3. Agricultural Situation in NE India

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3.1 Agricultural Situation in Arunachal Pradesh

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1. Agricultural Situation in East Siang

East Siang is located in the upper side of the Assam border and North western part of the mighty Brahmaputra River. It is situated between 27^0 43/ —29^0 20/ N latitude and 94^0 42/ — 95^0 35/ E longitude. It has a geographical area of about 4005 sq.km against 83,743 sq.km of the State geographical area. The total population of the district is 87397 against 1,097968 of the State population as per 2001 census.

East-Siang district is endowed with rich natural resources, agro-climatic suitability, too many tropical, sub-tropical, sub-temperate type of crops. Yet with the small population and vast area with natural resources, the district remains deficit in food production due to many factors which needs to be unearthed through SREP of the district. Agriculture is the mainstay of the economy of the district, however, majority of the farmers considered it a means for subsistence particularly in the areas where shifting cultivation still in progress, unaware of Govt. policy and others, which is a critical issue standing as bottleneck in the improvement of rural economy & food production. Out of 400500 ha of geographical area; only 12526 ha is under net area sown against 189000 ha of the state net area sown. The predominant crops of the district are paddy, maize, millet, ginger, mustard, potato, orange & pineapple. The forest covers 56.89%. The district has been divided in to six administrative CD blocks with 566 Gram Panchayat for 128 villages.

1. Position in relation to longitude and latitude: 27^0 $43^/$ - 29^0 $20^/$ N latitude and 94^0 $42^/$ - 95^0 $35^/$ E longitude.
2. Altitude from MSL : 130-752
3. Boundaries of the district :

E	:	Dibang Valley	W	:	West Siang
N	:	Upper Siang	S	:	Dhemaji Dist. Assam
NE	:	Upper Siang	SE	:	Dibang Valley
SW	:	Junai	NW	:	West Siang

4. Total population : 87,397 nos
5. Area of the district : 4005 sqkm.
6. Population density : 0.22 person/ha
7. Literacy percentage : 46.60 %
8. Status of agriculture : Rainfed
9. **Farmers :**
   a. Big farmers : 2,870 (nos)
   b. Medium farmers : 1,955 (nos)
   c. Small farmers : 4,880 (nos)
   c. Marginal farmers : 3,619 (nos)
   d. Agricultural labourers : 350 (nos)

10. Farm labour mobility

a. Is sufficient farm labour available in the district : NO
b. If 'NO' from which places do they come from ? Adjoining Assam area
c. If 'YES' whether they do work in near by or other districts also? Not Known

11. Physiography

a. Highlands : 42 % (1,68,210 ha)
b. Midlands : 35 % (1,40,175 ha)
c. Lowlands : 23% (92,115 ha)
d. General nature of the terrain:

Low altitude, plains, less irrigated, loamy sand with tropical climate. Medium altitude, foot hills regions, medium irrigated, heavy sandy loam, and with sub-tropical climate. Higher altitude, High rainfed, reddish, sandy soil with sub-temperate climate.

12. Climates

a. Sub-tropical /Sub-temperate
b. Pattern of rainfall in different months (Provide as high, medium or low)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low	Low	Low	Low	Medium	High	High	Medium	Low	Low	Low	Low

c. Special weather phenomenon in the district:
Heavy to medium wind blows from the month of October to March starting from early morning 4:30 am to 9:30 am daily in areas adjoining to the mighty river Siang. The direction of wind is constant and mostly along the flow of river Siang.

d. Maximum and minimum temperatures recorded: Max: 36^0C Min: 8^0C

e. Critical periods for plant growth in the district.

Sl. No	Crop	Critical periods of growth	Coinciding calendar month(s)
1.	Paddy	Kharif	July-August
2.	Citrus	1st Flash, 2nd Flash, 3rd Flash	Feb-March, June-Jully, Sept-Oct
3.	Ginger	Summer	April-May
4.	Maize	Summer	March-April
5.	Millet	Summer	March-April

13. Soils

a. Soil group classifications present in the district

1. Red soil
2. Sandy soil
3. Sandy loam
4. Loamy sand

Sl. No	Soil type	Area in ha	Characteristics
1	Red soil	47,400	Soil is severely acidic in nature. The pH varies from 4.0 to 5.9 with organic carbon content from 1.1- 3.9% available phosphorus from 13.30- 60.25 kg and available potash content from 26.8- 400 kg. Per hectare.
2	Sandy soil	1, 07,900	
3	Sandy loam soil	1,32,600	
4	Loamy sand soil	82,400	
5	Others	30,200	
	Total	4,00,500	

b. Acid soils : 6.79 million ha

c. Soil fertility status (in general) : Medium

14. Irrigation

a. Area under irrigation : 11,679 ha

b. Source of irrigation

1. Rivers/Canal : 11,636 ha
2. Tanks/Ponds : 60 ha
3. Open wells : 33 nos
4. Bore wells : 15 nos

15. Land use and Cropping intensity

a.	Gross cropped area	:	76,200 ha
b.	Net Area sown	:	50,000 ha
c.	Fallow lands	:	8,400 ha
d.	Cultivable waste lands	:	17,800 ha
e.	Forest cover	:	2,27,850 ha
f.	Barren lands	:	11,890 ha
g.	Cropping intensity	:	100 %

16. Major Crops

a. Principal crops, area, production and productivity

S. No	Crop	Area (ha)	Production (Ton)	Productivity (kg/ha)
1.	Paddy	13137	29699.2	2260
2.	Maize	2900	5348.0	1844
3.	Millet	2220	2528.0	1138
5.	Pulses	956	892.0	933
6.	Oil seeds	4585	3752.0	818
7.	Potato	685	4899.0	715
8.	Ginger	667	5581.0	8367
9.	Vegetables	1987	5897.0	2967
10.	Citrus	2658.43	16956.3	637
11.	Turmeric	193	369.0	1911
12.	Sugarcane	179	728.0	.4067
13.	Pineapple	560.15	4221.0	7535
14.	Arecanut	172.32	268.0	1555
15.	Banana	342.88	6039.0	1761
16.	Black Pepper	187.89	4.6	24
17.	Large Cardamon	286.9	3.6	12
18.	Jackfruit	70.07	930.3	13276

b. Crop rotations followed : 1. Cereal -Cereal
2. Cereal -Pulse

c. Crop sequences followed : 1. Paddy- Paddy
2. Maize – Vegetable
3. Maize - Mustard

d. Inter-cropping done, if any : NA

e. Mixed cropping done, if any : 1. Paddy-Maize- Vegetable-Ginger - Colocasia
2. Potato –Mustard

f. Catch crops grown, if any : NA

17. Socio-economic Characteristics, Land Holding Pattern

a.	Average size of land holdings	:	3 ha
b.	Average fragmentation intensity	:	2 nos
c.	Existing land tenure system(s)	:	three types of ownership: Clan or community ownership, private ownership and mixed type of ownership
d.	Source(s) of finance for farming	:	Rank 1. State Bank of India Rank 2. Rural Bank Rank 3. NABARD
e.	Main source of income for farmers	:	Rank 1. Cereal Rank 2. Oil seed Rank 3. Citrus
f.	Commercial commodities produced	:	Rank 1. Citrus Rank 2. Ginger Rank 3. Paddy

18. Farm Machinery and Implements available in the district

a.	Number of tractors	:	86 nos
b.	Number of power tillers	:	72 nos
c.	Pumps (Oil and electrical)	:	353 nos
d.	Threshers	:	28 nos
e.	Sprayers	:	533 nos

19. Livestock

a.	Cattle	:	78,111 nos
b.	Buffaloes	:	1,555 nos
c.	Goats	:	23,540 nos
d.	Horses & Ponies	:	11 nos
e.	Pigs	:	41,753 nos
f.	Poultry & Duck	:	20,490 & 3,054 nos
g.	Production of milk	:	3,850 ltr
h.	Production of meat	:	1,320 ton
i.	Table fish	:	180 ton
j.	Production of eggs	:	219,000 nos
k.	Production of wool	:	Nil

20. Livestock holding patterns

As per Statistical Hand Book of East Siang District, 2008 Prepared by Department of Economics and Statistics, Pasighat there is no organised Live Stock Farm except one Pig farm at Pasighat Circle.

a. Livestock holding pattern for big farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Pig	10-15	1
2.	Poultry	40-50	2
3.	Cattle	25-30	3
4.	Mithun	20	4

b. Livestock holding pattern for small farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Pig	5-10	1
2.	Poultry	25 -30	2
3.	Cattle	7-10	3
4.	Mithun	2-5	4

c. Livestock holding pattern for marginal farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Pig	4-7	1
2.	Poultry	10-15	2
3.	Cattle	2-6	3
4.	Mithun	-	4

d. Livestock holding pattern for agricultural labourers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Pig	2-5	1
2.	Poultry	5-10	2
3.	Cattle	2-4	3
4.	Mithun	-	4

e. Average yields of various animals and bird in the district.

Sl. No	Animal/bird	Average yield (Specify Units)
1.	Cow/Cattle	108 ton
2.	Buffalo	64 ton
3.	Goat	14 ton
4.	Pig	1, 134 ton
5.	Fish	180 ton

21. Research Resources

a. Number of research stations : Nil

b. Number of ICAR institutes/substations : Nil

c. Number of state seed farms : 2 nos

d. Number of private seed farms : Nil

22. Agricultural Marketing Status and Constraints

a. Ways of disposal of farm produce and bye-products

Sl. No	Major Farm produce	Marketing channel	Bye product (if any)	Marketing channel
1	Paddy	Unorganised	-	-
2	Oil Seeds	Unorganised	-	-
3	Maize	Unorganised	-	-
4	Millets	Unorganised	-	-
5	Pulses	Unorganised	-	-
6	Potato	Unorganised	-	-
7	Citrus	Unorganised	-	-
8	Ginger	Unorganised	-	-
9	Pineaple	Unorganised	-	-
10	Vegetables	Unorganised	-	-

b. Whole sale and retail markets.

a. Wholesale markets : 1. Citrus 2. Ginger

b. Retail markets : 1. Rice 2. Vegetables 3. Meat products

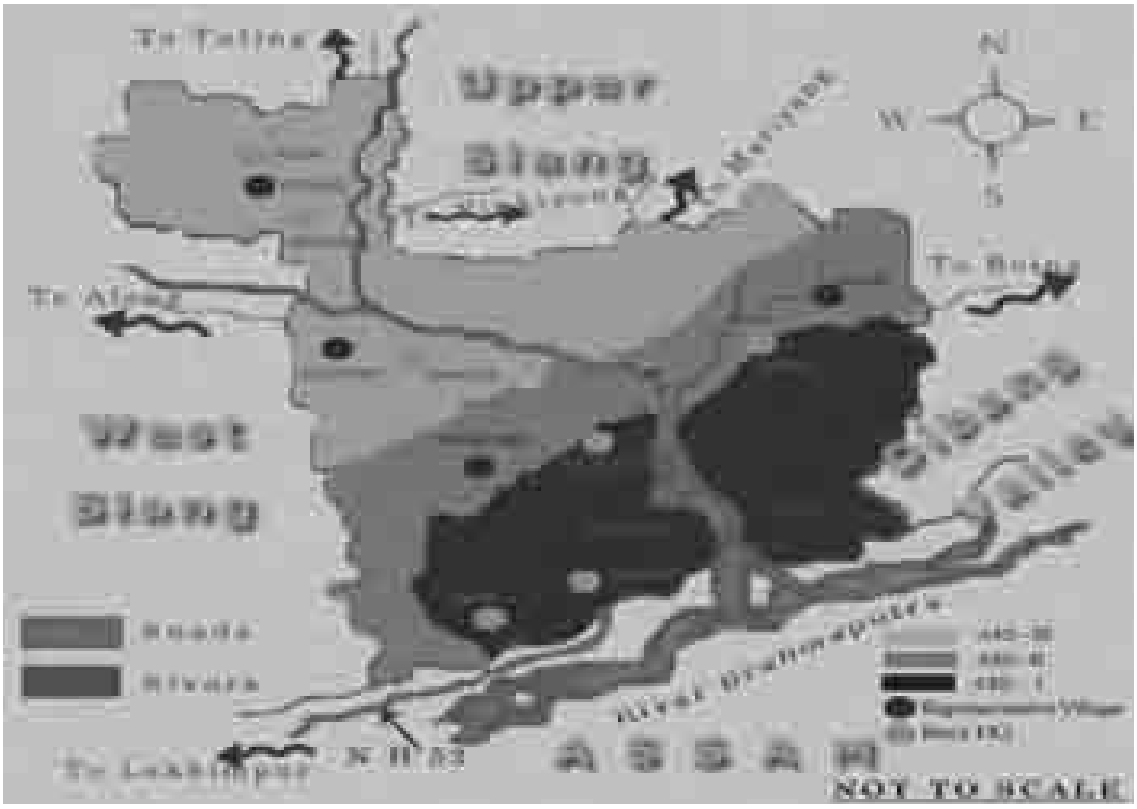
c. Major modes of transport to market:

1. Govt. and Private Bus.
2. Sumo Services
3. Pick up vans

d. Available/commonly used conveyance facilities (roads/waterways) to market :

1. Road ways

23. Agro-climatic Zones



a. Various zones in Arunachal Pradesh :

1. Humid Hyperthermic Foot Hills.
2. Perhumid Humid Hyperthermic Foot Hills.
3. Thermic Perhumid Midhills & Valleys.
4. Thermic Humid Midhills & Valleys.
5. Alpine and high hills.

b. Various zones in East Siang district :

1. Perhumid Humid Hyperthermic Foot Hills. (14%)
2. Thermic Humid Midhills & Valleys. (86%)

2. Agricultural Situation in Lohit

Lohit District of Arunachal Pradesh is situated in the foot hills of eastern part of Himalaya with a geographical area of 5212 sq. km. It is surrounded by Anjaw District in the East, Changlang District and Assam in the South, Part of Lower Dibang Valley District in the North, Assam State and part of Lower Dibang Valley District to the West. The district has varying altitude ranging from 140-686 meters above Mean Sea Level. The high mountain region of the Northern boundary is extremely cold. The District is named after the principal river LOHIT which, flows through Eastern Tibet and enters Lohit district at Parashuram Kund a famous place of pilgrimage for the Hindus. River Kamlang and Noa Dihing are the other main rivers flowing across the southern part of the district. These rivers cause soil erosion which consequently pose serious problem like flood and water stagnation on the cropping areas. The climate of the district varies from place to place. At foot hills it is quite hot during summer (16^0C -36^0C) and moderately cold in winter, but at higher altitude the climate is pleasant during summer season but the winter is extremely cold (5^0C-25^0C). The rainfall of the district is also varying in nature. In Tezu it is recorded as 110.43 mm and 3644.67 mm in Wakro. The district is divided into 2 sub-division and 8 administrative circles. The district has total population of 1,25,086 and 222 villages. Total ST population is 40,552 and SC population is 1796. Agriculture is the main source of livelihood for the people of the District, as almost 70% of the total population are cultivator & 30% are other workers. In the mid hill region the traditional methods of shifting cultivation is practiced by the Misimi people. Soils along the foot hills area are alluvial, loamy and sandy loam. The soil in the valley is clay alluvium and rich in organic contents. The soil is generally acidic in nature. The cropping intensity of the district is only 103%. The crop is mainly grown as rainfed and main source of irrigation is river water. The important crops grown are paddy, mustard, ginger, potato, orange, pulses & other vegetables. Cows, buffaloes, goats and mithun are the main domestic animals. Animal husbandry and Fishery is also practiced by some farmers of the district.

1. Position in relation to longitude and latitude : Between $95^0 15^{/}$ to $97^0 24^{/}$ East latitude and $27^0 33^{/}$ to $29^0 30^{/}$ North (Both Lohit and Anjaw)
2. Altitude from MSL : 140 m- 686m
3. Boundaries of the district

E: Anjaw District	W: Assam state and part of Lower Dibang Valley District	N: Part of Lower Dibang Valley District	S: Changlang District and Assam

4. Total population : 1,25,086
5. Area of the district : 5212 Sq. km
6. Population density : 24/Sq. Km
7. Literacy percentage : 56.07% (Undivided Lohit)
8. Status of agriculture : 33,900 ha (Rainfed-29,702 ha, Irrigated-4198 ha)
9. **Farmers**
   - a. Big farmers : 695
   - b. Small farmers : 654
   - c. Marginal farmers : 793
   - d. Agricultural labourers : 2232

10 Farm labour mobility

a. Is sufficient farm labour available in the district: NO

b. If 'NO' from which places do they come from? Assam, Bihar, Nepal

c. If 'YES' whether they do work in near by or other districts also: NO

11 General nature of the terrain

Lohit District comprises of high to moderate hills and plain region. The altitude varies from 140-686 mtrs above MSL. The soil of this zone is medium deep, light-texture and low in fertility. The soil is acidic in reaction with PH ranging from 5.5-6.5. A number of rivers like Lohit, Kamlang and Noadihing flows through the district.

12 Climates

a. Sub-tropical/ Sub-temperate/ Humid

b. Pattern of rainfall in different months

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
36.00 mm	219.00 mm	89.40 mm	976.90 mm	134.30 mm	409.50 mm	970.00 mm	208.40 mm	371.50 mm	72.50 mm	22.10 mm	6.4 mm
Low	Medium		High						Medium	Low	

c. Maximum and minimum temperatures recorded : Max: 36^0 C Min: 5^0 C

13	**Critical periods for plant growth**		
Sl. No.	**Crop**	**Critical periods of growth**	**Coinciding calendar month(s)**
1	Direct seeded upland paddy	Seedling stage	Apr.- May
		Tillering stage	Jun.
		Vegetative lag phase, Panicle initiation stage, Internode elongation and booting stage, Heading stage, Flowering stage	July- Aug
		Ripening stage	Sept- Oct
2	Transplanted paddy	Seedling stage	Jun- July
		Transplanting stage, Tillering stage	July-Aug
		Vegetative lag phase, Panicle initiation stage, Internode elongation and booting stage, Heading stage, Flowering stage	Sept- Nov
		Ripening stage	Nov- Dec
3	Maize	Seedling stage	Feb
		Grand growth stage	Mar
		Tasseling stage, Silking stage	Apr
		Soft dough stage	May- Jun
		Hard dough stage	Jun- July
4	Rapeseed/ Mustard	Seedling stage	Oct- Nov
		Vegetative growth stage	Nov
		Flowering stage	Dec
		Siliqua formation & grain filling stage	Dec- Jan
		Maturity stage	Jan – Feb

14 Soils

a Soil group classifications present in the district

Data not available

a Black soils : 145620 ha

b Red soils : Present (NA ha)

c Alluvial soils : 20700 ha

d Sandy soils : 365880 ha

e Laterite soils : Present (NA ha)

f Saline and alkaline soils : Not Present

g Acid soils : 518200 ha

h Soil fertility status (in general) : Medium

15 Irrigation

a Area under irrigation : 4360 ha

b Irrigation potential : 1297 ha

c Sources of irrigation

1. Rivers : 14 nos
2. Tanks : 0 nos
3. Open wells : 5 nos
4. Bore wells : 0 nos
5. Any other sources : Spring water well : 2 nos

16 Land use and Cropping intensity

a Gross cropped area : 41977 ha

b Net Area sown : 41977 ha

c Fallow lands : 4124 ha

d Cultivable waste lands : 2088 ha

e Forest cover : 10327.145 ha

f Barren lands : 48965 ha

g Cropping intensity : 103%

17 Major crops

a Principal crops, area, production and productivity

Sl. No.	Principal Crops	Area (in ha)	Production (in tones)	Productivity (kg/ha)
I	**Cereals**			
1.	Paddy (Irrigated)	2595	8356	32.2
2.	Paddy (Rainfed)	7150	16302	22.8
3.	Paddy-Jhum	800	592	7.4
4.	Maize(Improved)	520	738	14.20
5.	Maize-Local	7805	8117	10.40
6.	Millet	92	78	8.50
7.	Wheat	415	664	16.0
II	**Pulses**			
1.	Black gram	635	610	9.60
2.	Green gram	215	194	9.0
3.	Pea	560	750	13.40
4.	Others (Local)	455	546	12.0
III	**Oil Seeds**			
1.	Mustard	10778	8191	7.6

III	**Oil Seeds**			
1.	Mustard	10778	8191	7.6
2.	Sesamum	160	80	5.0
3.	Soyabean	265	411	15.50
4.	Local Soyabean	180	198	11.0
IV	**Spices & Condiment**			
1.	Ginger	890	7324	82.30
2.	Turmeric	110	387	35.20
3.	Chilly	125	190	15.20
V.	**Other food grains**			
1.	Potato	620	5704	92.0
2.	Sweet Potato	435	2001	46.40
3.	Sugarcane	20	130	65.0
4.	Colocasia	925	4301	46.50
5.	Tapioca	358	1653	46.20
VI	**Horticulture crops**			
1.	Orange(Khasi Mandarin)	2175.89	2250.86	1.03
2.	Pineapple	135.38	514.88	3.80
3.	Large Cardamon	31.2	15.9	0.51
4.	Banana	111.292	1199.9	10.78
5.	Papaya	16.58	29	1.74
6.	Guava	15.9	8.86	0.55
7.	Mango	16.51	4.42	0.26
8.	Assam Lemon	26.35	60.06	2.28
9.	Litchi	34.9	76.1	2.18
10.	Arecanut	11	1.50	0.14
11.	Black pepper	50	28.5	0.57
12.	Jackfruit	9	9	1
13.	Bamboo	115.052	8465.34	73.58

b Crop rotations followed : Rice – Potato followed by Rice Mustard.

c Crop sequences followed : 1. Rice-Fallow
2. Rice-Mustard/Potato
3. Rice-Rabi crops
4. Maize-Vegetable/Rabi crops/Ginger

d Inter-cropping done, if any : 1. Maize + Greengram
2. Orange + Ginger
3. Orange + Pineapple

e	Mixed cropping done, if any	: 1. Rice(Upland), Colocasia, Ginger, Cucurbits 2. Rice, Maize 3. Rice, Tapioca
f	Catch crops grown, if any	1. Buck Wheat

18 Socio-economic Characteristics, Land Holding Pattern

a	Average size of land holdings	: 1.8 ha
b	Average fragmentation intensity	: NA
c	Source(s) of finance for farming	: Rank 1. Agriculture Rank 2. Horticulture Rank 3. Animal husbandry
d	Main source of income for farmers	: Rank 1. Agriculture Rank 2. Horticulture Rank 3. Animal husbandry
e	Commercial commodities produced	: Rank 1. Ginger Rank 2. Orange Rank 3. Mustard Rank 4. Maize Rank 5. Rice Rank 6. Potato

