

STATE: KARNATAKA

AGRICULTURE CONTINGENCY PLAN FOR DISTRICT: UDUPI

1.0 District Agriculture profile					
1.1	Agro-Climatic/Ecological Zone				
	Agro Ecological Sub Region (ICAR)	Western Ghats And Coastal Plain, Hot Humid ecosubregion (19.3)			
	Agro-Climatic Region (Planning Commission)	West coast plains and Ghat Region (XII)			
	Agro Climatic Zone (NARP)	Coastal Zone (KA-10)			
	List all the districts or part thereof falling under the NARP Zone	Dakshina Kannada, Udupi, Uttara Kannada			
	Geographic coordinates of district	Latitude	Longitude	Altitude	
		13 ⁰ 12' 30" N	74 ⁰ 41'0" E	3.10 to 82.82 m	
	Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Zonal Agricultural Research Station, Brahmavar			
	Mention the KVK located in the district	Krishi Vigyan Kendra, Brahmavar, Udupi – 576 213			
1.2	Rainfall	Normal rainfall (mm)	Normal Rainy days (number)	Normal Onset (specify week and month)	Normal Cessation (specify week and month)
	SW monsoon (June-Sep):	3273	92	1 st Week of June	1 st Week of October
	NE Monsoon(Oct-Dec):	263	11		
	Winter (Jan- February)			-	-
	Summer (March-May)	183	8	-	-
	Annual	3728	111	-	-

1.3	Land use pattern of the district (latest statistics)	Geographical 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 (thousand ha)	356.4	100.1	39.3	10.6	36.2	47.7	11.6	1.8	8.3

1.4	Major Soils (common names like shallow red soils etc.,)	Area ('000 ha)	Percent (%) of total
	Coastal alluvial soils		
	Red lateritic soils	1.2	
	Sandy loams soils		

1.5	Agricultural land use	Area ('000 ha)	Cropping intensity %
	Net sown area	100.0	123.2
	Area sown more than once	23.2	
	Gross cropped area	123.2	

1.6	Irrigation	Area ('000 ha)	
	Net irrigated area	33.0	
	Gross irrigated area	33.5	
	Rainfed area	67.0	
	Sources of Irrigation	Number	Area ('000 ha)
	Canals		0.0
	Tanks		1.4
	Open wells		
	Bore wells		0.4
	Lift irrigation		2.6
	Micro-irrigation		
	Other sources		7.1
	Total Irrigated Area		33.4
	Pump sets		
	No. of Tractors		
	Groundwater availability and use* (Data source: State/Central Ground water Department /Board)	No. of blocks/ Tehsils	(%) area
	Over exploited	-	-
	Critical	-	-
	Semi- critical	-	-
	Safe	9	70%
	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 etc. (2008-09)

1.7	Major Field Crops cultivated	Area ('000 ha)					
		Kharif		Rabi		Summer	Total
		Irrigated	Rainfed	Irrigated	Rainfed		
1	Paddy	-	62.0	-	-	-	62.0
2	Blackgram	-	-	-	6.2	-	6.2
3	Groundnut	-	-	-	2.1	-	2.1
	Horticulture crops - Fruits	Total area		Irrigated		Rainfed	
1	Banana	1.3		-		-	
2	Mango	1.6		-		-	
3	Jackfruit	0.7		-		-	
	Horticultural crops - Vegetables	Total area		Irrigated		Rainfed	
1	Vegitables	1.9		-		-	
	Medicinal and Aromatic crops	Total area		Irrigated		Rainfed	
	Plantation crops	Total area		Irrigated		Rainfed	
1	Areca nut	5.294		-		-	
2	coconut	15.009		-		-	
3	Cashew	19.687		-		-	
4	Rubber	2.610		-		-	
5	Pepper	0.293		-		-	
6							
	Fodder crops	Total area		Irrigated		Rainfed	
1	Hybrid napier	0.500		0.500		-	
	Total fodder crop area	-		-		-	
	Grazing land	-		-		-	
	Sericulture etc	-		-		-	
	Others (Specify)	-		-		-	

