up to 3rd week of July	-
		Groundnut	Maize (local) Soybean (JS-335/ local)	-	

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	**Major Farming situation**	**Crop/cropping system**	**Change in crop/ cropping system**	**Agronomic measures**	**Remarks on implementation**
Delay by 6 weeks July 3rd week	Rainfed uplands	Rice	Rice-mustard	Transplant 35-40 days old seedling and 3-4 seedlings/hill to compensate plant population and yield	
				Select RC maniphou-7 which is photo-insensitive variety	
				Sow pre sprouted seed 80kg/ha for direct seeding	
		Groundnut/ Maize	Soybean (JS-335/ local)	-	

Condition			**Suggested Contingency measures**		
Early season drought (delayed onset)	Major Farming situation	Crop/cropping system	Change in crop/ cropping system	Agronomic measures	Remarks on implementation
Delay by 8 weeks Aug 1st week	Rainfed uplands	Rice	Rice	Direct seeding/ broadcast of rice var. RC maniphou-7	
				Transplant up to 50 days old seedling and 3-5 seedlings/hill at closer spacing	
				If no hope of getting rice crop plough the field for early rabi vegetables	
		Groundnut/ Maize	Vegetables	-	

Condition			**Suggested Contingency measures**		
	Major Farming situation	**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	Rainfed uplands	Rainfed rice	a)Sow short duration var. of 15-20 days shorter in duration b) maintaining high density pattern at one corner of land to get seedling for gap filling	Timely weed control	
		Maize/ Groundnut	Line sowing	Sow the seeds against the slope	
		Soybean	Line sowing	Sow the seeds against the slope	

Condition			**Suggested Contingency measures**		
Mid season drought (long dry spell, consecutive 2 weeks rainless period (> 2.5 mm)	**Major Farming situation**	**Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures,**	**Remarks on implementation**
Vegetative stage	Rainfed uplands	Rice	Split application of N and K_2O	Thinning is must if plant population is high and use as mulch	
		Maize/ Groundnut	Earthing up should be done at 35 days DAS before peg formation in groundnut	Remove weeds and use as mulch between rows	
		Soybean	Plough the land 2-3 times by cultivator followed by rotavator	Conservation of soil moisture through mulching Open conservation furrows	

Condition			**Suggested Contingency measures**		
Mid season drought (long dry spell)	**Major Farming situation**	**Crop/cropping system**	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on implementation**
At reproductive stage	Rainfed uplands	Rice	Life saving irrigation	Give life saving irrigation at flowering stage	
		Maize/ Groundnut	Remove weeds	Practice Mulching in between the rows	
		Soybean	Plough the land 2-3 times by cultivator followed by rotavator	Conservation of soil moisture through mulching Open conservation furrows	

Condition			Suggested Contingency measures		
Terminal drought	**Major Farming situation**	**Crop/cropping system**	**Crop management**	**Rabi crop plan**	**Remarks on implementation**
	Rice	Rice	Harvest the crop for grain purpose	Plan to sow mustard, field pea and vegetables	-
	Maize/ Groundnut	Groundnut	Harvest at physiological maturity		
	Soybean	Soybean			

2.1.2 Drought - Irrigated situation – Not applicable

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					
Limited release of water in canals due to low rainfall					
Non release of water in canals under delayed onset of monsoon in catchment					
Lack of inflows into tanks due to insufficient /delayed onset of monsoon					
Insufficient groundwater recharge due to low rainfall					

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

Condition	**Suggested contingency measure**			
	Vegetative stage	**Flowering stage**	**Crop maturity**	**Post harvest**
Rice	-	Apply Tricyclazole @ 10ml/15 litres of water for blast	Apply Dithane M-45 to control false smut of rice	Dry grain sufficiently and safe storage

			Drain out water 10 days before harvesting Application of imidaclopid 17.8SL @ 7ml/15lit of water to control Gundhi bug	
Maize			Harvest cobs for seeds before rains.	
Soybean		Application of imidaclopid 17.8SL @ 7ml/15lit of water to control hairy caterpilars		
Ground nut		Spray Dithane M-45 (0.2%) at 2-3 interval if disease incidence is severe Ridomil should be applied for control of Tikka disease	-	Pods should be dried after harvesting so that moisture is reduced to 10%.
Heavy rainfall with high speed winds in a short span	Not applicable			
Outbreak of pests and diseases due to unseasonal rains	-		-	-

2.3 Floods : Not applicable

Condition	**Suggested contingency measure[o]**			
Transient water logging/ partial inundation	**Seedling / nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Continuous submergence				

for more than 2 days[2]				
Sea water intrusion[3]				

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

Extreme event type	**Suggested contingency measure**			
Heat wave/ Cold wave/ Frost /Hailstorm /Cyclone	**Seedling /nursery stage**	**Vegetative stage**	**Reproductive stage**	**At harvest**
Early kharif Rice	Usually nurseries are raised in Feb. - March. During this month, soil temperature is low. 1t/FYM/ 700 m^2 may be applied for proper germination and seedling growth, water should be maintained 2-3cm	-	-	-