19 Farm Machinery and Implements available in the district

a	Number of tractors	: 100 nos	
b	Number of power tillers	: 55 nos	
c	Number of carts	: 75 nos	
d	Types of implements	:	
		Cultivators	: 25 nos
		Discs	: 25 nos
		Harrows	: 100 nos
		Others	: 50 nos
e	Pumps (Oil and electrical)		: 75 nos
f	Harvesters and Threshers		: 04 and 55 nos
g	Sprayers and Dusters		: 1200 and 25 nos

20 Livestock

a	Cattle	: 93,329 nos
B	Buffaloes	: 9382 nos
c	Sheep and goats	: 56 and 37989 nos
d	Pigs	: 35,102 nos
e	Poultry and ducks	:159416 and 29386 nos
f	Production of milk	: 243580 ltr

g Production of meat : NA
h Production of eggs : NA
i Production of wool : NA
j Mithun :7344 nos

21 Livestock holding patterns

a Livestock holding pattern for big farmers

Sl No.	Animal/ bird	Average nos possessed	Rank according to nos possessed
1	Cattle	50-100	1
2	Pig	10-20	3
3	Poultry	30-40	2
4	Buffalo	10-20	4
5	Mithun	20-50	5

b Livestock holding pattern for small farmers

Sl No.	Animal/ bird	Average nos possessed	Rank according to nos possessed
1	Cattle	10-15	1
2	Poultry	10-20	2
3	Pig	5-10	3
4	Goat	5-10	4

c Livestock holding pattern for marginal farmers

Sl No.	Animal/ bird	Average nos possessed	Rank according to nos possessed
1	Cattle	3-8	1
2	Poultry	5-10	2
3	Pig	3-8	3
4	Goat	3-5	4

d Livestock holding pattern for agricultural labourers

Sl No.	Animal/ bird	Average nos possessed	Rank according to nos possessed
1	Cattle	5-8	1
2	Buffalo	3-5	2
3	Poultry	5-10	3
4	Pig	5-10	4
5	Goat	3-5	5

Average yields of various animals and birds

Sl. No.	Animal/bird	Average yield (Specify Units)
1	Cow	1-2 litre milk
2	Pig	50-80 Kg live wt.
3	Goat	15-20 Kg live wt.
4	Poultry	200-250 egg/year

22 Research Resources

a Number of research stations : NIL

b Number of ICAR institutes/substations : NIL

c Number of state seed farms : NA

d Number of private seed farms : NA

23 Agricultural Marketing Status and Constrains

a Ways of disposal of farm produce and bye-products

Sl. No.	Major farm produce	Marketing channel	Bye product (if any)	Marketing channel
1	Rice	Farmer-Shopkeeper/Retailer-Wholesale market	Husk/Rice Polish	Rice mill owner – Retailer/Farmers
2	Mustard	Farmer-Middleman/ Shopkeeper/Retailer-Oil manufacture	MOC	Oil mill owner-Farmers
3	Potato	Farmer-Middleman/ Shopkeeper/Retailer-Wholesale market		
4	Orange	Farmer-Middleman/ Retailer-Wholesale market		
5	Ginger(Fresh)	Farmer-Middleman/ Retailer-Wholesale market		
6	Pineapple	Farmer-Middleman/ Retailer-Wholesale market		
7	Maize	Farmer-Middleman/ Retailer-Wholesale market		

b Market types-whole sale and retail markets in the district

a. Wholesale markets : 1. Namsai : 2. Tezu

b. Retail markets : 1. Wakro : 2. Mahadepur : 3. Chongkham

: 4. Alubari : 5. Sunpura : 6. Piyong etc

c Major modes of transport to market

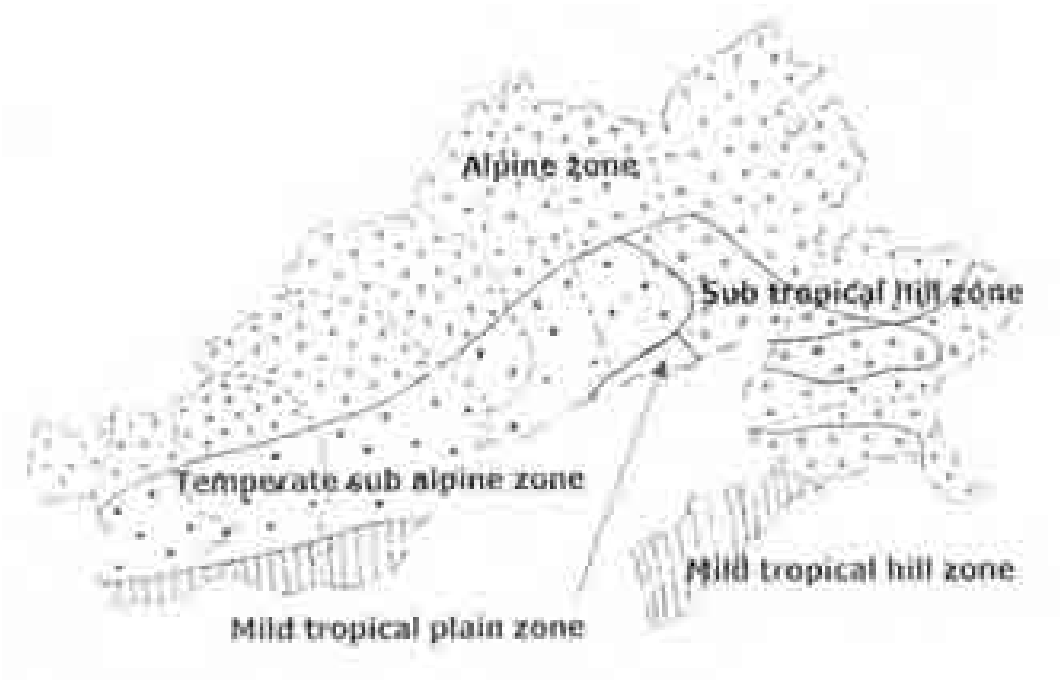
1. By truck
2. By walking/cycle
3. By auto rickshaw
4. By bus

d Available/commonly used conveyance facilities (roads/waterways) to market:

1. Roads
2. Waterways

e Agro-climate Zones in the district

1. Sub tropical hill zone



Agro-climatic zone map of Arunachal Pradesh

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3. Agricultural Situation in Papum Pare

Papum Pare is one of the major districts in Arunachal Pradesh situated at an altitude of 459-1250 MSL covering a geographical area of 2875 sq. km. The district has plentiful of natural resources but the mechanism of harnessing and logical utilization of resources for rural upliftment is not well defined. There is a need to formulate an area specific differentiated strategy taking into account the agronomic, climatic, socio economic practices as well as the resource worthiness of farmer. Special emphasis need to be given on introduction of the newly developed HYV seeds, improved planting material, adoption of new technology and mechanized farming.

The Agriculture Practiced though of traditional type, is the important means of sustaining livelihood of the tribal communities of the district. Shifting cultivation in the hill slope and low land cultivation on the foot hills are the two main agricultural practices prevalent in the area. Paddy is found to be dominant crop both under wet and dry land cultivation. Other commonly grown crops are Maize, Millets, Pulses, Oilseed, Sugarcane and Tuber crops in the district. The district is a natural home or centre of origin of many important horticulture crops. The wild relatives of citrus, bananas, mango, litchi and other lesser known fruits and numerous medicinal and aromatic plants, mushrooms and orchids are found growing luxuriantly in natural form in the forest of the districts.

The district harbors 65,139 and 84,451 numbers of livestock and poultry respectively, which accounts for 5.30 and 6.54 percent share of the state and the respective densities, is found to be 22.66 and 29.37 per sq. km. As compared to the other 16 districts of the state, Papum-Pare stands at eight position in respect to mithun population (11,070 numbers). The district produces as a whole 5.300 (000' MT) milk, 3.300 (millions nos.) egg and 1.642 (00' Tons) meat with per capita availability of 11.90 mg / day milk, 3.69 g / day meat and 0.074 no. egg / day

The district is bestowed with immense potentiality of resource in the shape of capture and culture fisheries resources. The main capture resources are in the form of rivers, streams, lakes, beels and derelict water bodies and culture potential resources are in the shape of ponds and tanks etc. Fisheries resources are renewable but nevertheless they are subject to over exploitation, consequently the percentage of catch from fluvial stream has declined considerably. Therefore, there is a need of intervention programme for sustainable development of fisheries.

1. **PAPUM-PARE DISTRICT AT A GLANCE**

(a)	Name of the district	:	Papum-Pare
(b)	Head Quarter of the district	:	Yupia
(c)	Number of sub-division (s)	:	2 (two)
(d)	Name of the sub-divisions	:	1) Yupia Capital complex sub-division 2) Sagalee sub-division
(e)	Nos. of C.D block	:	4 (four)
(f)	Total circle	:	11 (eleven)
(g)	Total village	:	268

2	Position in relation to longitude and latitude	:	Long:92.40°-94.21°E Lat:26.55°N-28.40°N
3	Altitude from MSL	:	459-1250 MSL
4	Boundaries of your district	:	East: Lower Subansiri, West: East Kameng North: Kurung Kumey South: Assam NE: Upper Subansiri SE: Assam SW: East Kameng NW: East Kameng
5	Total population	:	1,22,003
6	Area of the district	:	2,875 Sq Km
7	Population density	:	42 Sq. km
8	Literacy percentage	:	Male :70.30%, Female:61.72%
9	Status of agriculture	:	Rainfed
10	**Farmers**		
	a. Big farmers	:	107 holdings nos
	b. Small farmers	:	991 Holdings
	c. Agricultural labourers	:	589 Holdings
	d. Agricultural labourers	:	24,038 nos.
11	**Farm labour mobility**		
	a. Is sufficient farm labour available	:	No
	b. If 'No' from which place do they come from?	:	Assam
	c. If YES, whether they do work in near by or other district also?	:	NA

12 Physiography

a. Highlands : 3923 ha

b. Midlands : 6693 ha

c. Lowlands : 4330 ha

d. Hilly tract : 1750 ha

e. General nature of the terrain :

High lands: Slightly to moderately dissected, having slightly to moderate erosion hazard on very steep side slopes, under dense forest and shifting cultivation..

Low Lands: Foot hills to slightly mid-hills, sub tropical evergreen forest, having slight erosion hazard, under paddy cultivation.

Mid Lands: Gently slopping terraced valley, having slight erosion hazard, under shifting cultivation and TRC.

Hilly Tract: Slightly to moderate dissected, having moderate erosion hazard, on steep side slopes, under dense forest.

13 Climates

a Sub-tropical/ Sub-temperate/ Sub-humid

b Pattern of rain fall in different months : Medium

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low	Med	Low	Med	Med	High	High	Med	Low	Med	Low	low

c Special weather phenomenon in the district :

During the year 2009-10 Papum Pare witnessed delay in monsoon especially in the month of June-July(heaviest rainfall month). Due to late monsoon, district recorded a less area under wet Rice cultivation, however in the month of Aug-Sept district received a optimum lebel of rainfall. Transplanting of Paddy was under taken by the some farmers of the district after June-July. Thus, observed late transplanting of Kharif Paddy, the transplanted paddy are performing well till date.

d Maximum and minimum temperatures recorded : Max: 36.08°c
Min:6.60°c

e Critical periods for plant growth in the district

Sl.no	Crop	Critical period of growth	Coinciding calendar months(s)
1	Paddy	15-60 DAS	July – Aug
2	Maize	15-45 DAS	April – May
3	Orange	Flowering, Fruit set, fruit development	April-June

14 Soils:

a	Soil group classifications	:	
b	Acid soils	:	3,43,000 ha (SREP)
c	Soil fertility status (in general), high/medium/low	:	Medium

15 Irrigation

a	Area under irrigation	:	4783.88 ha
b	Irrigation potential	:	13274.80 ha
c	Source of irrigation	:	Rain fed/ perennial streams
	a. Rivers	:	3 nos
	b. Tanks	:	0 nos
	c. open wells	:	0 nos
	d. Bore wells	:	0 nos
	e. any other source	:	Perennial source, rainfall

16 Land use and cropping intensity:

a	Gross cropped area	:	30944 ha
b	Net area sown	:	15970 ha
c	Fallow lands	:	277790 ha
d	Cultivable waste lands	:	4216 ha
e	Forest cover	:	1458.389 Sq. km
f	Barren lands	:	2164 ha
g	Cropping intensity	:	193.7 %

17 Major crops:

1 Principal crops, area, production and productivity:

Sl.no.	Principal crops	Area (in ha)	Production (in tones) (1ton=1000Kg)	Productivity (Kg/ha)
1.	Rice	9025.00	21521.00	2384.00
2.	Maize	2000.00	3700.00	1850.00
3.	Potato	200.00	1820.00	9100.00
4.	Ginger	85.00	610.00	7176.00
5.	Chilly	50.00	72.00	1440.00
6.	Vegetables	215.00	450.00	2000.00
7.	Citrus	477.00	93.00	200.00

2 Crop rotation followed :
1. Maize-Paddy- Mustard
2. Paddy -Potato- Ginger
3. Mustard – Maize-Chili-Paddy

3 Crop sequence followed :
1. Paddy-Mustard (double)
2. Maize-Paddy-Winter vegetables (triple)

4	Inter –cropping done, if any	:	1. Growing of rice with maize or maize with soyabean is followed but does not maintain definite row arrangement.
5	Mixed cropping done, if any	:	1. Paddy + Maize + Pumpkins + Chilies 2. Maize + Soyabean + Chili 3. Mustard + Beans
6	Cash crops grown, if any	:	1. Sugarcane 2. Vegetables (cabbage, mustard) 3. Pineapple

18 Socio-economic Characteristics, Land Holding Pattern:

1	Average size & land holdings	:	3.07 ha
2	Average fragmentation intensity	:	1. Marginal-0.69 ha, 2. Small-1.33 ha, 3. Semi medium-2.76 4. Medium-5.02 ha, 5. Large-15 ha.
3	Existing land tenure system(s)	:	NA
4	Source (s) of finance for farming	:	Rank 1: Self finance Rank 2: Govt. scheme Rank 3: Bank
5	Main source of income for farmers	:	Rank 1: Horticulture Rank 2:Agriculture Rank 3:Animal Husbandry
6	Commercial commodities product	:	Rank1: Seasonal Vegetables Rank2: Paddy Rank3:Orange

19 Farm machinery and implementations available in the district:

1	Tractors	:	10 nos
2	Power tillers	:	15 nos
3	Carts	:	NA
4	Types of implements-	:	
	a. Discs		2 nos
	b. Harrows		2 nos
5	Pumps (oil and electrical)	:	20 and 0 nos
6	Harvesters and threshers	:	0 and 3 nos
7	Sprayers and dusters	:	2 and 0 nos

20 Livestock

1	Cattle	:	41113 nos
2	Buffaloes	:	NA
3	Sheep and Goats	:	NA and 26548 nos

4	Pigs	:	24343 nos
5	Poultry and Ducks	:	86157 and 2628 nos
6	Production of Milk	:	53000 ltr
7	Production of meat	:	1.642 ton
8	Production of eggs	:	3.300 million nos
9	Production of wool	:	NA

21 Livestock holding patterns

a Livestock holding pattern for big farmers

Sl. No.	Animal/ bird	Average nos. possessed	Rank according to nos possessed
1	Cattle	30	3
2	Poultry	80	1
3	Goat	25	3
4	Mithun	35	2

b Livestock holding pattern for small farmers

Sl. No.	Animal/ birds	Average nos possessed	Rank according to nos possessed
1	Cattle	4	5
2	Pigs	20	2
3	Poultry	30	1
4	Goat	10	3
5	Mithun	8	4

c Livestock holding pattern for marginal farmers

Sl. No.	Animal/ birds	Average nos possessed	Rank according to nos possessed
1	Cattle	4	4
2	Pigs	10	2
3	Poultry	15	1
4	Goat	5	3
5	Mithun	2	5

d. Animal/ birds holding pattern for agricultural labourers

Sl. No.	Animal/ birds	Average nos possessed	Rank according to nos possessed
1	Pigs	4	2
2	Poultry	5	1

e. Average yields of various animal and birds in the district

Sl. No	Animal/ birds	Average yield (specify units)
1	Cattle (milk production) indigenous	0.0.5 to 0.75 ltr / day
2	Cattle cross breed (milk production)	6.1 ltr / day

22 Research resources:

1	Number of research station	2 nos
2	Number of ICAR institutes/ substations	0 nos
3	Number of state seed farms	1 nos
4	Number of private seed farms	4 nos

23 Agricultural Marketing status and Constraints:

a Ways of disposal old farm produce and bye-products

Sl. No	Major Farm produce	Marketing channel	Bye-product(if any)
1	Vegetables	Local market	-
2	Paddy	-do-	Straw
3	Ginger and chillies	-do-	Pickles
4	Orange	Middle man./ local market	-
5	Pineapple	-do-	-

b. Whole sale and retail markets in the district:

a. Wholesale markets : 1. Gohpur 2. Ganga

b. retail markets : 1. Chandra Nagar 2. Kimin 3. Balijan

c. Major models of transport to market: Vehicle

a. private vehicles or Hired.

b. Govt. transport Bus.

c. By foot

d. Available / commonly used conveyance facility (road/ water ways) to market:

a. Bus (APST/ Pvt).

b. Hired mini truck

c. Private daily sumo Service

24 Agro-climatic Zones in the District:

a. Mengio: high hill semi temperate zone (1250msl)

b. Sagalee/ Leporiang: High to mid hills, sub-tropical to temperate zone (1150 msl)

c. Sagalee / Toru: Mid hills, sub-tropical zone (1079 msl)

d. Kimin: Mid hills, vastly sub-tropical and tropical zone with micro area of temperate zone (462 msl)

e. Balijan/ Doimukh / Kimin/ Itanagar: Foot hills to mid-hills are, sub-tropical to tropical zones (459-800msl)

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4. Agricultural Situation in Tirap

The entire Tirap district falls under Perhumid Hyperthermic Foothills Agro-climatic sub region. The topography is dominantly a hilly terrain and intercepted by 5 rivers namely, Tirap, Tissa, Tissing, Dirok and Chatjo. The district is characterized with wide range of elevation and climatic variation. The foot hill areas adjoining to Assam plains is having sub-tropical climate with high temperature and humidity. However, at higher elevation near temperate climate is also experienced .Representative soils of this zone are – Alluvial, Red loamy, Red sandy and hill soil.

The district has 167 villages under 6 community Development blocks. It has a rural population of 85,032 person (84.7 %) against 15,294 urban population (15.3 %). The population density is 42 persons per sq km and comprised of 9.91 % of total state population. The indigenous tribe of the district are Nocte, Wancho and Tutsa.

Agriculture in Tirap district is mainly rainfed. The net sown area is 13002 ha and cropping intensity is only 102.1 % . Major crops of the district are Millets, Rice, Maize, Tapioca, Colocasia, Potato, Radish, Beans, Leafy vegetables, Cucurbits, Tea, Betel-vine, Arecanut, Ginger, Turmeric, Citrus, Pineapple, Pears etc. Most of the field crops and vegetables are grown as mixed crop on the hill slopes.Shifting cultivation with slash and burn method is largely practiced on the hill slopes. Millets and Maize with Tapioca, Colocasia, Vegetables etc are sown in the 1st year *jhum* plot. In the 2nd year upland paddy is sown with few vegetable crop in the same plot. Then it is abandoned for 2-4 years. Scientific method of hill agriculture is yet to be followed by the farmers. Plain medium to low land is very limited and scattered. In these pockets transplanted rice (WRC) is cultivated

Betel vine, Ginger and Tea are the major cash crops. Betel vine is grown along with the timber plants. On the other hand medium to low altitude hill slopes are utilized for Tea plantation. Fruit crops mainly citrus and pineapple are at homestead level. However, in few pockets commercial cultivation is also initiated. Animal husbandry involving cattle, pig, goat and birds is a common enterprise of every house hold. It is mainly for domestic purpose and local sale.

Fish farming is followed by a few farmers as per availability of land. Besides agricultural activities people depend on minor forest products and fishing in the natural streams for their livelihood.

1. Boundaries of the district :

East: Changlang Dist.	West: Sivasagar Dist. of Assam & Mon Dist of Nagaland
North: Dibrugarh Dist. of Assam	South: Myanmar
NE: Changlang district	NW: Dibrugarh District of Assam
SE: Myanmar	SW: Mou District of Nagaland

2.	Total Population	:	1,00,326 person
3.	Area of the district	:	2362 sq km
4.	Population density	:	42 person / sq km
5.	Literacy percentage	:	42.01 %
6.	Status of agriculture	:	Rainfed , Shifting

7. Farmers

a.	Big farmers	:	67 (nos.)
b.	Small farmers	:	2276 (nos.)
c.	Marginal farmers	:	4299 (nos.)
d.	Agricultural labourers	:	NA

8. Farm labour mobility

a. Is sufficient farm labour available in the district : YES

b. If 'NO' from which places do they come from?

c. If 'YES' whether they do work in near by or other districts also? NO

9. Physiography

Tirap district is dominantly a hilly terrain excepting a few foothill areas adjoining Assam plains. The typical topography is characterized by lofty hill ridges and deep valleys. The hill ridges are situated haphazardly. As soon as one ridge ends, the other takes over and runs either in parallel or in opposite directions. At thee intervals, either narrow or wide valleys come into existence. So, the surface land is noticed mutilated and variegated.

10. Climates

a. Perhumid/Hypothermic

11. Pattern of rainfall in different months (Provide as high, medium or low)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low	Low	Medium	Medium	Medium	High	High	High	Medium	Medium	Low	Low

12. Special weather phenomenon in the district:

Day temperature shoots up to > 33° C during July- August with high humidity. Heavy to very heavy rain also occurs from June onwards. Frequent heavy rainfall delays land preparation for kharif crops. Again, occasionally moderate to heavy rainfall is also experienced during Jan- Feb which cause damages to rapeseed/ mustard, other rabi pulse at the maturity stage. Occasional overcast weather during Nov- Feb. favour fungal attack in potato, tomato etc.