1.8	Livestock	Male ('000)	Female ('000)	Total ('000)			
	Non descriptive Cattle (local low yielding)	44.3	195.0	239.4			
	Crossbred cattle	7.6	71.5	79.1			
	Non descriptive Buffaloes (local low yielding)	22.9	3.8	26.7			
	Graded Buffaloes						
	Goat			2.7			
	Sheep			59.0			
	Others (Camel, Pig, Yak etc.)			1.40			
	Commercial dairy farms (Number)						
1.9	Poultry	No. of farms	Total No. of birds ('000)				
	Commercial	71	-				
	Backyard						
1.10	Fisheries (Data source: Chief Planning Officer)						
	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)
		119241	1913	2645	1017	1362	Ice factories - 73 Cold storages - 9 Freezing plants - 5 Frozen storages - 4
	ii) Inland (Data Source: Fisheries Department)	No. Farmer owned ponds		No. of Reservoirs		No. of village tanks	
		3000 Nos		-		366	
B. Culture							
		Water Spread Area (ha)	Yield (t/ha)	Production ('000 tons)			
i) Brackish water (Data Source: MPEDA/ Fisheries Department)		376.1	925 kg/ha/crop	1006 mt.			

	ii) Fresh water (Data Source: Fisheries Department)	862.4		1789
	Others			

1.11 Production and Productivity of major crops

1.11	Name of crop	Kharif		Rabi		Summer		Total		Crop residue as fodder ('000 tons)
		Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	Production ('000 t)	Productivity (kg/ha)	
Major Field crops (Crops to be identified based on total acreage)										
1	Paddy	155.00	2500	-	-	-	-	155.0	2500	186.0
2	Groundnut	-	-	29.0	1400	-	-	29.0	1400	23.2
3	Black gram	-	-	24.7	400	-	-	24.7	400	8.7
Major Horticultural crops (Crops to be identified based on total acreage)										
1	Areca nut	9.529	1800	-	-	-	-	9.529	1800	-
2	Coconut	Nos. 90054' T	6000 nuts/ha	-	-	-	-	Nos. 90054' T	6000 nuts/ha	-
3	Cashew	5906	300	-	-	-	-	5906	300	--
4	Pepper	261.86	890	-	-	-	-	261.86	890	-

1.12	Sowing window for 5 major field crops (start and end of normal sowing period)	Paddy	Ground nut	Black gram
	Kharif- Rainfed	1 st week of June to 2 nd week of July	-	-
	Kharif-Irrigated	-	--	-
	Rabi- Rainfed		3 rd week of November to 4 th week of December	4 th week of October to 2 nd week of November
	Rabi-Irrigated	1 st week to 4 th week of November		

1.13	What is the major contingency the district is prone to? (Tick mark and mention years if known during the last 10 year period)	Regular	Occasional	None
	Drought	-	√	-
	Flood	√	-	-
	Cyclone	√	-	-
	Hail storm	-	-	√
	Heat wave	-	-	√
	Cold wave	-	-	√
	Frost	-	-	√
	Sea water intrusion	√	-	-
	Pests and diseases (specify)	√	-	-
	Others	-	-	-

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

Maps to be included

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	Agronomic measures ^d	Remarks on Implementation ^e
Delay by 2 weeks (3 rd week of June)	Shallow, lateritic, acid soil	Paddy	Paddy	No change	

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
Delay by 4 weeks (1 st week of July)	Shallow, lateritic, acid soil	Paddy	Paddy	Short duration varieties Drum seeded sowing Altering planting geometry Protective irrigation	Supply of short duration varieties by the Dept. of Agri. Supply Drum seeders through RSKs Pests and disease control measures need to be taken up and Dept. of Agriculture Use of seepage water/well water ensure availability of required chemicals