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	Insurance Encourage perennial fodder on bunds and waste land on community basis Establishing fodder banks, encouraging	Utilizing tree fodder and jungle hay. Feeding of urea treated paddy straw. Utilization of urea molasses liquid feed Utilizing fodder stored in silos Transporting excess fodder from adjoining districts	Availing Insurance Culling unproductive

	fodder crops in irrigated area Silage – using excess fodder for silage	Use of mineral mixtures as feed supplement	livestock
Drinking water	Preserving water in the tank for drinking purpose Excavation of Bore wells	Using preserved water in the tanks for drinking Wherever ground water resources are available priority for drinking purpose	
Health and disease management	Veterinary preparedness with medicines and vaccines	Conducting mass animal Health Camps and treating the affected one in Campaign	Culling sick animals
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			
Shelter/environment management	Low cost animal housing with proper ventilation	Low cost animal housing with some covering with gunny bag during the cool wave. Use of local charcoal in the house. Use of good bedding materials in the house.	
Health and disease management	Veterinary preparedness with medicines and vaccines	Conducting mass animal Health Camps and treating the affected one in Campaign	

[s] based on forewarning wherever available

2.5.2 Poultry

	Suggested contingency measures			Convergence/linkages with ongoing programs, if any
	Before the event	**During the event**	**After the event**	
Drought				
Shortage of feed ingredients	Insurance & Integration Establishing feed reserve Bank	Utilizing from feed reserve banks Use of mineral mixture and vitamins supplement.	Availing insurance Strengthening feed Reserve Banks Use of mineral mixture and vitamins supplement.	
Drinking water	Preserving water in the tank for drinking purpose Excavation of Bore wells	Using preserved water in the tanks for drinking Wherever ground water resources are available priority for drinking purpose	Using preserved water in the tanks for drinking Wherever ground water resources are available priority for drinking purpose	
Health and disease management	Emergency Veterinary preparedness with medicines/vaccination to birds	Campaign and Mass Vaccination	Campaign and Mass Vaccination	Culling affected and unproductive birds
Floods	Not applicable			
Shortage of feed ingredients				
Drinking water				
Health and disease management				

Cyclone	Not applicable			
Shortage of feed ingredients	Insurance Encourage perennial fodder on bunds and waste land on community basis Establishing fodder banks, encouraging fodder crops in irrigated area Silage – using excess fodder for silage	Utilizing tree fodder and jungle hay. Feeding of urea treated paddy straw. Utilization of urea molasses liquid feed Utilizing fodder stored in silos Transporting excess fodder from adjoining districts Use of mineral mixtures as feed supplement	Utilizing tree fodder and jungle hay. Feeding of urea treated paddy straw. Utilization of urea molasses liquid feed Utilizing fodder stored in silos Transporting excess fodder from adjoining districts Use of mineral mixtures as feed supplement	
Drinking water	Preserving water in the tank for drinking purpose Excavation of Bore wells	Using preserved water in the tanks for drinking Wherever ground water resources are available priority for drinking purpose	Using preserved water in the tanks for drinking Wherever ground water resources are available priority for drinking purpose	
Health and disease management	Emergency Veterinary preparedness with medicines/vaccination to birds	Campaign and Mass Vaccination	Campaign and Mass Vaccination	Culling affected and unproductive birds
Heat wave and cold wave				
Shelter/environment management	Low cost animal housing with proper ventilation	Low cost animal housing with some covering with gunny bag during the cool wave. Use of local charcoal in the house. Use of good bedding	Low cost animal housing with some covering with gunny bag during the cool wave. Use of local charcoal in the house. Use of good bedding	

		materials in the house.	materials in the house	
Health and disease management	Emergency Veterinary preparedness with medicines/vaccination to birds	Campaign and Mass Vaccination	Campaign and Mass Vaccination	Culling affected and unproductive birds

[a] based on forewarning wherever available

2.5.3 Fisheries/ Aquaculture –Not applicable

	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			
(ii) Impact of salt load build up in ponds / change in water quality			
(iii) Any other			
2) Floods			

A. Capture			
Marine			
Inland			
(i) Average compensation paid due to loss of human life			
(ii) No. of boats / nets/damaged			
(iii) No.of houses damaged			
(iv) Loss of stock			
(v) Changes in water quality			
(vi) Health and diseases			
B. Aquaculture			
(i) Inundation with flood water			
(ii) Water contamination and changes in water quality			
(iii) Health and diseases			
(iv) Loss of stock and inputs (feed, chemicals etc)			
(v) Infrastructure damage (pumps, aerators, huts etc)			
(vi) Any other			
3. Cyclone / Tsunami	Not applicable		
A. Capture			
Marine			
(i) Average compensation paid due to loss of fishermen lives			
(ii) Avg. no. of boats / nets/damaged			

(iii) Avg. no. of houses damaged			
Inland			
B. Aquaculture			
(i) Overflow / flooding of ponds			
(ii) Changes in water quality (fresh water / brackish water ratio)			
(iii) Health and diseases			
(iv) Loss of stock and inputs (feed, chemicals etc)			
(v) Infrastructure damage (pumps, aerators, shelters/huts etc)			
(vi) Any other			
4. Heat wave and cold wave	Not applicable		
A. Capture			
Marine			
Inland			
B. Aquaculture			
(i) Changes in pond environment (water quality)			
(ii) Health and Disease management			
(iii) Any other			

[a] based on forewarning wherever available