13. Maximum and minimum temperatures recorded: Max:28° C Min: 10 ° C

14. Critical periods for plant growth in the district

Sl. No	Crop	Critical periods of growth	Coinciding calendar months(s)
1	Direct seeded upland paddy	Seedling stage	Apr - May
		Tillering stage	Jun
		Vegetative lag phase, Panicle initiation stage, Internode elongation and booting stage, Heading stage, Flowering stage	July - Aug
		Ripening stage	Sept - Oct
2	Transplanted paddy	Seedling stage	Jun - July
		Transplanting stage, Tillering stage	July - Aug
		Vegetative lag phase, Panicle initiation stage, Internode elongation and booting stage, Heading stage, Flowering stage	Sept - Oct
		Ripening stage	Nov - Dec
3	Maize	Seedling stage	Feb
		Grand growth stage	Mar
		Tasseling stage, Silking stage,	Apr
		Soft dough stage	May - Jun
		Hard dough stage	Jun - July
4	Rapeseed/ Mustard	Seedling stage	Oct - Nov
		Vegetative growth stage	Nov
		Flowering stage	Dec
		Siliqua formation & grain filling stage	Dec - Jan
		Maturity stage	Jan - Feb

15. Soils

a. Soil group classifications present in the district

1. Fluventic
2. Umbric
3. Typic Dystrochrepts
4. Typic Haplumbrepts
5. Typic Kandihumults
6. Typic Udorthents
7. Cumulic Haplumbrepts
8. Dystro Eutrochrepts

b. Soil types

a.	Black soils	:	Not Present
b.	Red soils	:	Present (Data not available)
c.	Alluvial soils	:	Present (Data not available)
d.	Sandy soils	:	Present (Data not available)
e.	Laterite soils	:	Present (Data not available)
f.	Alkaline soils	:	Present (Data not available)
g.	Acid soils	:	Present (Data not available)
h.	Soil fertility status (in general)	:	Medium

16. Irrigation

a.	Area under irrigation	:	406 ha
b.	Irrigation potential	:	2491 ha (Command area under minor irrigation)
c.	Source of irrigation		
1.	Rivers	:	Nil
2.	Tanks	:	Nil
3.	Open wells	:	Nil
4.	Bore wells	:	Nil

17. Land use and Cropping intensity

a.	Gross cropped area	:	13278 ha
b.	Net Area sown	:	13002 ha
c.	Fallow lands	:	16710 ha
d.	Cultivable waste lands	:	Data Not Available
e.	Forest cover	:	Data Not Available
f.	Barren lands	:	Data Not Available
g.	Cropping intensity	:	102.1

18. Major Crops

a. Principal crops, area, production and productivity

Sl.No	Principal Crops	Area (in ha)	Production in tones (1 ton=1000kg)	Productivity (kg/ha)
1	Paddy	5615	3862	687.8
2	Maize	2750	3320	1207.3
3	Millet	4785	3635	759.7
4	Wheat	16	27	1687.5
5	Rajma	45	45	1000.0
6	Arhar	30	302	10066.7
7	Local pulses	150	145	966.7
8	Pea	145	138	951.7
9	Potato	55	330	6000.0
10	Ginger	122	534	4377.0
11	Chilli	125	155	1240.0
12	Mustard	55	42	763.6
13	Sesamum	200	204	1020.0
14	Soyabean	545	530	972.5
15	Vegetables	2575	9030	3506.8
16	Sweet potato	105	605	5761.9
17	Tapioca	725	3730	5144.8
18	Colocasia	840	3157	3758.3
19	Orange	165	200	1200
20	Banana	90	300	3300
21	Pear	10	56	5600
22	Peach	3.64	11	3022
23	Pineapple	40.61	108	2659
24	Guava	13.93	38	2728
25	Others	-	11	-

19 Crop rotation followed:

Mixed crops (Millets + Maize + Tapioca + Colocasia + Vegetables) under Jhum in 1st year followed by direct seeded upland paddy in 2nd year. The same cycle is repeated after 4-6 years

20 Crop sequences followed

1. Transplanted rice – summer vegetables
2. Maize – Rabi vegetables/ Mustard

21 Inter-cropping done, if any : 1. Areca nut+ betel vine

22	Mixed cropping done, if any	:	1. Millets + Maize + Tapioca + Colocasia + Vegetables (Beans , Cucurbits, Ginger, Turmeric, Chilli, Leafy vegetables
		:	2 Upland paddy +Tapioca + Colocasia + Vegetables
		:	3. Raddish + leafy vegetables + Beans+ Cucurbits + Pea
23.	Catch crops grown, if any	:	1. Ginger
		:	2. Potato
		:	3. Chilli
		:	4. Orange
		:	5. Betel vine

24. Socio-economic Characteristics, Land Holding Pattern

a.	Average size of land holdings	:	1- 2.5 ha (under homestead & settled cultivation)
b.	Average fragmentation intensity	:	5-8 nos
c.	Existing land tenure systems(s)	:	Individual / Community holding pattern
d.	Source (s) of finance for farming	:	Rank 1. Own capital Rank 2. Govt. scheme (Free / subsidized inputs,) Rank 3 Agril. credit
e.	Main source of income for farmers	:	Rank 1.Selling of agril. produce (mainly betel leaf, ginger, chilli, citrus , pineapple, vegetables,), poultry bird, pig and fish Rank 2 Selling of minor forest products (Bamboo and bamboo shoot, broom, palm leaf, wild food stuff) Rank 3 Contract work
f.	Commercial commodities produced	:	Rank 1 Betel leaf
		:	Rank 2. Fruits (Orange, pineapple)
		:	Rank 3 spices (ginger, cardamom)

25. Farm Machinery and Implements available in the district

a.	Number of tractors	:	2 nos
b.	Number of power tillers	:	22 nos
c.	Number of carts	:	NA
d.	Types of implements:-		

	Ploughs	:	NA
	Cultivators	:	NA
	Discs	:	NA
	Harrows	:	NA
	Others (Puddler)	:	10 nos
e.	Pumps (Oil and electrical)	:	71 nos
f.	Harvesters and Threshers	:	22 nos
g.	Sprayers and Dusters	:	670 nos

26. Livestock

a.	Cattle	:	11,784 nos
b.	Buffaloes	:	584 nos
c.	Sheep and goats	:	16,326 nos
d.	Pigs	:	22,338 nos
e.	Poultry and ducks	:	99,177nos
f.	Production of milk	:	12,415.5 ltr
g.	Production of meat	:	70.046 ton
h.	Production of eggs	:	N.A
i.	Production of wool	:	N.A

27. Livestock holding patterns

a. Livestock holding pattern for big farmers :(Data Not Available)

b. Livestock holding pattern for small farmers

Sl.No	Animal/bird	Average nos possessed	Rank according to nos possessed
1	Cattle	2	III
2	Buffaloes	1	IV
3	Sheep and Goat	2	III
4	Pig	3	II
5	Poultry and ducks	5	I

c. Livestock holding pattern for marginal farmers: (Data Not Available)

d. Livestock holding pattern for agricultural labourers : (Data Not Available)

e. Average yields of various animals and bird in the district

Sl.No	Animal/bird	Average yield (Specify Units)
1	Cattle meat	16.130 tons
2	Buffalo meat	22.722 tons
3	Goat meat	6.898 tons
4	Pig meat	24.296 tons

28. Research Resources

1	Number of research stations	:	1 (KVK)
2	Number of ICAR institutes/substations	:	Nil
3	Number of states seed farms	:	Nil
4	Number of privates seed farms	:	Nil

29. Agricultural Marketing Status and Constraints

a. Ways of disposal of farm produce and bye-products

Sl. No	Major Farm produce	Marketing channel	Bye product (if any)	Marketing channel
1	Vegetables (leafy vegetables, radish, Cucurbits etc)	Retail sale in local market	Nil	-
2	Fruits (Orange, Pineapple	Retail as well as wholesale in local market	Nil	-
3	Spices (Ginger, Turmeric, Cardamom, Chilli)	Retail as well as wholesale in local market	Nil	-
4	Betel leaf	Retail as well as wholesale in local market	Nil	-
5	Poultry birds / pig	Retail as well as wholesale in local market	Nil	-

b. Whole sale and retail markets in the district

a. Wholesale markets : Nil

b. Retail markets : 1. Deomali
2. Khonsa
3. Longding
4. Kanubari
5. Ranglua

c. Major modes of transport to market

1. By bus (Govt. and private)
2. On foot through hilly track upto road point / market
3. Own vehicle

d. Available/commonly used conveyance facilities (roads/waterways) to market:

1. Road
2. Hilly tracks

30. Agro-climatic Zones

1. Perhumid Hyperthermic Foothills

5. Agricultural Situation in West Kameng

West Kameng district is situated in the western part of Arunachal Pradesh bordering Bhutan to its west. The altitude of the District ranges from 213m MSL at Bhalukpung to 7090m MSL at Kangte. The district comprises an area of 7422sq km and has a population of 74599 no. with meager population density (10 persons per sq km). The sex ratio of district is 753/1000 with 42542 nos. of male and 32057 nos. of female population. 91% population of the district lives in rural areas. The inhabitants of the district belong to Tibeto-Mongoloid stock which mostly comprises of six major tribes namely- *Monpas, Mijis, Akas, Sherdukpens, Thangras and Khawas* (Bugun).

The economy of the district is primarily dependant on agriculture and horticulture. Domestic animal and fishery also play an important role in household income of the family. Among the tribes the Monpas prefer selected cultivation and Akas, Mijis and Khawas practice shifting or jhum cultivation. Maize, Rice, Finger Millets, Wheat are the major cereal crops and Soyabean, Rajmah are the major pulse crops of the district. Among the horticultural crops Apple, Kiwi, Pears, Peach, Orange and Walnut are distinctly cultivated in the district. Potato, Cabbage, Tomato, Pea, Chilli are the principal vegetables of the West Kameng District.

West Kameng district is also bestowed with Cattle, Yak, Mithun, Sheep, Goat, Pig and poultry although commercial livestock farming is rare. The high altitude areas of the district are suitable for trout farming. This District is prone to soil erosion due to steepness and higher rainfall with erosive intensity.

1. Position in relation to longitude and latitude : 91' 30" E to 92' 40" E longitude and 26' 54" N to 28' 10" N latitude
2. Altitude from MSL : 213 to 7090 m MSL
3. Boundaries of the district:

E: East Kameng district	W: Bhutan
N: Tibet Region of China	S: Assam
NE: East Kameng	SE: East Kameng & Assam
SW: Bhutan & Assam	NW: Tawang

4. Total population : 74599
5. Area of the district : 7422 sq km
6. Population density : 10
7. Literacy percentage : 61.67%
8. Status of agriculture : Rainfed + irrigated + Shifting

9. Farmers

a. Big farmers : 155 nos.
b. Small farmers : 4035 nos.
c. Marginal farmers : 3755 nos.
d. Agricultural labourers : 1515 nos.

10. Farm labour mobility

a. Is sufficient farm labour available in the district: YES
b. If 'YES' whether they do work in near by or other districts also? NO

11 Physiography

1. Highlands : Nil
2. Midlands : Nil
3. Lowlands : Nil
4. Hilly tract : 742200 ha
5. General nature of the terrain

The entire West Kameng District is steep hilly terrain of mountain eco-system. The land of the District is subjected to heavy soil erosion and degradation resulting from deforestation, faulty cultivation and rainfall of higher intensity & duration. Depth of cultivable soil layer is very thin with poor binding quality.

12. Climates

1. Sub-tropical/ Temperate/ humid
2. Pattern of rainfall in different months (Provide as high, medium or low)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low	Low	Medium	Medium	Medium	High	High	High	High	Medium	Medium	Low

3. Maximum and minimum temperatures recorded: Max: 24^0 C Min: -0.5^0 C (Bomdila DHQ)
4. Critical periods for plant growth in the district

Sl. No	Crop	Critical periods of growth	Coinciding calendar month(s)
1.	Maize	Tasselling and silking	July
2.	Paddy	Early tillering and flowering	July-August
3.	Soybean	Pre-flowering and pod development	July
4.	Potato	Sprouting and tuberization	April-May
5.	Cabbage	Head Development	December
6.	Apple	After fruit set	April to August
7.	Kiwi	Fruit development	September and October
8.	Orange	Flowering, fruit set and fruit development	October-December
9.	Walnut	After flowering	May

13. Soils

1. Sandy-loamy
2. Black soils : Not Present
3. Red soils : Data not Available
4. Alluvial soils : Not Present
5. Sandy soils : Data not Available
6. Laterite soils : Not Present
7. Saline and alkaline soils : Not Present
8. Acid soils : Present (742200ha)

14. Irrigation

1. Area under irrigation : 631 ha
2. Irrigation potential : 572 ha
3. Source of irrigation

15. Land use and Cropping intensity

1. Gross cropped area : NA ha
2. Net Area sown : 9312 ha
3. Fallow lands : 4278 ha
4. Cultivable waste lands : 2190 ha
5. Forest cover : 609800 ha
6. Barren lands : 314 ha
7. Cropping intensity : 125

16. Major Crops

a. Principal crops, area, production and productivity:

Sl. No	Principal Crops	Area (in ha)	Production (in tones) (1ton=1000kg)	Productivity (kg/ha)
1.	Maize	2832	4377	1546
2.	Paddy	860	760	883
3.	Millets	977	948	970
4.	Pulses	342	312	-
5.	Tomato	341	2899	8501
6.	Oilseeds	163	173	-
7.	Potato	341	2899	8501
8.	Chili	43	146	3395
9.	Apple	1400	150	107
10.	Walnut	480	40	83
11.	Pears	45	49	1088
12.	Plum	40	15	375
13.	Pomegranate	30	32	1067
14.	Kiwi	390	140	359
15.	Orange	200	135	675

b. Crop rotations followed : 1. Potato-Maize-Barley
2. Chilli-Spinach-Maize
3. Tomato-Cabbage-Bhindi

c. Crop sequences followed : 1. Maize-Soybean
2. Cabbage-Cauliflower
3. Beans-Cucurbits-Bhindi

d. Inter-cropping done, if any : 1. Maize-Soyabean
2. Maize-Rajmah

e. Mixed cropping done, if any : 1. Maize-Soyabean-Cucurbits
2. Maize-Rajmah-Cucurbits

f. Catch crops grown, if any : 1. Buck-wheat
2. Radish
3. Onion

17. Socio-economic Characteristics, Land Holding Pattern

a. Average size of land holdings : Less then one ha

b. Average fragmentation intensity : NA

c. Existing land tenure system(s) : 1. Personal land
2. Community land
3. Lease system

d.	Source(s) of finance for farming	:	Rank 1. SBI
e.	Main source of income for farmers	:	Rank 1. Horticulture
			Rank 2. Agriculture
			Rank 3. Animal Husbandry
f.	Commercial commodities produced	:	Rank 1. Apple
			Rank 2. Kiwi
			Rank 3. Walnut
			Rank 4. Tomato
			Rank 5. Potato

18. Farm Machinery and Implements available in the district

a.	Number of tractors	:	06	nos.
b.	Number of power tillers	:	05	nos.
c.	Number of carts	:	Nil	
d.	Types of implements-Ploughs	:	500	nos.
	Cultivators	:	NA	
	Discs	:	NA	
	Harrows	:	NA	
	Others	:	NA	
e.	Pumps (Oil and electrical)	:	NA & 10	nos.
f.	Harvesters and Threshers	:	NA & NA	nos.
g.	Sprayers and Dusters	:	10 & 50	nos.

19. Livestock

a.	Cattle	:	30559 nos. (including Yak, Mithun and their hybrids with cattle)
b.	Buffaloes	:	Nil
c.	Sheep and goats	:	9676 & 18860 nos.
d.	Pigs	:	5528 nos.
e.	Poultry and ducks	:	42295 nos. (including duck)

20. Research Resources

a.	Number of research stations	:	1 no.
b.	Number of ICAR institutes/substations	:	1 no.
c.	Number of state seed farms	:	Nil
d.	Number of private seed farms	:	Nil

21. Agricultural Marketing Status and Constraints

a. Ways of disposal of farm produce and bye-products

Sl. No	Major Farm produce	Marketing channel	Bye product (if any)	Marketing channel
1.	Apple	A.P.M.C. (Bomdila)	Nil	NA
2.	Kiwi	A.P.M.C. (Bomdila)	Nil	NA
3.	Tomato	A.P.M.C. (Bomdila)	Nil	NA
4.	Potato	A.P.M.C. (Bomdila)	Nil	NA
5.	Orange	A.P.M.C. (Bomdila)	Nil	NA

b. Whole sale and retail markets in the district

a. Wholesale markets : 1. Bomdila

b. Retail markets : 1. Bomdila, 2. Singchung, 3. Rupa, 4. Nafra, 5. Kalaktang, 6. Dirang

c. Major modes of transport to market:

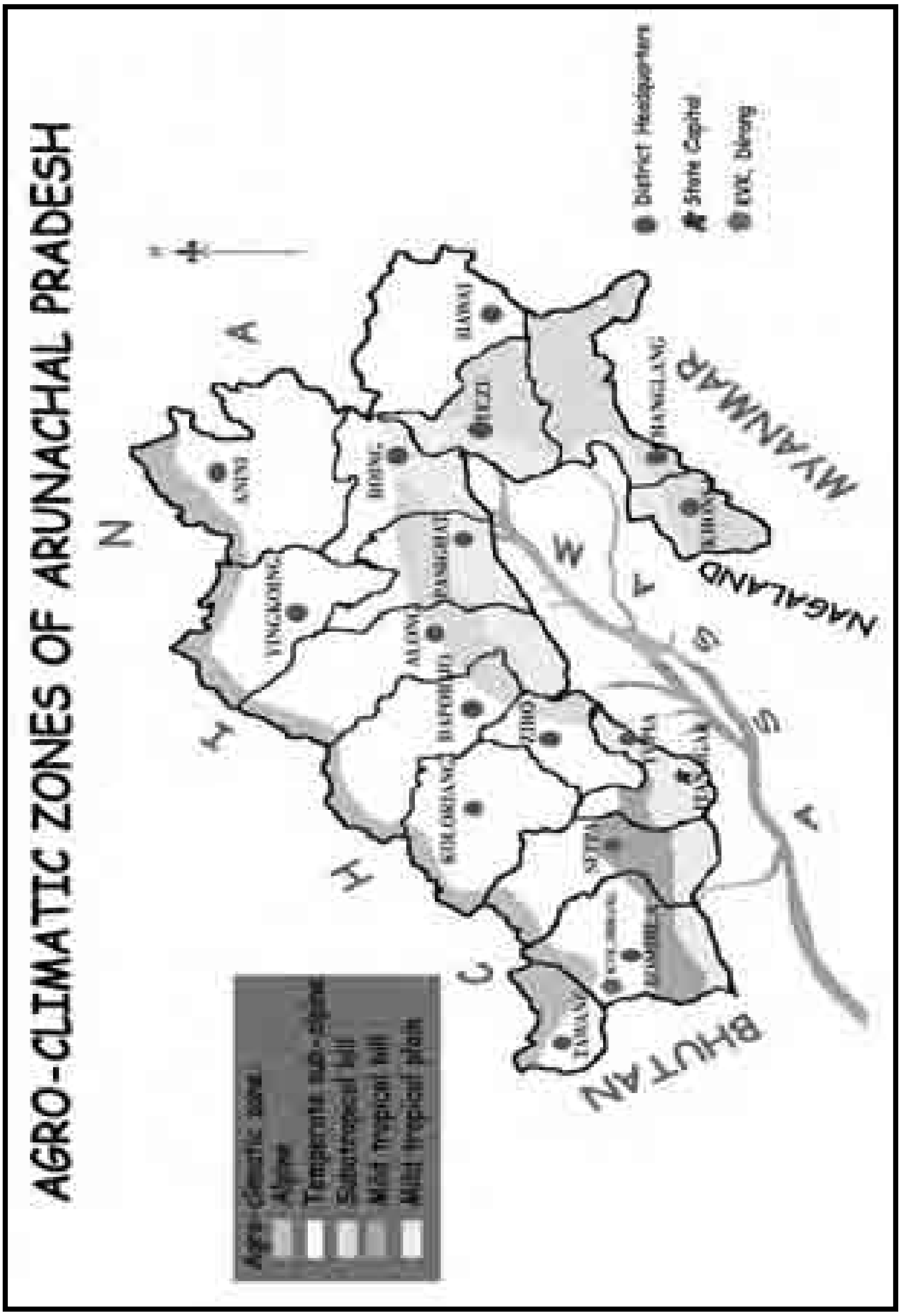
1. Road

d. Available/commonly used conveyance facilities (roads/waterways) to market :

1. Mobile Van
2. Truck

22. Agro-climatic Zones in the district.

1. Alpine
2. Temperate-sub alpine
3. Mild tropical hill
4. Mild tropical plain


AGRO-CLIMATIC ZONES OF ARUNACHAL PRADESH
MYANMAR
NAGALAND
BHUTAN
District Headquarters
State Capital

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6. Agricultural Situation in West Siang

West Siang of Arunachal Pradesh is a centrally located district that lies between 57° and 93° East longitude and 20° and 27° North latitude .The geographically area is of 8325 sq.km and population as per 2001 census is 103918.The dist. has 6(Six) subdivisions,21(twenty one) circles,11(eleven) C.D Blocks and 399 villages in the district. The altitude ranges from 100m in foothills of likhabali block to 2000 m in Mechuka and Monigong Blocks. The density of population is 13 persons per sq .km. The topography and climatic factors of the dist. Varies from place to place and season to season. In all, the district has approximately 5900 hectares irrigated area. The cropping intensity of the district is 122.About 75 percent of the total population in the district .depends on agriculture. The cropping pattern are mostly WRC,rainfed and jhuming .The cultivators mostly practice monocropping,with double & mixed cropping in few pockets .The soil in district is acidic in nature.