Condition			Suggested Contingency measures		
			Change in crop/cropping system ^c	Agronomic measures ^d	Remarks on Implementation ^e
Early season drought (delayed onset)	Major Farming situation^a	Normal Crop/cropping system^b			
Delay by 6 weeks (3 rd week of July)	Shallow, lateritic, acid soil	Paddy	Paddy/Vegetables	Short duration varieties Drum seeded sowing Altering planting geometry Protective irrigation	Ensuring the Supply of short duration varieties through Dept. of Agri. Demonstration on drum seeding and ensuring availability of drum seeders Pests and disease control measures should be compulsory need to take up Use of seepage water/open well water
Delay by 8 weeks (1 st week of August)	Shallow, lateritic, acid soil	Paddy	Paddy	Short duration variety, Drum seeded sowing Altering planting geometry Protective irrigation	Supply of short duration varieties by the Dept. of Agri. Drum seeders supply Pests and disease control measures should be taken Use of seepage water Kaolin @ 6% w/v

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.	Shallow, lateritic, acid soils	Paddy	Protective irrigation Postponement of fertilizer top dressing of fertilizer	1. Scooping of top soil 2. Growing of azolla	Use of open well water Supply of azolla seeds

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
At vegetative stage	Shallow, lateritic, acid soils	Paddy	Protective irrigation Postponement of fertilizer top dressing Insect pest management by (Leaf folder) spraying of Quinolphos	Scooping of top soil Growing azolla	Supply of azolla seeds Ensuring the availability of Quinolphos

Condition			Suggested Contingency measures		
Mid season drought (long dry spell)	Major Farming situation	Normal Crop/cropping system	Crop management	Soil nutrient & moisture conservation measure	Remarks on Implementation
At flowering/ fruiting stage	Shallow, lateritic, acid soils	Paddy	Use of seepage water		

Condition			Suggested Contingency measures		
Terminal drought	Major Farming situation	Normal Crop/cropping system	Crop management	Rabi Crop planning	Remarks on Implementation
	Shallow, lateritic, acid soils	Paddy	Protective irrigation using available seepage water	Black gram, cowpea, Vegetables – coccinia, ash gourd, brinjal, cucumber, Chilli,	

2.1.2 Irrigated situation – 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	Flowering stage	Crop maturity stage	Post harvest
Paddy	Proper drainage	Proper drainage	Proper drainage	Transport to nearest warehouse, proper drying and storage in shade. Storage pest management
Black gram	Green leaf hopper damage: Application of Dimethoate @ 1.75 ml/lt	-		Transport to nearest warehouse, proper drying and storage in shade. Storage pest management
Ground nut	Tikka disease : Metalaxyl @ 2 gm/lt	-		Proper drying in shade and give turning
Horticulture				
Brinjal	Proper drainage	Proper drainage	Proper drainage	Direct marketing
Ash gourd	Proper drainage	Proper drainage	Proper drainage	Direct marketing
Coccinia	Proper drainage	Proper drainage	Proper drainage	Direct marketing
Coconut	Proper drainage	Proper drainage	Proper drainage	Direct marketing
Areca nut	Proper drainage	Proper drainage	Proper drainage	Shift to safer place and store it in shade
Cashew	Proper drainage	Proper drainage	Proper drainage	Direct marketing

Pepper	Proper drainage	Proper drainage	Proper drainage	Shift to safer place and store it in shade and turn frequently
Banana	Proper drainage	Proper drainage	Proper drainage	Direct marketing
Pine apple	Proper drainage	Proper drainage	Proper drainage	Direct marketing
Heavy rainfall with high speed winds in a short span²				
Horticulture				
Banana	Planting wind breaks all along the boarder, provide stakes	Planting wind breaks all along the boarder, provide stakes	Planting wind breaks all along the boarder, provide stakes	Direct marketing to consumers
Area nut	Proper drainage	Proper drainage	Proper drainage	Shift to safer place and store it in shade
Outbreak of pests and diseases due to unseasonal rains				
Paddy	Leaf folder and Galmidge Management : leaf folder spraying of Quinolphos 2 ml/lit and Gall midge Application of Carbofuron 8 kg/ac	Gall midge : Application of Malathion dust @ 8 kg/ha	Gall midge : Application of Malathion dust @ 8 kg/ha	
Horticulture				
Arecanut	-	Koleroga (Phytopthera) disease : Spraying of 1 % Bordeaux mixture		
Brinjal	Shoot and fruit borer damage: Spraying of Carbaryl @ 2 gm/lit			

2.3 Floods:

Situation specific and crop specific contingencies to be adpted

2.4 Extreme events: Heat wave / Cold wave/Frost/ Hailstorm /Cyclone: 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	<ul style="list-style-type: none"> • Stock and store sufficient dry fodder • Should have tree fodder plants at your field or at backyard. • keep animals number depending upon the fodder availability • Plant drought resistant fodder species 	<ul style="list-style-type: none"> • Judicious use of fodder, • Feed tree species as fodder • Enrich the dry fodder with mineral matters and concentrates • Allow the animals for open grazing 	<ul style="list-style-type: none"> • Planting the fast growing and drought resistant fodder species. • Go for tree fodder legume crops
Drinking water	<ul style="list-style-type: none"> • Ensure availability of good quality water • Judicious use of water 	<ul style="list-style-type: none"> • Judicious use of water • Recycle the waste water • Disinfect the water 	<ul style="list-style-type: none"> • Make proper storage facility for water.
Health and disease management	<ul style="list-style-type: none"> • Keep the sanitary clean, • Keep the animals clean • Give regular antibiotics to the animals 	<ul style="list-style-type: none"> • Keep the sanitary clean, • Keep the animals clean • Give regular antibiotics to the animals 	<ul style="list-style-type: none"> • Keep the sanitary clean, • Keep the animals clean • Give regular antibiotics to the animals
Floods	-	-	-
Feed and fodder availability	<ul style="list-style-type: none"> • Ensure safe drainage and passage of water • Plant tree fodder species of legumes Store 	<ul style="list-style-type: none"> • Stall feeding of animals • Give regular antibiotics to the animals 	<ul style="list-style-type: none"> • Replanting of fast growing and flood resistant fodder crops
Drinking water	<ul style="list-style-type: none"> • Protect the drinking water with suitable structures • Keep ready the drainage channels clean • Planting of grasses in water way channels 	<ul style="list-style-type: none"> • Use bore well water • Use of boiled water 	<ul style="list-style-type: none"> • De-silting of tanks/ wells, etc., • Treat the water bodies with disinfectant chemicals
Health and disease management	<ul style="list-style-type: none"> • Regular de-worming vaccination and sanitation • Construct sheds at high elevated places • 	<ul style="list-style-type: none"> • Use disinfected water for drinking • Regular Vaccination of animals 	<ul style="list-style-type: none"> • Vaccination

	Suggested contingency measures		
	Before the event ^s	During the event	After the event
Drought			
Cyclone			
Feed and fodder availability	<ul style="list-style-type: none"> • Store the fodder 	<ul style="list-style-type: none"> • Stall feeding of the animals 	-
Drinking water	<ul style="list-style-type: none"> • Storage of clean water for drinking purpose 	<ul style="list-style-type: none"> • Storage of clean water for drinking purpose 	-
Health and disease management	<ul style="list-style-type: none"> • Vaccination 	<ul style="list-style-type: none"> • Keep the animals in the safe shelters 	-
Heat wave and cold wave	-	-	-
Shelter/environment management	<ul style="list-style-type: none"> • Cover the animal sheds with coconut fronds • Storage of sufficient drinking water 	<ul style="list-style-type: none"> • Cover the animal sheds with coconut fronds • Feed the frequent drinking water • Mist spray of water • Sufficient ventilation and coolers • Provide proper space 	-
Health and disease management	<ul style="list-style-type: none"> • Regular Vaccination 	<ul style="list-style-type: none"> • Regular Vaccination 	-