1. Position in relation to longitude & Latitude: 57° N and 93 E, 20° N and 27°E

2. Altitude from MSL : 898 ft - 270m

3. Boundaries of the district :

E:	Part of E/Siang &U/Siang	W:	Upper Subansiri
N:	China	S:	Assam (Dhemaji District)
NE:	Upper Siang	SE:	East Siang
SW:	Lower Subansiri	NW:	Upper Subansiri

4. Total population : 103918 nos.

5. Area of the district : 8325 sq km

6. Population density : 13 person/ sq km

7. Literacy percentage : 60.31 %

8. Status of agriculture

1. Farmers
   - a. Big farmers : 695 Nos
   - b. Medium farmers : 3557
   - c. Small farmers : 4226
   - d. Marginal farmers : 556
   - e. Agricultural labourer : Nil
2. Farm labour mobility
   - a. Is sufficient farm labour available in the district : NO
   - b. If 'NO' from which places do they come from : Assam

9 Physiography

1	Highlands	:	557.00 ha
2	Midlands	:	269898.00ha
3	Lowlands	:	7980.00ha
4	Hilly tract	:	24140.00ha
5	General nature of the terrain	:	Mainly hilly in nature with altitude from mean sea level ranges from 100m in foothills of likababli to 2800 m in Mechukha and Monigong region .The topography is young and its soils do not show much diversity and are highly erosive in character.

10. Climates

a. Sub-tropical/ Temperate/ Humid

b. Pattern of rainfall in different months

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low	Low	Med	Med	High	High	High	High	High	High	Low	Low

c. Special weather phenomenon in the district :

The average rainfall of West siang district are 1362.25 mm in 2006-07.In west siang district there are some pockets which they have received maximum rainfall within the district . These areas are Basar (1876.10mm) and Likhabali(1764.7 mm) and the number of rainy days of these two blocks are such as 124 and 116 days respectively. Although studies have not been made in this context, it is observed to receive high precipitation than the rest. Often hailstorms occur during the months of May, June and July are responsible for crop damages. West Siang also experiences pre and post monsoon cyclones which can be accounted as special climatic phenomena which occur rarely in other districts of Arunachal Pradsh.

d. Maximum and minimum temperatures recorded: Max: 38°C Min: 6°C

e. Critical periods for plant growth in the district.

Sl. No	Crop	Critical periods of growth	Coinciding calendar month(s)
1.	Paddy	Germination, Tillering, knee-high stage, Grain filling	April, July, August, October
2.	Maize	Tillering- Grain filling	August-September
3.	Cowpea	Pre blooming- Pod formation	July-September
4.	Sesamum	Flowering- Pod formation	June-August
5.	Potato	Planting- Tuber formation	October- November to January – February
6.	Khasi mandarin	Flowering- Fruit maturity	March-November
7.	Banana	Planting- Shooting	July-June
8.	French Bean	Pre blooming - Pod formation	July-August
9.	Chinese mustard	First forty days	November- December
10.	Cabbage	Transplanting- Head Formation	November-January
11	Cauliflower	Transplanting- Curd Formation	November-January
12.	Tomato	Flowering- Fruiting maturity	December-January
13.	Brinjal	Flowering- Fruiting maturity	November-December
14.	Ginger	Rhizome elongation, pre flowering stage	May, October-November
15.	Turmeric	Rhizome elongation, pre flowering stage	May –October-November

16	Cardamom	Rhizome elongation, pre flowering stage	-

11. Soils

1. Soil group classifications present in the district
   1. Entisols
   2. Inceptisols
   3. Ultisols

2.	Black soils	:	Not Present
3.	Red soils	:	Not Present
4.	Alluvial soils	:	32159 ha
5.	Sandy soils	:	47706 ha
6.	Laterite soils	:	179606 ha
7.	Saline and alkaline soils	:	Not Present
8.	Acid soils	:	38146 ha
9.	Soil fertility status (in general)	:	High

12. Irrigation

1	Area under irrigation	:	5900 ha	
2	Irrigation potential	:	297 ha	
3	Source of irrigation			
	1. Rivers	:	N/A	
	2. Tanks	:	N/A	
	3. Open wells	:	N/A	
	4. Bore wells	:	N/A	
	5. Any other sources	:	Perennial streams	: 232
			Farm ponds	: 423 nos

13. Land use and Cropping intensity

1.	Gross cropped area	:	45171 ha
2.	Net Area sown	:	31486 ha
3.	Fallow lands	:	8209 ha
4.	Cultivable waste lands	:	5476 ha
5.	Forest cover	:	506669 ha
6.	Barren lands	:	553 ha
7.	Cropping intensity	:	122%

14. Major Crops

a. Principal crops, area, production and productivity

Sl no	Principal Crops	Area (in ha)	Production (In Tones) (1ton =1000kg)	Productivity (Qt/ha)
1	Paddy(Jhum&WRC)	24951	32902	13.20
2	Maize	3359	4384	14.9
3	Pulses (cow pea)	640	628	9.8
4	Oil Seeds (Soyabean/ sesamum)	1735	1726	9.9
5	Sugarcane	91	2607	286.5
6	Potato	294	1801	61.3
7	Ginger	347	1636	92.4
8	Chilly	154	238	15.5
9	Turmeric	54	218	40.4
10	Oranges	3565	16051	45.00
11	Cardamom	260	-	-
12	Vegetables	375	1629	55.2
13	Millet	2538	2166	8.5
14	Banana	53	194.96	3890.00

b. Crop rotations followed : Farmers mostly followed mono cropping.
Only some progressive farmers follow crop rotation
1. Rice - Potato
2. Rice – Winter vegetables (Cole crops)
3. Maize – Paddy

c. Crop sequences followed :
1. Paddy/ Potato
2. Potato/Cole crops
3. Paddy/Chilli/Brinjal

d. Inter-cropping done, if any :
A. Maize/Soyabean(Jhum)
: B. Paddy/ Soyabean
: C. Ginger/ Pigeon Pea/ Red Gram

e. Mixed cropping done, if any :
A. Paddy - Maize -Vegetables
: B. Maize –Millet-Cucumber
: C. Chilly- Brinjal- other vegetables

f. Catch crops grown, if any : N/A

15. Socio-economic Characteristics, Land Holding Pattern

1. Average size of land holdings : 2.0 ha
2 Average fragmentation intensity : 3.0 ha
3 Existing land tenure system(s) : N/A

4	Source(s) of finance for farming	:	Rank 1. Self
		:	Rank 2. Govt. subsidies
5	Main source of income for farmers	:	Farm produces
6	Commercial commodities produced	:	Subsistence farming like
			a) Horticultural Produce
			b) Livestock
			c) Fishery

16. **Farm Machinery and Implements available in the district**

1	Number of tractors	:	95 nos
2	Number of power tillers	:	82 nos
3	Number of carts	:	N/A
4	Types of implements-Ploughs	:	N/A
	Cultivators	:	8 nos
	Discs	:	15 nos
	Harrows	:	15 nos
	Others (trailers, rotovator)	:	5 nos
5	Pumps (Oil and electrical)	:	N/A
6	Harvesters and Threshers	:	42 Nos
7	Sprayers and Dusters	:	512 & NIL

17. Livestock

1	Cattle	:	17452 nos(Local),1,50,38(Upgraded)
2	Buffaloes	:	13 nos
3	Sheep and goats	:	N/A
4	Pigs	:	54826 nos
5	Poultry and ducks	:	139511 nos

18. Livestock holding patterns

a. Livestock holding pattern for big farmers

Sl. No	Animal/Bird	Average nos possessed	Rank according to nos possessed
1.	Cattle	NIL	_
2.	Buffalo	NIL	-
3.	Pig	21	1
4.	Poultry	19	2
5.	Goat	NIL	-

b. Livestock holding pattern for small farmers

Sl. No	Animal/Bird	Average nos possessed	Rank according to nos possessed
1.	Cattle	29	3
2.	Buffalo	N/A	5
3.	Pig	38	1
4.	Poultry	33	2
5.	Goat	8	4

c. Livestock holding pattern for marginal farmers

Sl. No	Animal/Bird	Average nos possessed	Rank according to nos possessed
1.	Cattle	0	-
2.	Buffalo	0	-
3.	Pig	9	1
4.	Poultry	32	2
5.	Goat	0	-

d. Livestock holding pattern for agricultural labourers

Sl. No	Animal/Bird	Average nos possessed	Rank according to nos possessed
1.	Cattle	0	-
2.	Buffalo	0	-
3.	Pig	1	2
4.	Poultry	25	1
5.	Goat	0	-

19. Research Resources

1. Number of research stations : 01
2. Number of ICAR institutes/substations : 01
3. Number of state seed farms : NIL
4. Number of private seed farms : NIL

20. Agricultural Marketing Status and Constraints

a. Ways of disposal of farm produce and bye-products

Sl.No	Major Farm produce	Marketing channel	Bye product(if any)	Marketing channel
1.	Rice	Within village	NIL	NIL
2.	Maize	Within village, Govt. deptt.	NIL	NIL

3.	Pulses	Within village	NIL	NIL
4.	Oilseeds	Within village	NIL	NIL
5	Orange	APMC	NIL	NIL
6	Pineapple	APMC	NIL	NIL
7	Vegetables	Local market	NIL	NIL
8	Ginger	APMC	NIL	NIL
9	Peer	APMC	NIL	NIL
10	Chilli	APMC/Private	NIL	NIL

b. Whole sale and retail markets in the district

a. Wholesale markets : NIL

b. Retail markets : Retailing is usually done by hawkers.

c. Major modes of transport to market:

1. Trucks
2. Tata Mobile

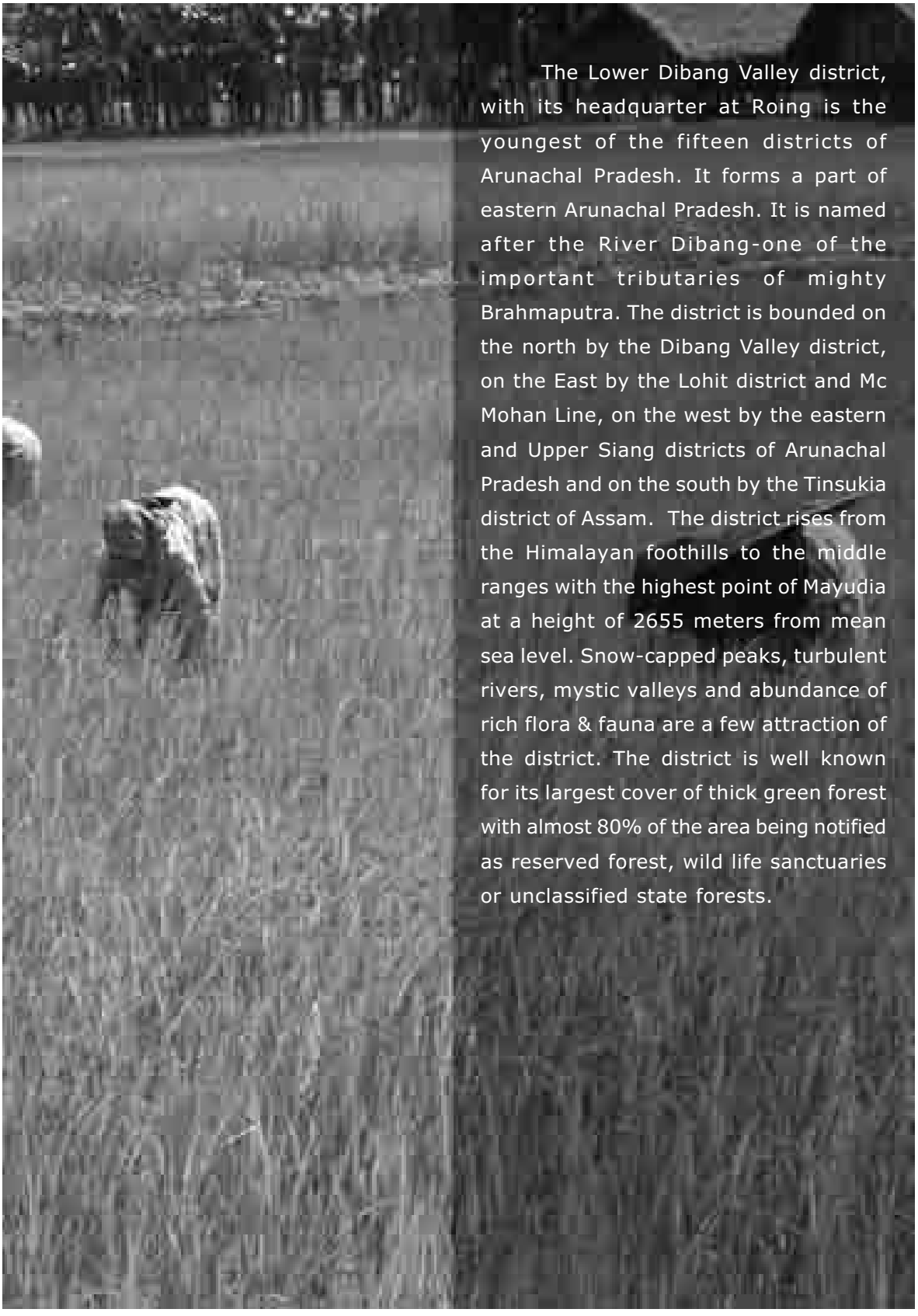
d. Available/commonly used conveyance facilities (roads/waterways) to market:

1. Road

21. Agro-climatic Zones

1. Sub tropical (Thermo Presumed mid hills and valley)
2. Alpine and high hill zone
3. Sub-tropical(chumis hyper themes foot hills)

7. Agricultural Situation in Lower Dibang Valley



The Lower Dibang Valley district, with its headquarter at Roing is the youngest of the fifteen districts of Arunachal Pradesh. It forms a part of eastern Arunachal Pradesh. It is named after the River Dibang-one of the important tributaries of mighty Brahmaputra. The district is bounded on the north by the Dibang Valley district, on the East by the Lohit district and Mc Mohan Line, on the west by the eastern and Upper Siang districts of Arunachal Pradesh and on the south by the Tinsukia district of Assam. The district rises from the Himalayan foothills to the middle ranges with the highest point of Mayudia at a height of 2655 meters from mean sea level. Snow-capped peaks, turbulent rivers, mystic valleys and abundance of rich flora & fauna are a few attraction of the district. The district is well known for its largest cover of thick green forest with almost 80% of the area being notified as reserved forest, wild life sanctuaries or unclassified state forests.

1. Position in relation to longitude and latitude :
   Latitude 27^0 ′30′ 'N' to 28^0 33', 'N', Longitude 95^0 ′15′ 'E' to 96^0 30′ 'E'.

2. Altitude from MSL : 390 mtr.

3. Boundaries of the district :

E:	Lohit	W:	East Siang	N:	Dibang Valley
S:	Assam	NE:	Dibang Valley	SE:	Assam & Lohit
SW:	Assam & East Siang	NW:	Dibang Valley & East Siang		

4. Total population : 50448 (census 2007)

5. Area of the district : 3900sq km

6. Population density : 13 (to be calculated based on total population and area of the district)

7. Literacy percentage : 60.34%

8. Status of agriculture : Rain fed & Shifting

9. Farmers :

a.	Big farmers	:	326(nos.)
b.	Small farmers	:	1964
c.	Marginal farmers	:	2929
d.	Agricultural labourers	:	1300

10. Farm labour mobility

a. Is sufficient farm labour available in the district: NO

b. If 'NO' from which places do they come from? Assam

11. Physiography

1	Highlands	:	156600 ha
2	Midlands	:	117000 ha
3	Lowlands	:	39000 ha
4	Hilly tract	:	78000 ha
5	General nature of the terrain	:	The topography of the district is mountainous. The northern part of the district falls within higher mountain zone consisting of tangle peak and valley. The foothills range lies in the southern part having plain hill with low altitudes. The area under Roing, Korunu, Dambuk and Paglam circles plain land, where the areas under Desali and Hunli circles are hilly terrain with rugged and steep slopes.

12. Climates

a. Humid Sub-tropical

b. Pattern of rainfall in different months (Provide as high, medium or low)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
L	L	L	L	H	H	H	M	L	L	L	L

b. Special weather phenomenon in the district:

During the year 2009 – 10 the district and the state as a whole received very little rainfall affecting normal agricultural operations. This adverse condition put farmers really under dilemma of relying upon which crop as an alternative to main crops. After realizing this problem, our center took initiation in development of weather based agricultural plan and educated farmers through organizing extension activities followed by distribution of critical inputs by the dept of agriculture.

c. Maximum and minimum temperatures recorded: Max: 32°C Min: 13°C

d. Critical periods for plant growth in the district

Sl. No	Crop	Critical periods of growth	Coinciding calendar month(s)
1.	WRC	Panicle initiation/grain filling	Sep - Oct
2.	Jhum paddy	- do -	June - July
3.	Maize	Tassling	June - July
4.	Mustard	Flowering	Nov - Dec
5.	Potato	Tuberization	December

13. Soils

a. Soil group classifications present

1. Sandy loam
2. Clay loam
3. Alluvial

b. Black soils : 1553.96 ha

c. Red soils : Data not Available

d. Alluvial soils : Data not Available

e. Sandy soils : 22019.04 ha

f. Laterite soils : Data not Available

g. Saline and alkaline soils : Data not Available

h. Acid soils : Data not Available

i. Soil fertility status (in general) : Medium

14. Irrigation

a. Area under irrigation : 2431 ha

b. Irrigation potential : 17764 ha

c. Source of irrigation

1.	Rivers	:	12 nos	
2.	Tanks	:	2 nos	
3.	Open wells	:	Nil	
4.	Bore wells	:	Nil	
5.	Any other sources	:	Irrigation channels	: 3 nos

15. Land use and Cropping intensity

a.	Gross cropped area	:	25024 ha
b.	Net Area sown	:	22408 ha
c.	Fallow lands	:	1166 ha
d.	Cultivable waste lands	:	1450 ha
e.	Forest cover	:	324436 ha
f.	Barren lands	:	7220 ha
g.	Cropping intensity	:	112%

16. Major Crops

a. Principal crops, area, production and productivity

Sl. No.	Principal Crop	Area (ha)	Production(T)	Productivity (Kg/ha)
1.	Paddy	9845	1378.0	14.00
2.	Maize	5673	10211.0	18.00
3.	Millet	1342	1050.0	7.82
4.	Buckwheat	202	242.0	11.98
5.	Pulses	650	487.0	7.49
6.	Oilseeds	4188	3350.0	8.00
7.	Potato	150	1200.0	80.00
8.	Ginger	2600	18200.0	70.00
9.	Turmeric	75	375.0	50.00
10.	Sugarcane	100	2000.0	200.00
11.	Chilli	55	55.0	10.00
12.	Vegetables	400	800.0	20.00
13.	Banana	510	24120.0	47.00
14.	Citrus	905	1612	18.00
15.	Pineapple	375	147.4	39.00
16.	Large Cardamom	14	3.0	2.20

b. Crop rotations followed : 1. Rice – Mustard - Potato

: 2. Summer : Maize – Mustard- Vegetables

3. Ginger – Maize - Pulses

c.	Crop sequences followed	:	1. Maize - Mustard - Maize 2. WRC Rice - Black Gram - Vegetables 3. Winter Maize - Jhum Paddy
d.	Inter-cropping done, if any	:	1. Soybean - Vegetables 2. Maize – Black Gram- Green Gram 3. Orange – Chillies – Turmeric- Ginger
e.	Mixed cropping done, if any	:	1. Jhum Paddy - Beans – Bhindi – Black Gram 2. Maize – Black Gram – Green Gram
f.	Catch crops grown, if any	:	NIL

17. Socio-economic Characteristics, Land Holding Pattern

1	Average size of land holdings	:	5 - 10 ha
2	Average fragmentation intensity	:	2 -3 nos (i.e. a holding gets fragmented to this many nos)
3	Existing land tenure system(s)	:	individual and clan
4	Source(s) of finance for farming	:	Rank 1. loan Rank 2. Self finance Rank 3. Govt schemes
5	Main source of income for farmers	:	Rank 1. Sale of farm produce Rank 2. Wage labor
6	Commercial commodities produced	:	Rank 1. Orange Rank 2. Ginger Rank 3. Mustard Rank 4. Maize

18. Farm Machinery and Implements available in the district

1	Number of tractors	:	28 nos
2	Number of power tillers	:	8 nos
3	Number of carts	:	12 nos
4	Types of implements-Ploughs	:	
	Cultivators	:	3 nos
	Discs	:	15 nos
	Harrows	:	13 nos
	Others	:	2 nos
5	Pumps (Oil and electrical)	:	52 and 1 nos
6	Harvesters and Threshers	:	1 and nil nos
7	Sprayers and Dusters	:	52 and 4 nos

19. Livestock

1	Cattle	:	24172 nos
2	Buffaloes	:	537 nos
3	Sheep and goats	:	Nil and 9229 nos

4	Pigs	:	17646 nos
5	Poultry and ducks	:	57729 and 5909 nos
6	Production of milk	:	23500 ltrs
7	Production of meat	:	74000 ton
8	Production of eggs	:	9.5 Lakhs.
9	Production of wool	:	Nil

20. Livestock holding patterns

a Livestock holding pattern for big farmers : NA

b. Livestock holding pattern for small farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Poultry	10 - 18	1
2.	Cattle	4	4
3.	Pig	3	5
4.	Goats	3 - 5	2
5.	Mithuns	4	3

c. Livestock holding pattern for marginal farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Poultry	10 - 12	1
2.	Cattle	3	3
3.	Pig	3	4
4.	Goats	2 - 4	2
5.	Mithuns	2	5
6.	Buffalo	2	6

d. Livestock holding pattern for agricultural labourers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Poultry	5	1
2.	Cattle	2	2
3.	Pig	1	3
4.	Goat	1	4

e. Average yields of various animals and bird in the district.