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	Storage of sufficient feed materials	Use of local alternative feeds	Use of local alternative feeds	Dept. of Animal Husbandry-for Schemes facilities
Drinking water	Storage of sufficient water	Judicious use of water		
Health and disease management	Regular Vaccination	Vaccination Provide proper ventilation Provide coolers	Regular Vaccination	
Floods				
Shortage of feed ingredients	Storage of locally available feed materials at elevated places	Use of local alternative feeds	-	Dept. of Animal Husbandry-for Schemes facilities
Drinking water	Storage of water	Feed clean water	-	-
Health and disease management	Construct the shelters at elevated place	Vaccination Provide adequate heat Sanitation	-	-
Cyclone				
Shortage of feed ingredients	Storage of locally available feed materials at elevated places	Use of local alternative feeds		Dept. of Animal Husbandry-for Schemes facilities
Drinking water	Storage of water	Feed clean water	-	-
Health and disease management	Take protective measures for the shelters Provide adequate drainage in and around the sheter	Vaccination Provide adequate heat Sanitation	-	-
Heat wave & cold wave				
Shelter/environment management	Cover the poultry sheds with coconut fronds Storage of sufficient drinking water	Cover the poultry sheds with coconut fronds Feed the frequent drinking water Sufficient ventilation and coolers/heaters Provide proper space	-	
Health & disease management	Vaccination	Vaccination	-	-

2.5.3 Fisheries/ Aquaculture

	Suggested contingency measures		
	Before the event*	During the event	After the event
1) Drought			
A. Capture			
Marine	NA	NA	NA
Inland			
(i) Shallow water depth due to insufficient rain/inflow	Observe water level. Advice fishermen to harvest as much as possible fish live stock	Harvest the complete fish live stock	Report the loss to Revenue & Fisheries Dept.
(ii) Changes in water quality	Observe water quality like dis- solved Oxygen & pH	Report the matter to Revenue & Fisheries Dept.	
(iii) Any other	To explore the possibility of shifting the live stock to other water resources		
B. Aquaculture			
(i) Shallow water in ponds due to insufficient rain/inflow	Observe water level. Advice for fishermen to harvest maxi-mum fish live stock.	Addition of water, lime for tackling salt load	
(ii) Impact of salt load build up in ponds/change in water quality		Report the matter to Revenue & Fisheries Dept.	Report the loss to Revenue & Fisheries Dept.
(iii) Any other			
2) Floods			
A. Capture			
Marine	1) Helpt the district administration in providing Savi monsoon and boat 2) Prior wawrning is given for fishrmen as per advice of Meteorological Dept.		

Inland			
(i) Average compension paid due to loss of human life	Revenue authorities pay the compension to boats / nets / houses / fish live stock damaged	Addition of water, lime for tackling salt load	Report the loss to Revenue & Fisheries Dept.
(ii) No.of boats/nets/damaged			
(iii) No.of houses damaged		Report the matter to Revenue & Fisheries Dept.	
(iv) Loss of stock			
(v) Changes in water quality			
(vi) Health and diseases	Should be reported to Revenue Dept. authorities.		
B. Aquaculture			
(i) Inundation with flood water	Monitor the floods and harvest maximum fish live stock before floods. Report the loss to Revenue and Fisheries Dept. authorities.		
(ii) Water continuation 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			
A. Capture			
Marine			

(i) Average compensation paid due to loss of fishermen life	Help the district administration in providing the necessary help concerned with Revenue Dept authorities.		
(ii) Avg no. of boats/nets/damaged			
(iii) Avg no. of boats 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.)	Help the district administration in providing the necessary help concerned with Revenue Dept. authorities.		
(v) Infrastructure damage (pumps, aerators, shelters/huts etc)			
(vi) Any other			

4. Head wave and Cold Wage			
A. Capture			
Marine			
Inland			
B. Aquaculture			
(i) Changes in ponds environment			
(water quality)			
(ii) Health and disease management			
(iii) Any other			