Sl. No	Animal/bird	Average yield (Specify Units)
1.	Cattle (Milch) Local	2 -3 litres
2.	Egg	150 eggs/ annum
3.	Pig	80 kg /year
4.	Poultry (Meat) Local	1- 1.5 kg/ year
5.	Broiler	2 kg/ 2 months

21. Research Resources

1	Number of research stations	:	Nil
2	Number of ICAR institutes/substations	:	Nil
3	Number of state seed farms	:	1 nos.
4	Number of private seed farms	:	Nil

22. Agricultural Marketing Status and Constraints

a. Ways of disposal of farm produce and bye-products

Sl. No	Major Farm produce	Marketing channel	Bye product (if any)	Marketing channel
1.	Orange	APMC/ Private agencies/ local market	Nil	Nil
2.	Ginger	APMC/ Private agencies/ local market	Nil	Nil
3.	Mustard	APMC/ Private agencies	Nil	Nil
4.	Maize	APMC/ Private agencies/ local market	Nil	Nil
5	Paddy	Domestic Consumption	Rice bran	Nil

b. Whole sale and retail markets in the district

1.	Wholesale markets	:	1.	APMC
2.	Retail markets	:	1.	Daily market 2.Local market.

c. Major modes of transport to market:

1. Bus
2. Trucks
3. Carts
4. Foot March

d. Available/commonly used conveyance facilities (roads/waterways) to market :

1. Hired Trucks
2. Daily Bus
3. Boat
4. Carts

23. Agro-climatic Zones

1. Sub – Tropical Plain Zone
2. Mid – Tropical Hill Zone
3. Temperate Sub -Alpine

Blank

3.2 Agricultural Situation in Assam

Blank

1. Agricultural Situation in Barpeta

Barpeta District of Assam comes under the Lower Brahmaputra Valley Zone and the district headquarter Barpeta is situated at a distance of 140 km in the western direction from the state capital Guwahati. The district is surrounded by Bhutan Kingdom in the North, Nalbari and Bongaigaon District in the East and West respectively. The river Brahmaputra flows through its southern end, flanked by Kamrup and Goalpara Districts. The total geographical area of the district is 3428.03 sq. km., which is 4.21% of the total geographical area of the state. Out of the total geographical area, 68.25% is cultivable area. The district has almost plain topography, with gentle slope towards south. Northern part of the district is slightly elevated and mostly covered by forests and tall grasses, while the southern part merges with the northern bank of the river Brahmaputra, characterizing low lying, flood prone zone. The district comprises of 2 civil subdivisions, 3 agricultural subdivisions, 19 ADO circles, 12 development blocks, 149 Gaon Panchayats and 1068 revenue villages. The total population of the district is 1642400, as per 2001 census. Out of this, 88.92% belong to General caste, 5.16% SC, 4.74% ST and 1.18% OBC. The male population is 51.90% and female 48.10%. Assamese is the major language of the district. The literacy rate of the district is 57.35%.

Six agro-ecological situations have been identified in the district, on the basis of altitude, topography, soil type, existing farming practices and occurrence of floods. The soils of the district is characterized by alluvial(predominant), sandy and sandy-loam soils and are mostly acidic in nature. The total cultivated area of the district is 224582 ha. Out of this, 81% is rainfed and 19% is irrigated. The average size of land holding is 1.22 ha. Majority of the farmers are small (25.91%) and marginal (41.29%). Majority of the farmers are resource poor (88.46%).

Fourteen major cropping sequences have been identified in the district, all of them including paddy, which is the dominant crop of the district. However, wheat, potato, blackgram, lentil, jute, mustard, niger, buck wheat, field spices etc. are also cultivated on large scale in different areas. With respect to horticultural crops, banana and Assam lemon are cultivated commercially. Other fruit crops are mainly concentrated in homestead gardens. The district has the reputation of producing the largest quantity of vegetables in the state. Next to agriculture, animal husbandry is an important enterprise of the district. In the recent past, fishery has emerged as an economically profitable enterprise in the district. Among sericulture commodities, Eri cut cocoon, Muga and Mulberry reeling cocoon are commercially produced in some areas. There are no agro-processing units in the district.

1. Position in relation to longitude and latitude : 91^0 02'E longitude and 26^0 19' N latitude

2. Altitude from MSL : 90 meters above msl

3. Boundaries:
E: Nalbari District W: Bongaigaon District N: Bhutan S: Brahmaputra River (demarcating Kamrup and Goalpara Districts)

4. Total population : 1642400 (as per 2001 census)

5. Area of the district : 3428.03 sq. km

6. Population density : 479.11 sq. km.

7. Literacy percentage : 57.35%

8. Status of agriculture : Rainfed

9. Farmers:

a. Big farmers : 29230
b. Small farmers : 39532
c. Marginal farmers : 103047
d. Agricultural labourers : 40688

10. Farm labour mobility :

a. Is sufficient farm labour available in the district : Yes
b. If 'YES' whether they do work in near by or other districts also? Yes
c. If 'YES' to which districts they go for work? Kamrup & Nalbari

11. Physiography

1 Highlands : NA
2 Midlands : NA
3 Lowlands : NA
4 Hilly tract : NA
5 General nature of terrain:

The district has almost flat topography, with gentle slope towards south. Northern part of the district is slightly elevated and mostly covered by forests and tall grasses, while the southern part is merges with the northern bank of the river Brahmaputra, characterizing low lying, flood prone zone.

12. Climates

a. Subtropical/ Humid

b. Pattern of rainfall in different months.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low	Low	Low	Medium	Medium	High	High	High	Medium	Low	Low	Low

c. Maximum and minimum temperatures recorded : Max: 33^0 C Min: 12^0C

d. Critical periods for plant growth in the district

Sl.No	Crop	Critical periods of growth	Coinciding calendar month (s)
1	Rice	Tillering, P.I stage	July-August & August-September
2	Toria	Flowering	November-December
3	Jute	Early vegetative stage	April-May
4	Wheat	CRI, Tillering & Heading	November-January
5	Potato	SI, TF, TD stage	October-December
6	Blackgram	Pre flowering stage	September-October
7	Banana	Vegetative & Reproductive stage	June-July & August-September

13. Soils

a. Soil group classifications present
   1. Recent Riverine Alluvial soil (Entisols)
   2. Old Riverine Alluvial soil (Inceptisols)
   3. Old mountain valley Alluvial soil (Alfisols)
   4. Ultisols

b. Black soils : Not present
c. Red soils : Not present
d. Alluvial soils : Present (212734ha)
e. Sandy soils : Present (120069 ha)
f. Laterite soils : Present (ha) /not present
g. Saline and alkaline soils: Present (ha) /not present
h. Acid soils : Present (332803 ha)
i. Soil fertility status (in general): Medium

14. Irrigation

a. Area under irrigation : 42863 ha
b. Irrigation potential : 181912 ha
c. Source of irrigation
   1. Rivers : 5488 ha
   2. Tanks : NA
   3. Open wells : NA
   4. Bore wells : 31607 ha
   5. Any other source : 5768 ha

15. Land used and Cropping intensity

1 Gross cropped area : 33959 ha
2 Net area sown : 24582 ha
3 Fallow lands : 377 ha
4 Cultivable waste lands : 392 ha
5 Forest cover : 6055 ha
6 Barren lands : 2991 ha
7 Cropping intensity : 83 %

16. Major crops

A Principal crops, area, production and productivity

Area, production and productivity of major agricultural crops

Sl. No.	Name of Crops	Area	Production (MT)	Productivity (kg/ha)
1	**Autumn Paddy**			
	HYV	18450	18450	1000
	Traditional	34270	31254	912
2	**Winter Paddy**			
	HYV	12750	31875	2500
	Traditional	32450	74940	1200
3	**Summer Paddy**			
	HYV	21675	119212	5500
	Traditional	3825	7650	2000
4	**Wheat (HYV)**	10500	14437	1375
5	**Maize (HYV)**	70	45	650
6	**Oilseeds**			
	Rape and Mustard	25500	16830	660
	Linseed	2675	1605	600
	Niger	1075	645	600
	Sesamum	735	413	550
	Soybean	45	49	1100
	Groundnut	145	174	1200
7	**Pulses**			
	Black gram	4250	2115	500
	Green gram	1150	575	500
	Lentil	3950	2350	595
	Pea	2500	2025	810
	Other pulses	1165	1165	1000
8	**Jute**	6142	9796	1595
9	**Sugarcane**	175	7000	40000
10	**Mesta**	32	29	920

Area, production and productivity of fruit crops

Sl. No.	Name of Crops	Area	Production (MT)	Productivity (kg/ha)
1	Banana	2451	36888	15050
2	Pine apple	272	4404	16191
3	Oranges	54	529	9804
4	Papaya	198	3861	19500
5	Assam lemon	292	1990	6818
6	Guava	228	4252	18651
7	Litchi	225	1308	5813
8	Jackfruit	981	7578	7725
9	Mango	126	876	6952
10	Other fruits	52	300	5769

Area, Production, productivity of Plantation crops in Barpeta district

Sl. No.	Crop	Area (ha)	Production (MT)	Productivity (nuts/palm)
1	Coconut	1215	92340	76
2	Arecanut	7190	575200	160

Area, production and productivity of vegetable crops (2006-07)

Sl. No.	Name of Crops	Area	Production (MT)	Productivity (kg/ha)
1	Cabbage	4900	122500	25000
2	Cauliflower	2465	34510	14000
3	Brinjal	1470	29400	20000
4	Tomato	1657	66280	40000
5	Radish	1635	22072	13500
6	Carrot	612	14076	23000
7	Knolkhol	1650	67650	41000
8	Cucumber	985	8865	9000
9	Ridge gourd	970	7760	8000
10	Sponge gourd	240	2920	8000
11	Snake gourd	365	2920	8000
12	Bitter gourd	370	4070	11000
13	Bottle gourd	845	11830	14000
14	Pumpkin	425	5525	13000
15	Lady's finger	1165	11650	10000
16	Cowpea	875	8312	9500
17	Pointed gourd	245	1470	6000
18	Squash	70	420	6000
19	Potato	11000	100925	9175
20	Tapioca	879	395	5000
21	Sweet potato	612	1530	2500
22	Kharif vegetables	2760	43251	15201
23	Rabi vegetables	11910	253902	21318

Area, production and productivity of spice crops

Sl. No.	Name of Crops	Area	Production (MT)	Productivity (kg/ha)
1	Chilli	1765	1412	800
2	Onion	970	1455	1500
3	Turmeric	675	540	800
4	Ginger	455	8190	18000
5	Coriander	2315	10996	4750
6	Garlic	875	6527	7460
7	Blackpepper	75	45	600

(Source: Department of Agriculture, Barpeta)

b. Crop rotations followed :

1. (Paddy-Paddy-Mustard) - (Paddy-Paddy-Pulses)
2. (Paddy-Jute)-(Paddy-Summer vegetable-Paddy)
3. (Paddy-Rabi vegetables-Potato)-(Paddy-Paddy)
4. (Paddy-Paddy-Pulse)-(Paddy-Paddy-Wheat)

c. Crop sequence followed :
   1. Paddy-Paddy-Rabi vegetable
   2. Paddy-Paddy
   3. Paddy-Jute
   4. Paddy-Rabi vegetables-Potato
   5. Paddy-Summer vegetable-Paddy
   6. Paddy-Paddy-Mustard
   7. Paddy-Jute- Mustard
   8. Paddy-Paddy-Pulses

d. Inter-cropping done, if any :
   1. Arecanut + Ginger/Turmeric+ Banana + Assam Lemon +Black pepper/Betel vine
   2. Coconut +Pineapple +Ginger/Turmeric+ Banana+ Assam Lemon + Blackpepper/Betel vine
   3. Banana + vegetables

e. Mixed cropping done, if any :
   1. Oat + Pea
   2. Oat + Khesari
   3. Maize + Pea/Cowpea
   4. Rapeseed + Oat
   5. Lentil + Oat

f. Catch crop grown, if any :
   1. Leafy vegetables
   2. Cowpea
   3. Maize

17. Socio-economic Characteristics, Land holding pattern

1	Average size of land holdings	:	1.22 ha
2	Average fragmentation intensity	:	NA
3	Existing land tenure system(s)	:	i. Own land farming (majority) ii. Shared cropping iii. Leased farming
4	Source of finance for farming	:	

Rank 1. Cooperative, Commercial & Regional Rural Banks
Rank 2. Private sources

5 Main source of income for farmers :
Rank 1. Agriculture
Rank 2. Fishery
Rank 3. Livestock
Rank 4. Sericulture

6 Commercial commodities produced :
Rank 1. Fish
Rank 2. Milk
Rank 3. Processed fruits & vegetables
Rank 4. Handloom & Handicraft items

18. Farm Machinery and implements available in the district

1	Number of tractors	:	238 nos
2	Number of power tillers	:	463 nos
3	Number of carts	:	NA
4	Type of implements-plough	:	3340
	Cultivators	:	NA
	Discs	:	NA
	Harrows	:	NA
	Others	:	9404 nos.
5	Pumps (oil and electrical)	:	7134 nos
6	Harvesters and Threshers	:	NA
7	Sprayers and dusters	:	642

19. Livestock (As on 2006-07)

1	Cattle	:	450029 nos
2	Buffaloes	:	15564 nos
3	Sheep and goat	:	368024 nos
4	Pigs	:	17226 nos
5	Poultry and ducks	:	1993391 nos
6	Production of milk	:	99 lakh litres/year.
7	Production of meat	:	1850 ton/year
8	Production of eggs	:	375 lakh nos/year
9	Production of wool	:	NA

20. Livestock holding patterns

a. Average yield of various animals and birds in the district

Sl nos	Animal/bird	Average yield (specify Units)
1	Milch cow	116 lit/cow/lactation period
2	Poultry/duck	63 nos of egg/bird/year
3	Broiler	0.94 kg/bird
4	Pig	40.63 kg/animal

21. Research Resources

1	Number of Research stations	:	02 nos
2	Number of ICAR institutes/substations	:	01nos
3	Number of state seed farms	:	03 nos (Agriculture-01, Fishery-01, Seri-01)
4	Number of private seed farms	:	03 nos (Agri)

22. Agricultural Marketing Status and Constraints

There are two regulated agricultural market committees viz., Howly & Baharihat in the district. Howly RMC covers five blocks and Baharihat RMC covers five blocks. Both the RMCs handle almost all types of agricultural and horticultural commodities. Besides, there are 23 unregulated wholesale markets situated in rural area of the district. From the point of view of periodicity, 72% markets are bi-weekly, 27% weekly and 1% daily. Market practices like grading & standardization are rarely practiced. Almost all markets are lacking in basic amenities and infrastructure facilities. The road & transport condition and network between production site and market is very poor. Farmers' access to market information is very low. Presence of market intermediaries is prevalent in all the markets.

a. Ways of disposal of farm produce and bye-products

Sl No	Major farm produce	Marketing channel	Bye product (if any)	Marketing channel
1	Rice	i. Producer-Consumer ii. Producer-Trader/Commission Agent-Wholesaler-Retailer- Consumer	Straw Husk Rice bran	Producer-Wholesaler – Retailer - Consumer
2	Oilseed & Pulses	i. Producer-Consumer ii. Producer-Trader/Commission Agent-Wholesaler-Retailer- Consumer	Oil cake	Producer-Wholesaler – Retailer - Consumer
3	Fruits & vegetables	i. Producer-Consumer ii. Producer-Commission Agent-Retailer-Consumer iii. Producer-Trader/Commission Agent-Wholesaler-Retailer- Consumer iv. Producer-Retailer-Consumer	-	Producer-Wholesaler – Retailer – Consumer Producer – Consumer
4	Fish	i. Producer-Commission Agent-Wholesaler-Retailer-Consumer	-	Producer – wholesaler – retailer – consumer
5	Milk & Egg	i. Producer-Consumer ii. Producer-Trader/Commission Agent-Retailer-Consumer	-	Producer – wholesaler – retailer – consumer
6.	Eri & Muga cocoon	i. Producer-Trader	-	Producer – wholesaler – retailer – consumer

b. Market types – wholesale and retail markets in the district

a. Wholesale market : 12 nos regulated Wholesale cum Retail market

b. Retail market : 23 nos unregulated Wholesale cum Retail market

c. Major modes of transport to market :

1. Hand cart
2. Auto van/ Mini truck
3. Public bus
4. Machine boat

d. Available/commonly used conveyance facilities (roads/waterways) to market:

1. Road
2. Waterways

23. Agro-climatic Zones

1. Lower Brahmaputra valley zone

2. Agricultural Situation in Cachar

Geopolitically, Cachar district is located in the Southern part of the state and agro-climatically it is in the Barak valley Zone. Total geographical area of Cachar district is 377610 ha. The district is bounded by N C Hills in the north, Mizoram in the south, Karimganj and Hailakandi districts and a part of Meghalaya state in the east and Manipur state in the west. Silchar is the only town in the district. The district is connected by Road and Metre Gauge railway. The condition of Road and Rail is poor. The National Highway NH- 44 passes through the district. Dispur, the capital of Assam is at a distance of 330 Km by road from the Silchar town.

Cachar District of Assam covers 15 community Development Blocks. The District has 163 nos. of G.P., 15 nos of A.P. and 19 nos. of A.D.O. Circles with a population 15.62 lakhs as per 2001 Census. The district is having two civil sub division *viz* Silchar and Lakhipur and three Agricultural sub division *viz*. Silchar, Sonai and Lakhipur.

Out of the total population of 15.62 lakhs of the District, the sex ratio is 943 female per 1000 males. Schedule caste constituted 15.03% and schedule tribe constitutes 1.24% of the total population. The literacy rate is 59.2%.

1. Position in relation to longitude and latitude : The district is situated between 24^0 22' and 25^0 08' latitude and between 92^0 24' and 93^0 15' E longitude

2. Altitude from MSL : Altitude 36.5 m MSL

3. Boundaries of the district :

E:	Karimganj and Hailakandi	W:	Manipur
N:	N.C. Hills	S:	Mizoram
NE:	N.C. Hills, Karimganj and Hailakandi	SE:	Mizoram, Karimganj, Hailakandi
SW:	Mizoram and Manipur	NW:	N.C. Hills , Manipur

4. Total population : 15,62 lakhs (2001 census)
5. Area of the district : 3776.1 sq km
6. Population density : 414 /Km^2 (to be calculated based on total population and area of the district)
7. Literacy percentage : 59.2%
8. Status of agriculture : Rainfed (Rainfed/irrigated/Shifting etc)
9. **Farmers**
   a. Big farmers : 1, 44,200 (nos)
   b. Small farmers : 42,430
   c. Marginal farmers : 7, 04,560
   d. Agricultural labourers : 62,576
10. **Farm labour mobility**
    a. Is sufficient farm labour available in the district: YES
    b. If 'YES' whether they do work in near by or other districts also? NO

11. **Physiography**
    a. Highlands : 11642 ha
    b. Midlands : 69048 ha
    c. Lowlands : 19512 ha
    d. General nature of the terrain:

    Cachar has an undulating topography characterized by hills, hillocks (tillah), wide plains and low lying water logged areas (natural depression) locally called *beels.* The river Barak ramifies the entire district with its tributaries. Physiographically the Barak Valley zone may be divided into 8 classes ranging from high hills with elevation exceeding 300m to perennially water logged *beels*.

12. **Climates**
    a. Warm Humid
    b. Pattern of rainfall in different months

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low	Low	Medium	Medium	High	High	High	High	Low	Low	Low	Low

    c. Special weather phenomenon in the district:

    Drought during monsoon season, uneven distribution of rain, draught during vegetable growing period.

    d. Maximum and minimum temperatures recorded: Max: 38^0 C Min: 12^0 C

e. Critical periods for plant growth in the district

Sl. No	Crop	Critical periods of growth	Coinciding calendar month(s)
1.	Rice	Tillering, Panicle Initiation and flowering	July-September
2.	Vegetable (Rabi)	Vegetative stage	October- March
3.	Vegetable (Kharif)	Vegetative stage	May-September
4.	Potato	Stolon and Tuber initiation	December- February
5.	Mustard	Flowering	October - February
6.	Pulses (Kharif)	Flowering	June-September
7.	Pulses (Rabi)	Flowering	November- March

13. Soils

a. Soil group classifications present in the district:
   1. Old riverine alluvium
   2. Old mountain alluvium
   3. Laterised red soil
   4. Non- Laterised red soil
   5. Peat soil

b. Black soils : Not Present
c. Red soils : Not Present
d. Alluvial soils : Present
e. Sandy soils : Present
f. Laterite soils : Not Present
g. Saline and alkaline soils : Not Present
h. Acid soils : Present
i. Soil fertility status (in general) : Medium

14. Irrigation

a. Area under irrigation : 398 ha
b. Irrigation potential : 1180 ha
c. Source of irrigation
   1. Rivers : 8 nos
   2. Tanks : 48 nos
   3. Open wells : 5 nos
   4. Any other sources : Lift irrigation : 1 no
      LLP : 2907 nos

15. Land use and Cropping intensity

1. Gross cropped area : 152826 ha
2. Net Area sown : 125000 ha
3. Fallow lands : 11354 ha
4. Cultivable waste lands : 2637 ha
5. Forest cover : 1432701 ha
6. Barren lands : 4170 ha
7. Cropping intensity : 122.3 ha

16. Major Crops

a. Principal crops, area, production and productivity

Sl. No	Principal Crops	Area(in ha)	Production (in tones)	Productivity (kg/ha)
1	Rice			
	Ahu	14696	30861.6	2000.1
	Sail	88521	177042	2000
	Boro	10613	19103.4	1800
2	Wheat	292	309.52	1060
3	Maize	258	190.92	740
4	Total cereals	114380	227507.4	-
5	Total pulses	6966	3552.66	510
6	Total oilseeds	2519	1637.35	650
7	Jute (Bales/(ha)	63	1183.14	18780
8	Sugarcane	275	11687.5	42500
9	Summer Vegetables	3603	25221	7000
10	Rabi Vegetables	7062	105930	15000
11	Spices	2445	12225	5000

b. Crop rotations followed : Not Available

c. Crop sequences followed :

1. Rice-Rice
2. Early ahu-Pea/Toria/Niger/Rajmah
3. Rice-Rice/Toria/Pea
4. summer /Kharif vegetables- winter vegetables
5. Ahu-Veg

d. Inter-cropping done, if any :

1. Pigeon Pea -sesamum

e. Mixed cropping done, if any : Not Avialable

f. Catch crops grown, if any :

1. Tea

17. Socio-economic Characteristics, Land Holding Pattern

1. Average size of land holdings : 0.58 ha
2. Average fragmentation intensity : 2.5 nos (ie a holding gets fragmented to this many nos)
3. Existing land tenure system(s) : Owned and hired land
4. Source(s) of finance for farming : Rank 1. Bank
   Rank 2. Local Finance
5. Main source of income for farmers : Rank 1. Agriculture
   Rank 2. Veterinary
   Rank 3. Fishery
6. Commercial commodities produced : Rank 1. Pineapple
   Rank 2. Arecanut
   Rank 3. Orange

18. Farm Machinery and Implements available in the district

1.	Number of tractors	:	40 nos
2.	Number of power tillers	:	60 nos

19. Livestock

1.	Cattle	:	3,89,961 nos
2.	Buffaloes	:	72473 nos
3.	Sheep and goats	:	14072 &178718 nos
4.	Pigs	:	32231 nos
5.	Poultry and ducks	:	911926 & 244981nos
6.	Production of milk	:	10,20,00,000 ltr
7.	Production of meat	:	44.47 ton
8.	Production of eggs	:	21.08 million nos
9.	Production of wool	:	Nil

20. Livestock holding patterns

a. Livestock holding pattern for big farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Cattle	3-10	1
2.	Buffalo	3-10	4
3.	Goat	5-15	2
4.	Sheep/pig	5-20	5
5.	Pultry/ duck	10-50	3

b. Livestock holding pattern for small farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Cattle	2-5	1
2.	Buffalo	1-5	3
3.	Goat	1-10	2
4.	Sheep/pig	1-5	5
5.	Poultry/ duck	5-20	4

c. Livestock holding pattern for marginal farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Livestock(Cow/Goat/pig)	1-5	2
2.	Birds (Poultry/ Duck)	1-15	1

d. Livestock holding pattern for agricultural labourers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Livestock(Cow/Goat/pig)	1-2	2
2.	Birds (Poultry/ Duck)	1-5	1

e. Average yields of various animals and birds in the district.

Sl. No	Animal/bird	Average yield (Specify Units)
1.	Cross breed cow	5 ltr. /day
2.	Local cow	1 ltr. /day

3.	Buffalo	3.5 ltr./day
4.	Goat/sheep	3-8 Kg/animal
5.	Pig	50 Kg at market age
6.	Hen	125 eggs/year
7.	Duck	85 eggs / year
8.	Broiler (poultry)	1-1.6 Kg at market age

21. Research Resources

1. Number of research stations : Nil
2. Number of ICAR institutes/substations : Nil
3. Number of state seed farms : 3 nos
4. Number of private seed farms : 5 nos

22. Agricultural Marketing Status and Constraints

a. Ways of disposal of farm produce and bye-products

Sl. No	Major Farm produce	Marketing channel	Bye product (if any)	Marketing channel
1.	Rice	Grower-middleman—wholesaler-retailer-consumer	-	-
2.	Vegetable	Grower-middleman—wholesaler-retailer-consumer	-	-
3.	Potato	Grower-middleman—wholesaler-retailer-consumer	-	-
4.	Pineapple	Grower-middleman—wholesaler-retailer-consumer	-	-
5.	Arecanut	Grower-middleman—wholesaler-retailer-consumer	-	-

b. Whole sale and retail markets in the district

a. Wholesale markets:
   1. Silchar
   2. Sonai
   3. Kalain

b. Retail markets:
   1. Tarapur
   2. Behera
   3. Katigorah
   4. Damchora bazar

c. Major modes of transport to market:
   1. Road transport like auto van, mini truck, thellah
   2. Boat
   3. Train

d. Available/commonly used conveyance facilities (roads/waterways) to market :
   1. Road transport
   2. Water ways viz. boat

23. Agro-climatic Zones

1. Humid alluvial flood free
2 Humid alluvial flood prone
3. Piedmonts and plantation crops
4. Beels and Haors
5. Hills and forest

3. Agricultural Situation in Darrang

The District of Darrang (undivided) had been created with effect from July, 1983 converting the erstwhile Sub-Division of Mangaldai.

The district Darrang is situated in the North Bank Plain Zone (NBPZ) of Assam and has a total geographical area of 1427.49 sq.km which is about 1.82 % of the total geographical area of the state. There elevation of Darrang varies from 50 mtrs to 250 mtrs above sea level and there is a constant slope from North to South.

The district is located at a 20°9´N to 26°95´N latitude and 91°45´ E to 92°22´ E longitude. The district is situated 68 km away from the state capital of Assam and in the central part of Assam and on the Northern side of the Mighty *Brahmaputra*. The district is bounded by the Udalguri district in the North. The river *Brahmaputra* flows in the South. The district Sonitpur and Kamrup districts are in the East and West respectively.

The major physiographic variation of the district is in general is considered to be plain except a few areas dotted by small hillocks. The northern part of the district is generally hilly areas and the southern part of the district is covered with forest and hillocks. The mighty Brahmaputra flows along the southern periphery of the district. Thus, the district is also well connected with the water ways. The district can be divided into the low-lying plains, covered plains and hills. The hills are for the most part formed of gneissic rocks from which excellent building stone can be obtained. The plain is of alluvial origin and consists of sand and clay in varying proportions.

The status of soil ranges from old alluvial to new alluvial. The soils are sandy to sandy loam in texture and acidic in reaction and are characterized by medium to high organic carbon, low to medium phosphorus and potash content. The northern border is covered by Alluvium, accompanied by another thin belt of older alluvium; the rest of the District is covered by sandstone & shale.

The district has a grossed cropped area of 268727 ha (Source: Statistical Hand Book, Assam, 2007) (estimated of which rice alone covers 184000 ha annually). More than 75% of the population depends on agriculture. The occurrences of natural calamities like, flood, draught etc. are the regular phenomena in the district.

The climate of the district is congenial. In the winter, the northern part of the district is colder than the rest of the district since it is covered by hills and forests of Udalguri District. The average temperature ranges from 10° to 30° C. Average annual rainfall is about 2120 mm. The relative humidity is about 37% in the month of February/ March and about 82% in other months. The monsoon of the district commences from the end of March and intensity gradually increases up to August and then declines to the minimum during November and December.

The *Brahmaputra* is the main river in the border of the south of the District on the east to west direction. Other important tributaries of the Brahmaputra are *Barnadi, Nanoi, Mangaldai, Noanodi, Saktola, Dhansiri,* which are the main rivers flowing through the district and the rivers are perennial in nature.

1. Position in relation to longitude and latitude : 20°9´N to 26°95´N and 91°45´ E to 92°22´ E

2. Altitude from MSL : 50 mtrs to 250 mtrs

3. Boundaries of the district :

E: Sonitpur district	W: Kamrup district	N: Udalguri district
S: Kamrup and Morigaon district	NE: Sonitpur district	SE: Nagaon district
SW: Kamrup district	NW: Kamrup district	

4. Total population : 834078 nos.

5. Area of the district : 1427.49sq km

6. Population density : 533

7. Literacy percentage : 47.51%

8. Status of agriculture : Rainfed and irrigated

9. Farmers

a. Big farmers : 11522 nos.
b. Small farmers : 37755 nos.
c. Marginal farmers : 29686 nos.
d. Agricultural labourers : 56,871 nos.

10. Farm labour mobility

a. Is sufficient farm labour available in the district: YES
b. If 'NO' from which places do they come from? NA
c. If 'YES' whether they do work in near by or other districts also? NO

11. Physiography

a. Highlands : 180.00 ha
b. Midlands : 216.00 ha
c. Lowlands : 254.1 ha
d. Hilly tract : 125.20 ha
e. General nature of the terrain

The major physiographic variation of the district is in general is considered to be plain except a few piedmont and high land areas, flood plain, char lands and swampy areas. The mighty Brahmaputra flows along the southern periphery of the district. Thus, the district is also well connected with the water ways.

12. Climates

a. Sub-tropical/ Humid
b. Pattern of rainfall in different months

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low	Low	Med	Med	Med	High	High	Med	Med	Low	Low	Low

c. Maximum and minimum temperatures recorded: Max: 36° C Min: 10° C

d. Critical periods for plant growth in the district

Sl. No	Crop	Critical periods of growth	Coinciding calendar month(s)
1.	Sali Paddy	Tillering, Panicle initiation and flowering stage,	July-Aug, Oct-Nov, Nov-Dec
2.	Ahu Paddy	Tillering, Panicle initiation and flowering stage,	May, June, July
3.	Mustard	Flowering and pod formation stage	Dec, Jan
4.	Green gram	Flowering and pod formation stage	Oct, Nov

13. Soils

a. Soil group classifications present in the district:
   1. Sandy loam
   2. Alluvial

b. Soil types :
   1. Alluvial soils : 60317 ha
   2. Sandy soils : 13302 ha

c. Soil fertility status (in general) : Medium

14. Irrigation

a. Area under irrigation : 11,342 ha
b. Irrigation potential : 57,758 ha
c. Source of irrigation
   1. Rivers : 3 nos
   2. Tanks : 91
   3. Open wells : Nil
   4. Bore wells : 15070 nos
   5. Any other sources : Nil

15. Land use and Cropping intensity

1. Gross cropped area : 132735ha
2. Net Area sown : 73,619 ha
3. Fallow lands : 6451 ha
4. Cultivable waste lands : 8150 ha
5. Forest cover : 28353 ha
6. Barren lands : 35866 ha
7. Cropping intensity : 180.3 %

16. Major Crops

a. Principal crops, area, production and productivity

Sl. No	Principal Crops	Area (in ha)	Production (in tones) (1ton=1000kg)	Productivity (kg/ha)
1.	Rice	105965	147363	8570
2.	Wheat	4710	6005	982
3.	Pulses	8955	5301	660
4.	Jute	5278	45449	2060

5.	Sugarcane	595	42262	35793
6.	Fruit crops	347	2569	16876
7.	Vegetable crops	16775	281378	333990
8.	Fish	10924	6704	61.26

b. Crop rotations followed :
   1. Paddy- Mustard- Paddy
   2. Paddy- Potato - Bhindi
   3. Paddy – Summer pulse- Cabbage /cauliflower / knolkhol
   4. Mustard- Ridge gourd/sponge gourd/bitter gourd/spine gourd
   5. Paddy- Jute- Mustard/Lentil/sesamum

c. Crop sequences followed :
   1. Kharif Paddy – Rabi vegetables
   2. Summer vegetables – Rabi vegetables
   3. Ahu Paddy – summer vegetables

d. Inter-cropping done, if any :
   1. Bringal + Chilli
   2. Ridge gourd + Sponge gourd
   3. Potato + pumpkin

e. Mixed cropping done, if any :
   1. Radish + Mustard (leafy vegetables)
   2. Pudina + Chilli
   3. Lentil + Lathyrus
   4. Coriander + Raddish

f. Catch crops grown, if any :
   1. Toria
   2. Greengram
   3. Coriander

17. Socio-economic Characteristics, Land Holding Pattern

a. Average size of land holdings : 0.956 ha
b. Average fragmentation intensity : 3 nos
c. Existing land tenure system(s) : Ownership right
d. Source(s) of finance for farming : Rank 1. Own fund
   Rank 2. Co-operative Society
   Rank 3. Financial Institutes
e. Main source of income for farmers : Rank 1. Agriculture
   Rank 2. Business
   Rank 3. Service
f. Commercial commodities produced : Rank 1. Paddy
   Rank 2. Vegetables
   Rank 3. Jute

18. Farm Machinery and Implements available in the district

1. Number of tractors : 1520 nos

2.	Number of power tillers		:	265 nos
3.	Number of carts		:	14202 nos
4.	Types of implements-Ploughs		:	13580 nos
	a.	Cultivators	:	1520 nos
	b.	Discs	:	1520 nos
	c.	Harrows	:	1520 nos
	d.	Others	:	None
5.	Pumps (Oil and electrical)		:	15070 nos Oil pump (electrical nil)
6.	Harvesters and Threshers		:	1206 nos (Threshers)
7.	Sprayers and Dusters		:	4507 nos (Sprayers)

19. Livestock

1.	Cattle	:	438208 nos
2.	Buffaloes	:	27526 nos
3.	Sheep and goats	:	39006 &156893 nos
4.	Pigs	:	54618 nos
5.	Poultry and ducks	:	585423 &369238 nos
6.	Production of milk	:	772829 ltr
7.	Production of meat	:	1430.356 ton
8.	Production of eggs	:	102.23 lakhs nos
9.	Production of wool	:	data is not available

20. Livestock holding patterns

a. Livestock holding pattern for big farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Milch cattle	10-15	1
2.	Pig	10-12	2
3.	Bird	25-50	3
4.	Goat	10-15	4
5.	Buffalo	5-8	5

b. Livestock holding pattern for small farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Milch cattle	4-5	1
2.	Pig	2-3	2
3.	Bird	10-15	3
4.	Goat	2-3	4
5.	Buffalo	1-2	5

c. Livestock holding pattern for marginal farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Milch cattle	2-3	1
2.	Pig	1-2	2
3.	Bird	4-5	3
4.	Goat	1-3	4
5.	Buffalo	1	5

d. Livestock holding pattern for agricultural labourers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Milch cattle	1	1
2.	Pig	1	2
3.	Bird	2-3	3
4.	Goat	1	4
5.	Buffalo	1	5

e. Average yields of various animals and bird in the district.

Sl. No	Animal/bird	Average yield (Specify Units)
1.	Indigenous Cattle	Milk yield 1-1.5 litre/ day
2.	Crossbred Cattle	Milk yield 5-7 litre/ day
3.	Local Buffalo	Milk yield 1-1.5 litre/ day
4.	Crossbred Buffalo	Milk yield 5-6 litre/ day
5.	Sheep	Meat 9.5 Kg/year
6.	Goat	Meat 10.0 Kg/year
7.	Pig	Meat 70.0 Kg/year
8.	Fowl Desi	Meat 1-1.25 Kg/year Egg 80 Nos. /yr.
	Improved	Meat 1-1.5 Kg/year Egg 175 Nos. /yr
9.	Duck Desi	Meat 1.25 to 1.50 Kg/year Egg 80 Nos. /yr
	Improved	Meat 1.5 to 1.75 Kg/year Egg 150 Nos. /yr

21. Research Resources

1. Number of research stations : Nil
2. Number of ICAR institutes/substations : Nil
3. Number of state seed farms : 2 nos.
4. Number of private seed farms : Nil

22. Agricultural Marketing Status and Constraints

a. Ways of disposal of farm produce and bye-products

Sl. No	Major Farm produce	Marketing channel	Bye product (if any)	Marketing channel
1.	Food Grains	i. Farmers/producer → Consumer ii. Farmer/producer → Retailer/Village traders → Consumer iii. Farmer/producer → Wholesaler → Retailer/village traders → Consumer iv. Farmer/producer → Village traders →Wholesaler → Retailer→ Consumer v. Farmer/producer → Co-operative marketing society → Retailer→ Consumer vi. Farmer/producer → Govt. Agency (FCI etc.) → Fair Price shop→ Consumer Farmer/producer → Wholesaler→ Flour miller → Retailer→ Consumer	Paddy straw/ Wheat straw	Producer → Consumer Producer → Village traders → Consumer

2.	Oilseeds	i. Farmers/producer → Consumer ii. Farmer/producer → Village traders →Retailer→ Consumer iii. Farmer/producer → Oilseed wholesaler →Processor → Oil wholesaler →Retailer→ Oil consumer iv. Farmer/producer → Village traders → Processor → Oil consumer		
3.	Fruits and Vegetables	i. Producer → Consumer ii. Farmers/producer → Primarywholesaler →Retailers →Consumer iii. Farmers/producer → Processor →Retailers →Consumer v. Farmers/producer → Primary wholesaler → Processor →Retailers → Consumer vi. Farmers/producer →Local Assembler →Primary wholesaler →Retailers → Consumer		
4.	Live Poultry	i. Producer → Consumer ii. Producer → Retailer → Consumer	Ghee, Dahi, Cream	Producer → Consumer
5.	Fish	i. Producer → Consumer ii. Producer → Retailer → Consumer iii. Producer → Wholesaller → Retailer → Consumer iv. Producer → Fish Co-operative Society → Retailer → Consumer		

b. Market types – whole sale and retail markets in the district

a. Wholesale markets :
1. Kharupetiya
2. Besimari
3. Dalgaon

b. Retail markets :
1. Mangaldai
2. Sipajhar
3. Kharupetia
4. Bhakatpara
5. Banglagarh
6. Dumunichwoki
7. Kopati
8. Patharighat
9. Balugaon

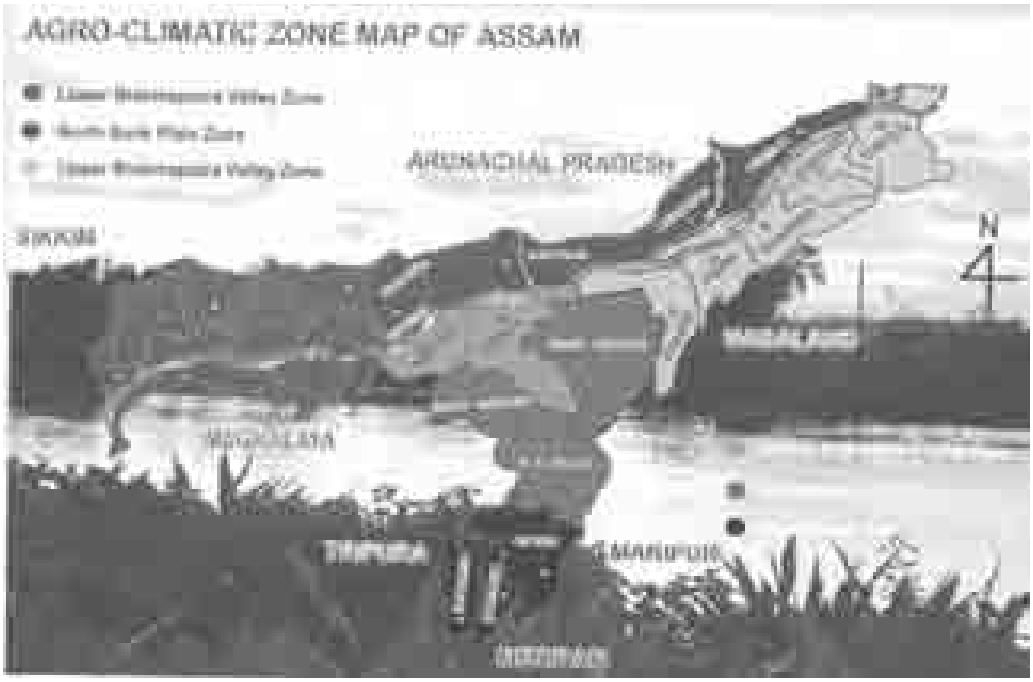
c. Major modes of transport to market:
1. Bicycle/ Tricycle
2. Thela / cart
3. Autovan
4. Mini Truck/ Mini Bus

d. Available/commonly used conveyance facilities (roads/waterways) to market :
   1. 52 No. National Highway
   2. PWD roads
   3. Katcha Road

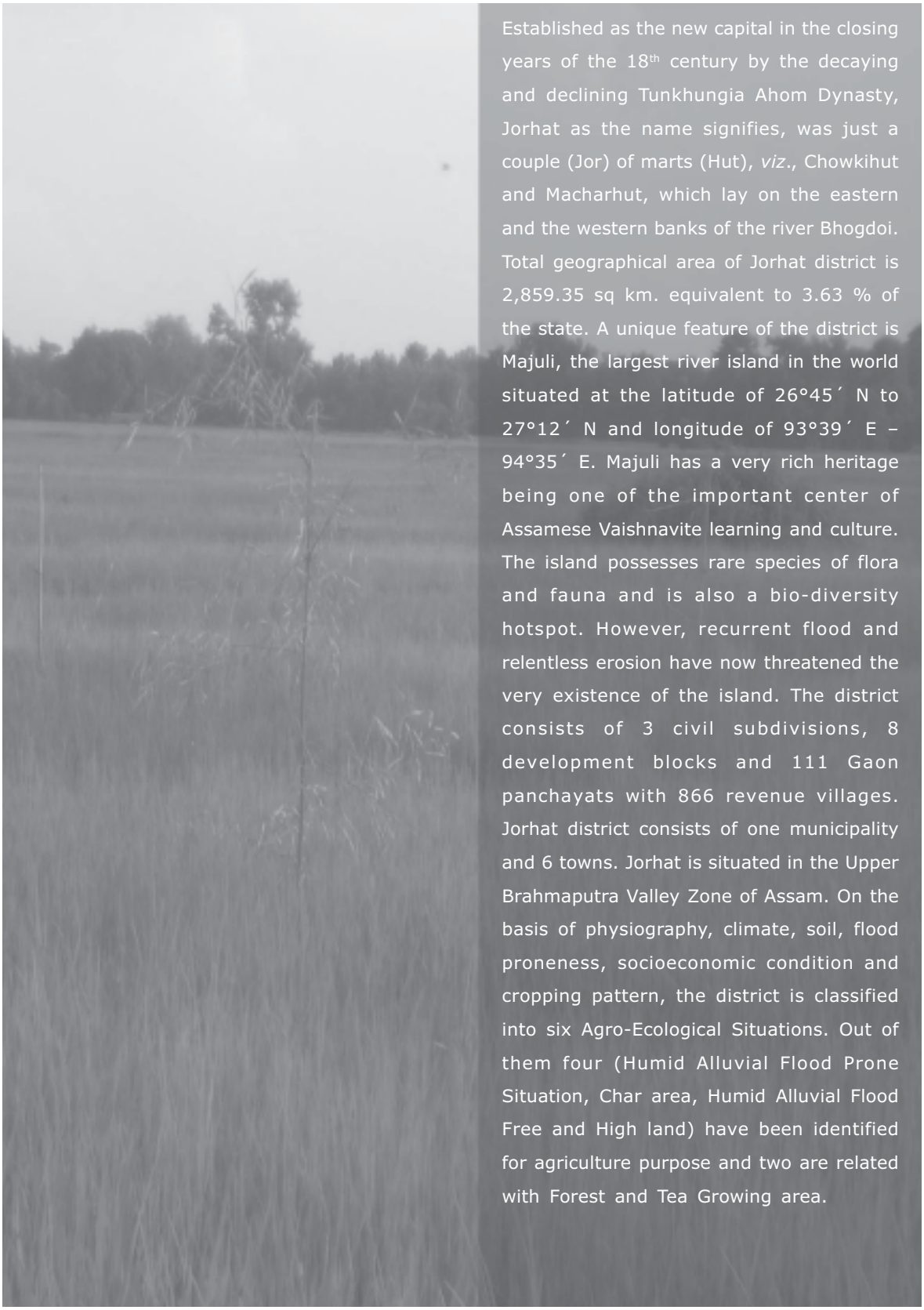
23. Agro-climatic Zones

North Bank Plain Zone with following AES

1. AES-1
2. AES-2
3. AES-3
4. AES-4



4. Agricultural Situation in Jorhat



Established as the new capital in the closing years of the 18th century by the decaying and declining Tunkhungia Ahom Dynasty, Jorhat as the name signifies, was just a couple (Jor) of marts (Hut), *viz*., Chowkihut and Macharhut, which lay on the eastern and the western banks of the river Bhogdoi. Total geographical area of Jorhat district is 2,859.35 sq km. equivalent to 3.63 % of the state. A unique feature of the district is Majuli, the largest river island in the world situated at the latitude of 26°45′ N to 27°12′ N and longitude of 93°39′ E – 94°35′ E. Majuli has a very rich heritage being one of the important center of Assamese Vaishnavite learning and culture. The island possesses rare species of flora and fauna and is also a bio-diversity hotspot. However, recurrent flood and relentless erosion have now threatened the very existence of the island. The district consists of 3 civil subdivisions, 8 development blocks and 111 Gaon panchayats with 866 revenue villages. Jorhat district consists of one municipality and 6 towns. Jorhat is situated in the Upper Brahmaputra Valley Zone of Assam. On the basis of physiography, climate, soil, flood proneness, socioeconomic condition and cropping pattern, the district is classified into six Agro-Ecological Situations. Out of them four (Humid Alluvial Flood Prone Situation, Char area, Humid Alluvial Flood Free and High land) have been identified for agriculture purpose and two are related with Forest and Tea Growing area.

1. Position in relation to longitude and latitude:
   Latitude: 20°10′ N to 27°20′ N
   Longitude: 93°37′ E to 93°57′ E
2. Boundaries of the district :
   E: Sivasagar district W: Golaghat district
   N: Lakhimpur district S: Nagaland state
3. Total population : 999221
4. Area of the district : 2,859.35 sq km
5. Population density : 349
6. Literacy percentage : 76.41%
7. Status of agriculture : Rainfall

8. Farmers :

a. Big farmers : 10524 (nos)
b. Small farmers : 30015
c. Marginal farmers : 43180
d. Agricultural labourers : 20927

9. Farm labour mobility

a. Is sufficient farm labour available in the district: NO
b. If 'NO' from which places do they come from?
   Dhubri, Marigaon and Nagaon district

10. Climates

a. Sub-tropical/ Sub-humid
b. Pattern of rainfall in different months

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
27.4	7.5	98.5	145.3	223.3	285.4	387.5	272.8	117.7	89.1	Nil	2.0

c. Maximum and minimum temperatures recorded: Max: 32.20^{0}C Min: 11.40^{0}C
d. Critical periods for plant growth in the district

Sl. No	Crop	Critical periods of growth	Coinciding calendar month(s)
1.	Paddy	Tillering and panicle initiation stage	July and october
2.	Rapeseed	Flowering and pod formation stage	December and January
3.	Potato	Staloon formation and tuberlet formation stage	December and January

11. Soils

a. Soil group classifications present in the district
   1. Sandy, Sandy loam, Loam, Silty Clay Loam and Clay
b. Black soils : Not Present
c. Red soils : Not Present
d. Alluvial soils : 152900
e. Sandy soils : 15169
f. Laterite soils : Not Present
g. Saline and alkaline soils : Not Present
h. Acid soils : 152900
i. Soil fertility status (in general) : Medium

12. Irrigation

a. Area under irrigation : 5805 ha

13. Land use and Cropping intensity

1. Gross cropped area : 173555.6 ha
2. Net Area sown : 111325 ha
3. Fallow lands : 34870 ha
4. Cultivable waste lands : 27800 ha
5. Forest cover : 28300 ha
6. Barren lands : 27800 ha
7. Cropping intensity : 155.90%

14. Major Crops

a. Principal crops, area, production and productivity

Sl. No.	Principal Crops	Area (in ha)	Production (in tones) (1ton=1000kg)	Productivity (kg/ha)
1.	Autumn paddy	6450	16130	2500
2.	Winter paddy	83100	249290	3000
3.	Summer paddy	2710	5660	2094
4.	Wheat	520	60	1200
5.	Black gram	2980	1790	600
6.	Green gram	2070	1240	600
7.	Pea	1050	620	594
8.	Lentil	520	270	520
9.	Mustard	9390	8000	850
10.	Sesamum	220	110	520
11.	Potato	3110	29800	9600
12.	Sugarcane	500	1670	3375
13.	Ridge gourd	270	500	1820
14.	Pumpkin	610	3020	5000
15.	Kharif vegetables	3600	31030	8620
16.	Rabi vegetables	6500	42990	6616
17.	Garlic	890	5340	6000
18.	Ginger	150	780	5200
19.	Arecanut	3090	59320	19200
20.	Banana	3400	51940	15300
21.	Assam Lemon	920	10620	11540

b. Crop rotations followed :

1. Potato - Oilseed
2. Tomato – Cole crops
3. Okra – Bitter gourd

c. Crop sequences followed:

1. Paddy
2. Paddy-Paddy
3. Paddy- Paddy-Pulse
4. Vegetable-Paddy-Vegetable

5. Winter paddy-Oilseed
6. Winter paddy-Wheat
7. Paddy-Rabi vegetable
8. Wheat–Paddy
9. Rabi Veg. -Kharif Veg.
10. Kkarif Veg-Wheat
11. Paddy-Oilseed-Vegetable
12. Paddy-Vegetable-Paddy
13. Paddy-Oilseed-Paddy
14. Paddy-Vegetable -Vegetable
15. Paddy-Pulse-Paddy
16. Paddy-Garlic
17. Paddy-Paddy-Oilseed

d. Inter-cropping done, if any :
1. Banana - Colocassia
2. Arhar - Bhutjalakia
3. Arecanut – ginger

e. Mixed cropping done, if any :
1. Ahu paddy – Bao paddy

f. Catch crops grown, if any : Nil

15. Socio-economic Characteristics, Land Holding Pattern

a.	Average size of land holdings	:	1.31 ha
b.	Average fragmentation intensity	:	NA nos
c.	Source(s) of finance for farming	:	
	Rank 1. Friends and relatives		
	Rank 2. Bank		
	Rank 3. SHG/FO		
d.	Main source of income for farmers	:	
	Rank 1. Agriculture		
	Rank 2. Livestock and poultry		
	Rank 3. Fisheries		
e.	Commercial commodities produced	:	
	Rank 1. Rice		
	Rank 2. Vegetables		
	Rank 3. Milk		

16. Farm Machinery and Implements available in the district

1.	Number of tractors	:	565 nos
2.	Number of power tillers	:	1780 nos
3.	Number of carts	:	NA nos
4.	Pumps (Oil and electrical)	:	1780 & NA nos
5.	Harvesters and Threshers	:	NA & 1 nos
6.	Sprayers and Dusters	:	NA & NA nos

17. Livestock

1.	Cattle	:	488012 nos
2.	Buffaloes	:	29845 nos

3.	Sheep and goats	:	330& 170793nos
4.	Pigs	:	85625nos
5.	Poultry and ducks	:	472624&236674 nos
6.	Production of milk('000')	:	57700 ltr
7.	Production of meat	:	1325.72 ton
8.	Production of eggs	:	51000000 nos
9.	Production of wool	:	NA

18. Livestock holding patterns

a. Livestock holding pattern for big farmers

Sl. No	Animal/ bird	Average nos possessed/ Farmer	Rank according to nos possessed
1.	Dairy cattle	2.01	1
2.	Draught animal	1.87	2
3.	Buffaloes	0.17	6
4.	Goat	1.03	3
5.	Pig	0.30	5
6	Broiler and Layer	0.94	4
7	Duck	0.17	6

b. Livestock holding pattern for small farmers

Sl. No	Animal/ bird	Average nos possessed/ Farmer	Rank according to nos possessed
1.	Dairy cattle	0.82	2
2.	Draught animal	0.56	4
3.	Buffaloes	0.05	7
4.	Goat	0.72	3
5.	Pig	0.34	5
6	Broiler and Layer	1.02	1
7	Duck	0.25	6

c. Livestock holding pattern for marginal farmers

Sl. No	Animal/ bird	Average nos possessed/Farmer	Rank according to nos possessed
1.	Dairy cattle	0.42	3
2.	Draught animal	0.35	4
3.	Buffaloes	0.04	7
4.	Goat	0.76	2
5.	Pig	0.29	6
6	Broiler and Layer	0.92	1
7	Duck	0.30	5

d. Livestock holding pattern for agricultural labourers

Sl. No	Animal/ bird	Average nos possessed/Farmer	Rank according to nos possessed
1.	Dairy cattle	0.84	3
2.	Draught animal	0.81	4
3.	Buffaloes	0.07	7
4.	Goat	0.94	2
5.	Pig	0.21	6

6.	Broiler and Layer	1.34	1
7.	Duck	0.36	5

e. Average yields of various animals and bird in the district.

Sl. No	Animal/bird	Average yield (Specify Units)
1.	Dairy cow	244 l/lactation
2.	Goat	10 kg/no.
3.	Pig	52 kg/no.
4.	Broiler and layer	2 kg/no.sand 42 eggs/hen/year
5.	Duck	45 eggs/duck/year

19. Research Resources

1. Number of research stations : 5 nos
2. Number of ICAR institutes/substations : 2 nos
3. Number of state seed farms : NA nos
4. Number of private seed farms : 4 nos

20. Agricultural Marketing Status and Constraints

a. Ways of disposal of farm produce and bye-products

Sl. No	Major Farm produce	Marketing channel	Bye product (if any)	Marketing channel
1.	Paddy	1. Producer-Consumer 2. Producer-middleman-wholeseller/processor-retailer-consumer 3. Producer-wholeseller/processor-retailer-consumer	-	-
2.	Rice	1. Producer-middleman-retailer-consumer 2. Producer-retailer-consumer 3. Producer - whole seller - retailer-consumer	-	-
3.	Rapeseed	1. Producer-middleman-wholeseller/ processor-retailer-consumer 2. Producer-whole seller/processor-consumer 3. Producer- Middleman-processor-wholeseller-retailer-consumer	-	-
4.	Vegetables	1. Producer-middleman-consumer 2. Producer-middle-wholeseller-retailer- consumer	-	-
5.	Fruits	1. Producer - middleman - retailer-consumer 1. Producer-middleman-wholeseller-retailer-consumer	-	-

b. Whole sale and retail markets in the district

a. Wholesale markets :
1. Kaliapani Saturday weekly market
2. Chipahikhola weekly market
3. Allenmora

b. Retail markets : 1. Teok weekly market
2. Pulibar daily market
3. Meleng Kopadhara weekly market

c. Major modes of transport to market:
1. Pull cart
2. Auto Van
3. Ferry
4. Bus

d. Available/commonly used conveyance facilities (roads/waterways) to market :
1. Roads
2. Water ways (river)

21. Agro-climatic Zones

1. Upper Brahmaputra Valley Zone

Blank

5. Agricultural Situation in Kamrup

Geographically, district is located at western side of the state and agro- climatically falls in the Lower Brahmaputra Valley Zone of Assam. The mighty Brahmaputra passes through the district. Other Important rivers in the district are Puthimari, Boko, kulsi, Singra, Bharalu and Digaru. It is well connected by airway, railways and roadways to different parts of the country.

The soils of the district are generally acidic in nature. Agriculture activities in the district are pre dominantly rain fed and only 19 percent of the total cultivated area of 2,51,156 ha is under irrigation. Rainfall is moderate with annual average rainfall of 1,765.30 mm (2008) The major amount of rainfall is received from April- Oct i.e., the peak period of *kharif* crops. Remaining months are generally dry due to no rainfall or scanty rainfall and hence rainfed *rabi* crops mostly suffers from moisture stress.

Paddy is the principal crop due to its climatic adaptability and main staple crop of the region. Three crops of paddy viz., Autumn (*ahu*), Winter (*sali*) and summer (*boro*) are raised in the district. Other important field crops are Rapeseed, Pulses, fibre crops(Jute) and Sugarcane. Banana, Pineapple, Arecanut and Coconut are the major horticultural crops besides Mandarin orange. Flowers such as marigold, gerbera, tuberose and gladiolus are gaining importance presently. Cows, milch buffaloes, sheep, goat, poultry and piggery are some of the major livestock enterprises. Fish is another important enterprise of the district covering individual ponds, community ponds, bed fisheries, river fisheries, swamp and low lying areas etc. Sericulture is also an important cottage industry of the district. The golden silk (Muga) produced only in Assam, more particularly in Kamrup district has a high quality export potential.

1. Position in relation to longitude and latitude: Longitude: 90.48' to 91.50'E
Latitude: 25.46' to 26.49'N

2. Altitude from MSL : 45 m – 800m

3. Boundaries of the district :

E:	Darrang and Morigaon	W:	Nalbari and Goalpara
N:	Bhutan	S:	Meghalaya
NE:	Bhutan and Darrang district	SE:	Morigoan and Meghalaya
SW:	Goalpara and Meghalaya	NW:	Nalbari and Bhutan

4. Total population : 23,71,276 (as per 2001 census)
5. Area of the district : 4345 sq km
6. Population density : 581
7. Literacy percentage : 74.16
8. Status of agriculture : Rainfed and irrigated

9. Farmers

a. Big farmers : 34,413
b. Small farmers : 55,986
c. Marginal farmers : 1, 00,694
d. Agricultural labourers : 60,909

10. Farm labour mobility

a. Is sufficient farm labour available in the district: Yes
b. If 'YES' whether they do work in near by or other districts also? NO

11. Physiography

a. General nature of the terrain

The northern and southern parts of the district are characterised by hill ranges which are extension of Bhutan and Meghalaya hills respectively. The middle portion of the district being part of the Brahmaputra valley is characterized by an almost plain topography. Topography composed of plains and hills, rivers, streams, channels and marshy lands.

12. Climates

a. Sub-tropical/ Humid
b. Pattern of rainfall in different months

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
low	low	low	med	med	high	High	high	high	med	low	low

c. Special weather phenomenon in the district:

Drought is a major threat and annual feature of the district and it affects all the blocks. In 2009, during *kharif* season the intensity and duration of rainfall was inadequate. The amount of rainfall recorded was 30% less than the previous years. The rainfall deficit in Assam finally come down to 13%, whereas in Kamrup district it was 19% as on August, 2009 (Source: RMC, Guwahati).There was scanty rainfall during the month of

June due to which farmers were unable to raise the seedlings of *Sali* rice. However, farmers could raise seedlings in the month of July, but delayed sowing would result in an overall shortfall of production and productivity to extent of about 30%.The total information on drought like situation affected in 2009 is given below-

SL. No	Particulars	Area (ha)
1	No. of village affected	1,007
2	No. of farm family affected	23,333
3	Sali seedling affected	948
4	Sali paddy affected	79,114
5	Sali paddy could not be transplanted	67,385

To compensate this shortfall and based on the report on drought like situation in Kamrup district of Assam, measures were taken to supply the seeds in the affected areas by KVK, Kamrup in 2009 – 2010.

d. Maximum and minimum temperatures recorded: Max: 33.4°c Min: 11.1°c

e. Critical periods for plant growth in the district

Sl. No	Crop	Critical periods of growth	Coinciding calendar month(s)
1.	Summer rice	Vegetative and Flowering stage	Feb – May
2.	Autumn Rice	Vegetative and Flowering stage	April – June
3.	Winter rice	Vegetative and Flowering stage	July – Oct (occasional)
4.	Rapeseed	Flowering stage	Nov – Dec
5.	Sesamum	Flowering stage	Oct (occasional)
6.	Black gram	Vegetative and Flowering stage	Oct (occasional)
7.	Banana	Vegetative and flowering stage	Dec – Mar
8.	Pineapple	Maturity stage (sunburn)	May – June
9.	Coconut	Vegetative and flowering stage	Dec – Mar
10.	Arecanut	Vegetative and flowering stage	Dec – Mar
11.	Summer vegetables	Vegetative and reproductive stage	Feb – Apr
12.	Rabi vegetables	Vegetative and reproductive stage	Nov – Feb

13. Soils

a. Which are the Soil group classifications present in the district:

1. Fluvaquentic Endoaquepts
2. Fluventic Dystrudepts
3. Aeric Endoaquepts
4. Aquic Udifluvents
5. Oxyaquic Udifluvents
6. Typic Udorthents
7. Typic Dystrudepts

b. Black soils : Not Present
c. Red soils : Present (6658 ha)
d. Alluvial soils : Present (71836 ha)
e. Sandy soils : Present (49685 ha)
f. Laterite soils : Not Present
g. Saline and alkaline soils : Not Present
h. Acid soils : Present (19092 ha)
i. Sandy loam soil : Present (107945 ha)
j. Others (clay loam) : Present (38688 ha)
k. Soil fertility status (in general) : Medium

14. Irrigation

a. Area under irrigation : 1605.03 ha
b. Irrigation potential : 34083 ha
c. Source of irrigation
   1. Rivers : 7 nos
   2. Bore wells(STW) : 22473
   3. Any other sources(Low lift pump) : 1516

15. Land use and Cropping intensity

1. Gross cropped area : 211426 ha
2. Net Area sown : 175934 ha
3. Fallow lands : 11009 ha
4. Cultivable waste lands : 3578 ha
5. Forest cover : 116584 ha
6. Barren lands : 20296 ha
7. Cropping intensity : 120%

16. Major Crops

a. Principal crops, area, production and productivity

Sl. No	Principal Crops	Area (in ha)	Production (in tones) (1ton=1000kg)	Productivity (kg/ha)
1.	Autumn rice	17,953	1608.5	896
2.	Winter rice	57,853	7503.5	1297
3.	Summer rice	37,652	8406.5	2233
4.	Rape and mustard	8,213	457	556
5.	Banana	2,922	2585.0	8847
6.	Pineapple	1,899	35,580	16,892
7.	Kharif vegetables	5,007	3734.4	7458
8.	Rabi vegetables	7,736	3362.1	4346

b. Crop rotations followed :
   1. Rice monoculture
   2. Autumn rice - rabi oilseed / pulses / potato / vegetable rotation
   3. Winter rice – rabi vegetables

c. Crop sequences followed :
   1. Autumn rice – winter rice
   2. Winter rice – summer rice
   3. Autumn rice / summer vegetables – rape seed / lentil / pea / potato / *rabi* vegetables

d. Inter-cropping done, if any :
   1. High density multiple cropping in coconut/ arecanut orchard
   2. Rice + pea/ lentil/ lathyrus relay cropping
   3. Potato + Radish + Pumpkin
   4. Cole crops + Summer vegetables(as relay)

e. Mixed cropping done, if any : Rapeseed + lentil

f. Catch crops grown, if any :
   1. Summer moong (Sown in rice nursery)
   2. Sesamum (Do)

17. Socio-economic Characteristics, Land Holding Pattern

a. Average size of land holdings : 1.003ha
b. Average fragmentation intensity : 3 nos
c. Existing land tenure system(s) : Share cropping system
d. Source(s) of finance for farming :
Rank 1. Institutional agencies
Rank 2. Non Institutional agencies (Money lenders, landlords, friends, relatives, etc.)
e. Main source of income for farmers :
Rank 1. Agriculture
Rank 2. Home stead
Rank 3. Livestock and Fisheries
f. Commercial commodities produced :
Rank 1. Coconut - arecanut
Rank 2. Banana – pineapple - orange
Rank 3. Bamboo – timber wood, spices

18. Farm Machinery and Implements available in the district

a. Number of tractors : 241
b. Number of power tillers : 695

19. Livestock

1. Cattle : 4,73,684
2. Buffaloes : 29,748
3. Sheep and goats : 2,382& 1,66,598
4. Pigs : 93,496
5. Poultry and ducks : 5,70,971 & 168099
6. Production of milk : 5,17,49,398 litres
7. Production of meat : 18,40,133 tons
8. Production of eggs : 2,93,03,204 nos
9. Production of wool : Nil

20. Livestock holding patterns

a. Livestock holding pattern for big farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Cattle	4	III
2.	Bullock	2 pairs	IV
3.	Poultry	8	I
4.	Ducks	7	II
5.	Goat	3	V

b. Livestock holding pattern for small farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Cattle	3	IV
2.	Bullock	1 pair	V
3.	Poultry	7	I
4.	Ducks	6	II
5.	Goat	5	III

c. Livestock holding pattern for marginal farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Cattle	1	V
2.	Goat	3	III
3.	Pig	2	IV
4.	Poultry	6	I
5.	Ducks	4	II

d. Livestock holding pattern for agricultural labourers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Cattle	1	IV
2.	Goat	2	III
3.	Pig	2	III
4.	Poultry	5	I
5.	Ducks	3	II

e. Average yields of various animals and bird in the district

Sl. No	Animal/bird	Average yield (Specify Units)
1.	Cattle(Cross breed)	4.503 liters milk
2.	Cattle(Indigenous)	1.033 liters milk
3.	Goats	0.213 liters milk
4.	Hens	180 nos. eggs
5.	Ducks	190 nos eggs

21. Research Resources

1. Number of research stations : 4 nos.
2. Number of ICAR institutes/substations : 2 nos.
3. Number of state seed farms : 3 nos.
4. Number of private seed farms : Nil

22. Agricultural Marketing Status and Constraints

a. Ways of disposal of farm produce and bye-products

Sl. No	Major Farm produce	Marketing channel	Bye product (if any)	Marketing channel
1.	Rice	P – WS-R-C	Paddy straw	P -C
2.	Vegetables	P – WS-R-C	-	-
3.	Banana	P – WS-R-C	-	-
4.	Coconut	P – WS-R-C	-	-
5.	Arecanut	P – WS-R-C	-	-
6.	Pineapple	P – R-C	-	-

P= Producer, WS=Whole Seller, R= Retailer, C= Consumer

b. Market types – Whole sale and Retail markets in the district

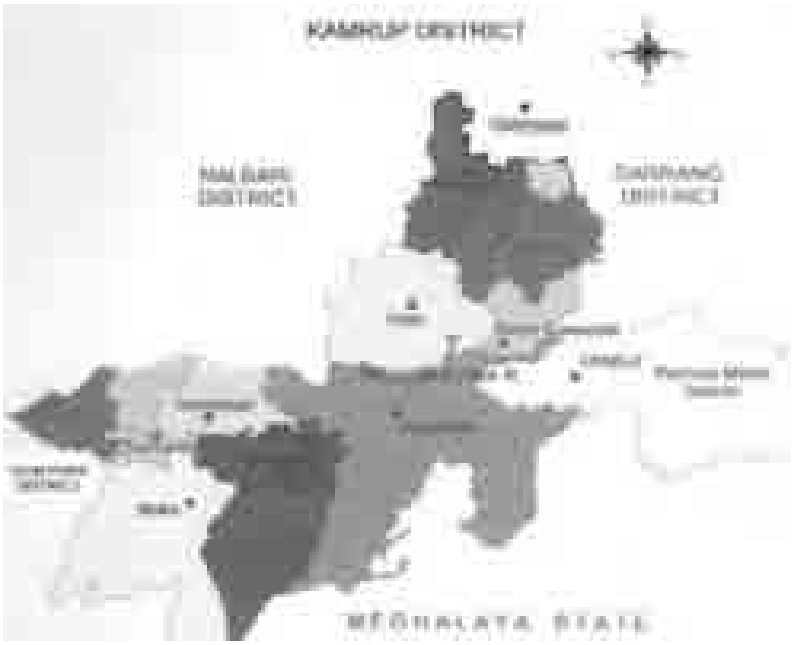
a. Wholesale markets : Primary & Secondary

b. Retail markets : Primary & Secondary

c. Major modes of transport to market:
   1. Roadways
   2. Railways
   3. Waterways

d. Available/commonly used conveyance facilities (roads/waterways) to market :
   1. Public buses, trucks and tempos
   2. Bicycles, hand carts and bullock carts.
   3. Passenger and goods trains
   4. Boats and steamers

23. Agro-Climatic Zones



1. Lower Brahmaputra Valley Zone

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6. Agricultural Situation in Karimganj

Karimganj district, the southwestern part of Southern Assam lies between 24º15´N - 25º54´N latitude and 92º23´E - 92º30´E longitude and at an altitude of 16m AMSL. The district with a geographical area of 1809 sq. km. along Indo-Bangladesh border touches Tripura & Mizoram on the south, Hailakandi district on the east and Bangladesh on the north and west. The district headquarter, Karimganj itself is situated on the bank of river Kushiara, which is the dividing line between India and Bangladesh. In summer the town bears the characteristic of "PORT-TOWN".

The major rivers of Surma Valley that drains Tripura, Mizoram, Manipur, part of Nagaland & Meghalaya flows through the district. As a result Karimganj is the only district constituting almost 30% area under water for more than 6 months every year. Therefore, the district is not merely flood prone but rather "WATER BASE".

Special features of the district

i. Enumeration of the Indian Parliamentary Constituency starts with No.1 Karimganj. Similarly, the Assam Legislative Constituency starts with No.1- Ratabari LAC.

ii. All the major rivers of Surma Valley that drain Tripura, Mizoram, Manipur, Part of Nagaland & Meghalaya flows through the district.

iii. The district also shares two contrasts: - The wettest zone of the globe (Cherrapunjee Mosynram belt) and the most scanty rainfall zone of N.E. i.e. Mizoram and Tripura State. The Sun line called Tropic of Cancer passes through the edge of the district in the south.

iv. As SRIRAMPUR of Brahmaputra Valley is the "GATE-WAY" to the North East, Karimganj is the "GATE-WAY" for Bangladesh. Sylhet Trunk Road is operative in the form of NH-115 that touches Sylhet City and Dhaka directly. River Kushiara is natural river canal that could serve the whole region as the "SWEZ CANAL of the North East" for trade route to the mainland of India and international ports as "INLAND SEA ROUTE".

Therefore the district occupies strategic position in local, regional, national and international arena having scope and vitality to develop the same.

1. Position in relation to longitude and latitude: 92°23′ -92°30′ East & 24°15′ -25°54′ North
2. Altitude from MSL : 16 m AMSL
3. Boundaries of the district :

E:	Hailakandi	W:	Bangladesh & Tripura	N:	Bangladesh & Cachar
S:	Tripura & Mizoram	NE:	Cachar & Hailakandi	SE:	Hailakandi & Mizoram
SW:	Tripura	NW:	Bangladesh.		

4. Total population : 10,07,976 (as on 2001 census)
5. Area of the district : 1809 sq. km
6. Population density : 557 per km
7. Literacy percentage : 66.21%
8. Status of agriculture : Rain fed

9. Farmers

a. Big farmers : 2784 (nos.)
b. Small farmers : 10480
c. Marginal farmers : 15808
d. Agricultural labourers : 15259

10. Farm labour mobility

a. Is sufficient farm labour available in the district: YES.
b. If 'NO' from which places do they come from? : NA.
c. If 'YES' whether they do work in near by or other districts also?: YES.
d. if 'YES' to which districts they go for work? : Hailakandi & Cachar.

11. Physiography

a. Highlands : 64929 ha
b. Midlands : 45683 ha
c. Lowlands : 15950 ha
d. Hilly tract : 54338 ha
e. General nature of the terrain

The terrain of Karimganj district is characterized by hills, tillas, undulating plains with small hillocks & swamps and low lying areas comprising of natural depressions, beels, hoars etc. Four main rivers namely Barak, Singla, Kushiara, and Longai pass through the district from north to south. The district is only 16 m above msl, due to which drainage is a major problem.

12. Climates

a. Sub-tropical/ Sub-humid
b. Pattern of rainfall in different months

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low	Low	Medium	Medium	High	High	High	High	Medium to high	Low	Low	Low

c. Special weather phenomenon in the district:

The climate of Karimganj district is sub-tropical, warm and sub-humid. The average rainfall is more than 3000mm. Generally, the period from November to February is dry. The periods of March-April and October-November are characterized by low and erratic rainfall. Hailstorm associated with high velocity wind is a regular feature during the pre-monsoon period. The period between May to mid-September is featured by high rainfall with apprehension of flood. However, the erratic behaviour of rainfall causes occasional drought as well. About 56 per cent of the total annual rainfall is confined to the monsoon period from June to August. The mean minimum temperature ranges from 12.2^{o}C in January to 25.4^{o}C in August and mean maximum temperature ranges from 24.3^{o}C in January to 32.0^{o}C in August. The winter thus appears to be less severe than other parts of the state. The relative humidity varies from 92 to 98 per cent in the morning and 43 to 78 per cent in the evening. The mean bright sunshine hours is the lowest (3.8) in July and highest (8.4) in December.

d. Maximum and minimum temperatures recorded: Max:33.2 $^{\circ}$ C Min: 8.6 $^{\circ}$ C

e. Critical periods for plant growth in the district

Sl. No	Crop	Critical periods of growth	Coinciding calendar month(s)
1.	Rice		
	a. Summer paddy	1. Maximum tillering	January/ February
		2. Panicle initiation	March/ April
	b. Autumn paddy	3. Booting/ flowering	April/ May
		1. Maximum tillering	March/ April
		2. Panicle initiation	May/ June
	c. Winter paddy	3. Booting/ flowering	June/ July
		1. Maximum tillering	July/ August
		2. Panicle initiation	August/ September
		3. Booting/ flowering	September/ October
2.	Rape & Mustard	1. Initial growth phase	November / December
		2. Flowering	January
		3. Siliqua formation	January/ February
3.	Black gram	1. Vegetative growth	October
		2. Flowering & pod setting	November/ December
4.	Brinjal	1. Initial growth stage	September/ October
		2. Flowering & fruiting	October/ November/ December
5.	Arecanut	1. Vegetative stage	Upto 3-4 years of planting
		2. Flowering & fruit setting	June/ July
6.	Banana	1. Vegetative stage	Planting in two phases
		2. Fruiting	(a) March/April (b) September/ October
			Round the year depending on the age of planting material
7.	Citrus	1. Vegetative stage	March/ April
	(Assam Lemon)	2. Fruiting	February to July/ August

13. Soils

a. Soil group classifications present in the district :-
   1. Old riverine alluvial soil
   2. Old mountain alluvial soil
   3. Non-laterized red soil
   4. (Add more if any) Peat/ organic soils in *Beel* areas

b. Black soils : Not Present
c. Red soils : Present (119267 ha)
d. Alluvial soils : Present (61633 ha)
e. Sandy soils : Not Present
f. Laterite soils : Not Present
g. Saline and alkaline soils : Not Present
h. Acid soils : Present
i. Soil fertility status (in general) : Medium

14. Irrigation

a. Area under irrigation : 9,592 ha
b. Irrigation potential : 14,041 ha
c. Source of irrigation
   1. Rivers : 3 nos
   2. Tanks : 281 nos
   3. Open wells : 237 nos
   4. Bore wells : 528 nos

15. Land use and Cropping intensity

a. Gross cropped area : 96,290 ha
b. Net Area sown : 68,546 ha
c. Fallow lands : 5561 ha
d. Cultivable waste lands : 2100 ha
e. Forest cover : 65,529 ha
f. Barren lands : 14,502 ha
g. Cropping intensity : 140 %

16. Major Crops

a. Principal crops, area, production and productivity

Sl. No	Principal Crops	Area (in ha)	Production (in tones) (1ton=1000kg)	Productivity (kg/ha)
1.	Autumn rice	5872	11744	2000
2.	Winter Rice	24674	60451.3	2450
3.	Summer Rice	1170	2925	2500
4.	*Rabi* vegetables	1605	13202	63200
5.	*Kharif* vegetables	424	7287	77000
6.	Fruits	1489	13994	9400
7.	Plantation crops (Coconut, Areca nut & tea)	2851	4218	-

b. Crop rotations followed :
   1. Rice-Rice
   2. Rice-Oil seed/Pulses/ Potato/*Rabi* vegetables
   3. *Kharif* vegetables-*Rabi* vegetables

b. Crop sequences followed :
   1. *Ahu* rice-*Sali* rice
   2. *Ahu* rice- Rape & Mustard/Black gram & Rajmah/Potato/*Rabi* vegetables
   3. *Kharif* vegetables-*Rabi* vegetables

c. Inter-cropping done, if any : 1. Areca nut - betel vine – banana - citrus

d. Mixed cropping done, if any :
   1. Ginger-turmeric-colocassia
   2. Cole crops-tomato-brinjal -chilli-country bean

e. Catch crops grown, if any : 1. Sugarcane

17. Socio-economic Characteristics, Land Holding Pattern

1.	Average size of land holdings	:	0.57 ha
2.	Average fragmentation intensity	:	2.38 nos
3.	Existing land tenure system(s)	:	NA.
4.	Source(s) of finance for farming	:	
	Rank 1. Personal finance		
	Rank 2. Money lender		
	Rank 3. Banks/ Govt. source		
5.	Main source of income for farmers	:	
	Rank 1. Agricultural production		
	Rank 2. Animal husbandry and Fishery		
	Rank 3. Small business & establishment/ service		
6.	Commercial commodities produced	:	
	Rank 1. Tea		
	Rank 2. Arecanut		
	Rank 3. Fish		

18. Farm Machinery and Implements available in the district

1.	Number of tractors	:	103 nos
2.	Number of power tillers	:	466 nos
3.	Number of carts	:	45 nos
4.	Types of implements-Ploughs	:	1042 nos
	Cultivators	:	103 nos
	Discs	:	103 nos
	Harrows	:	82 nos
	Others	:	202 nos
5.	Pumps (Oil and electrical)	:	1046 & 0 nos
6.	Harvesters and Threshers	:	
7.	Sprayers and Dusters	:	3590 nos

19. Livestock

1.	Cattle	: 329557 nos
2.	Buffaloes	: 65281 nos
3.	Sheep and goats	: 16129 & 125588 nos.
4.	Pigs	: 8381 nos.
5.	Poultry and ducks	: 579133 & 345946 nos.
6.	Production of milk	: 7881003 ltr
7.	Production of meat	: 695.7 ton
8.	Production of eggs	: 6951231 nos
9.	Production of wool	: Nil

20. Livestock holding patterns

a. Livestock holding pattern for big farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Cow	7	V
2.	Buffalo	5	VI
3.	Goat	12	III
4.	Pig	10	IV
5.	Duck	30	I
6.	Fowl	25	II

b. Livestock holding pattern for small farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Cow	4	IV
2.	Buffalo	3	V
3.	Goat	8	III
4.	Duck	42	I
5.	Fowl	15	II

c. Livestock holding pattern for marginal farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Cow	2	V
2.	Buffalo	1	VI
3.	Goat	7	III
4.	Duck	12	I
5.	Fowl	10	II
6.	Pig	3	IV

d. Livestock holding pattern for agricultural labourers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Cow	1- 2	IV
2.	Buffalo	Nil	V
3.	Goat	2 - 3	III
4.	Duck	4 - 5	I

5.	Fowl	3 - 4	II
6.	Pig	1- 2	IV

e. Average yields of various animals and bird in the district.

Sl. No	Animal/bird	Average yield (Specify Units)
1.	Cow (Local)	1-2 lit / day
2.	Cross Breed Cow	5-7 lit. / day
3.	Duck	80-90 nos./ year
4.	Fowl	70-80 nos./ year
5.	Pig	------

21. Research Resources

1. Number of research stations : 2 nos
2. Number of ICAR institutes/substations : Nil
3. Number of state seed farms : Nil
4. Number of private seed farms : Nil

22. Agricultural Marketing Status and Constraints

a. Ways of disposal of farm produce and bye-products

Sl. No	Major Farm produce	Marketing channel	Bye product (if any)	Marketing channel
1.	Rice & other cereals	Wholesale & retail markets	Paddy straw	Retail sale
2.	Vegetables & fruits	-do-		
3.	Fish	-do-	Dry fish	Wholesale & retail sale
4.	Poultry, duckery & goatery	-do-		
5.	Dairy	Retail market	Dungs & wastes	Retail

b. Whole sale and retail markets in the district

a. Wholesale markets : 1. Bhanga (arecanut) 2. Nilambazar (fish) 3. Badarpur

b. Retail markets : 1. Karimganj 2. Badarpur 3. Patherkandi

c. Major modes of transport to market:

1. Rickshaw
2. Cart
3. Autovan
4. Minitruck
5. Truck

d. Available/commonly used conveyance facilities (roads/waterways) to market :

1. Roads
2. Waterways (Boat in river)

23. Agro-climatic Zones

1. Alluvial flood free situation
2. Alluvial flood prone situation

3. Beels and haors
4. Piedmonts and plantation crops growing situation
5. Hills and forest situation

7. Agricultural Situation in Kokrajhar

Kokrajhar district of Assam is situated in between 89Ú46ì to 90Ú38ì east longitudes and between 26Ú19ì to 26Ú54ì north latitudes. The geographical area of the district is 3152.02 sq. Km which is 4.02 per cent of the state. The district is bounded by Himalayan kingdom of Bhutan on the north, Dhubri district on the south, Chirang and Bongaigaon district on the east and state of West Bengal on the west. Thus Kokrajhar district has interstate and international boundaries. The district is the gateway to Assam and other North Eastern states by road as well as railways.

Table 1. Feature of the district at a glance:

Features	District	State
Population	9.30 lakhs	266.38 Lakhs
Rural population	8.71 lakhs	NA
Geographical Area	3.152 lakhs ha	78.44 Lakh ha
Net sown area	0.897 lakh ha (28.48%)	24.89 lakh ha (24.63%)
Cropping intensity	162.4%	154.34%
Net irrigated area	25.44%	21.16%
Average operational holding	1.18 ha	1.17 ha
Total no of operational holding	74,600 lakh	25.20 lakh
Total no of household	117,688 lakh	49.40 lakh
Total revenue villages	973 nos	26312 no
Gaon Panchayat	88 nos	2212 no
Total no of block	6 nos	219 no
Total no of circle	5 nos	145 nos
Sub division	3 nos	53 nos

Demographic Profile:

The total population of the district is 9, 30, 404 as per 2001 census, of which 8, 71, 706 (93.69 %) live in rural areas. But after reorganization of the district, the present population of the Kokrajhar district is calculated around 8 lakhs. The population density per square kilometer is 294 with sex ratio of 945 per 1000 males. The SC and ST population constitute 44.87% of the total population of the district.

Table 2. Comparison of demographic profile between Kokrajhar district and Assam:

Sl. No.	Population description	Kokrajhar	Assam
1.	Total population	9,30,404	26,638,407
	Male	4,78,242	13,787,799
	Female	4,52,162	12,850,608
2.	Sex Ratio	945	932
3.	Population density per Km^2	294	340
4.	Literacy Rate	52.55	64.65
	Male	61.90	71.93
	Female	42.65	56.03

Topography and Agro-climatic characteristics:

The district has a total area of 3169.22 Sq. km. Till recently the district had over 50 per cent of its geographical area covered by deep green forest. But the forest coverage has dwindled substantially due to unscrupulous and massive denudation. Most of the terrain in the district is scantily populated and thickly forested. The district is characterised by almost plain topography being flanked by foothills of Bhutan in the upper strip of north and high plain in the middle to lower strip towards the southern side with a gradation from north to south.

Agro-climatically, the district falls under Lower Brahmaputra Valley Zone of Assam. The climate of the district is humid sub-tropical in nature characterised by warm-humid summer cool-dry winter. The average annual rainfall of the district is 3127 mm against the state average of 2584.50 mm and the mean maximum and minimum temperature varies from 33-38°C and 8-10°C respectively. The soil texture is mostly sandy loam to clay loam with P^H ranging from 4.7 to 7.8 i.e. acidic to neutral.

Land use pattern and land holdings:

The Net Sown Area of Kokrajhar district is 89, 782 ha which is 28.33% of the total area of the district. There are 74, 600 operational holdings with 89,782 ha under their possession. Small and Marginal holders constitute 50% of the total having 43.50% of land under their possession, where as Medium and Large farmers constitute 16.80% of total with 47.30% of land under their possession.

1.	Position in relation to longitude and latitude:		89o 46 to 90o38 East longitude and 26o 19 to 26o 54 north latitude			
2.	Altitude from MSL	:				
3.	Boundaries of your district	:				
	E:	Bongaigaon	W:	West Bengal	N:	Bhutan
	S :	Dhubri	NE:	Chirang	SE:	Bongaigaon and Dhubri
	SW:	Bengal & Dhubri	NW:	Bhutan and Bengal		
4.	Total population	:	9,30,404			
5.	Area of the district	:	3.986 sq km			
6.	Population density	:	234/ sq.km			
7.	Literacy percentage	:	52.55 %			
8.	Status of agriculture	:	Rainfed			

9. Farmers

a.	Big farmers	:	3537 (nos)
b.	Small farmers	:	29577(nos)
c.	Marginal farmers	:	22794 (nos)
d.	Agricultural labourers	:	25,160(nos)

10. Farm labour mobility

a. Is sufficient farm labour available in the district: YES

b. If 'YES' whether they do work in near by or other districts also? NO

11. Physiography

a.	Highlands	:	124773 (in ha)
b.	Midlands	:	169519.0
c.	Lowlands	:	56507.0
d.	Hilly tract	:	47836.0

12. Climates

a. Sub-tropical/ Humid

b. Pattern of rainfall in different months

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low	Low	Low	Low	low	Medium	High	high	high	medium	Low	low

c. Maximum and minimum temperatures recorded: Max: 38o C Min:10 oC

d. Critical periods for plant growth in your district

Sl. No	Crop	Critical periods of growth	Coinciding calendar month(s)
1.	Kharif paddy	July August	June – July to Oct/ Nov.
2.	Boro paddy	March –April	Dec.- Jan.- May- June
3.	Rape seed & Mustard	Dec.- January	Oct./Nov.- Feb/ March
4.	Nizer	Nov.- Dec.	Dec.- January
5.	Sessamum	August – September	August- November
6.	Jute & Mesta	April – June	March – Sept.

13. Soils

a. Soil group classifications present in the district:

1. Alluvial soils
2. Sandy
3. Red soils
4. Black soils

b Black soils : 10,000.0 ha

c. Red soils : 12,000.0 ha

d. Alluvial soils : 1,12,000.0 ha

e. Sandy soils : 10,000.0 ha

f. Acid soils : 52,000.0 ha

g. Soil fertility status (in general) : Low

14. Irrigation

a. Area under irrigation : 21846ha

b. Irrigation potential : 23,796 ha

c. Source of irrigation

1. Rivers : 14 nos (Flow irrigation-11 and Lift irrigation-3)
2. Tanks : 141 nos
3. Open wells : Nil
4. Bore wells : 3702 nos

15. Land use and Cropping intensity

1. Gross cropped area : 1,77,394 ha
2. Net Area sown : 108,906 ha
3. Fallow lands : 3,037 ha
4. Cultivable waste lands : 2,212 ha
5. Forest cover : 1,74,124ha

6. Barren lands : 18307 ha
7. Cropping intensity : 164.20%

16. Major Crops

a. Principal crops, area, production and productivity

Sl. No	Principal Crops	Area (in ha)	Production (in tones)	Productivity (kg/ha)
1.	Summer Rice	8792	21537	2384
2.	Autumn Rice	25758	23362	907
3.	Winter Rice	53447	74238	1389
4.	Rape and Mustard	23748	14462	609
5.	Niger	1724	903	524
6.	Wheat	2315	3151	1361
7.	Jute	2006	3954	1971
8.	Lentil	1126	636	565
9.	Black gram	705	457	648
10.	Pea	648	391	604
11.	Sesamum	321	202	628
12.	Linseed	548	305	586

b. Crop rotations followed : Nil

c. Crop sequences followed :

1. Rice (T) – potato/ Maize/ lentil/ Tomato/ chilli
2. Rice (T) – Toria/ Nizer/buckwheat/ winter vegetables etc
3. Rice (T)- Pea/ Vegetables/ cabbage/ cauliflower

d. Inter-cropping done, if any : Nil

e. Mixed cropping done, if any :

1. Corriander + Chilli + Reddish
2. Potato + Reddish + Pumkin
3. Arecanut + betelvine + Assam Lemon + pineapple

f. Catch crops grown, if any : Nil

17. Socio-economic Characteristics, Land Holding Pattern

a. Average size of land holdings : 1.20 ha

b. Source(s) of finance for farming :

Rank 1. Own source

Rank 2. Private money lender

Rank 3. Bank

c. Main source of income for farmers :

Rank 1. Paddy

Rank 2. Livestock

Rank 3. Pisciculture

Rank 4. Poultry and Dukery

18. Farm Machinery and Implements available in the district

1.	Number of tractors	:	62 nos
2.	Number of power tillers	:	150 nos
3.	Number of carts	:	500 nos
4.	Types of implements-Ploughs	:	200 nos
	Cultivators	:	100 nos
	Discs	:	150 nos
	Harrows	:	100 nos
	Others	:	Nil
5.	Pumps (Oil and electrical)	:	300 & 2 nos
6.	Harvesters and Threshers	:	Nil& 5 nos
7.	Sprayers and Dusters	:	5000 & Nil

19. Livestock

1.	Cattle	:	486856 nos
2.	Buffaloes	:	5929 nos
3.	Sheep and goats	:	13278& 66199nos
4.	Pigs	:	94055 nos
5.	Poultry and ducks	:	274294 & 132610 nos
6.	Production of milk	:	29.74 m ltr
7.	Production of meat	:	1172.90 ton
8.	Production of eggs	:	194.38 lakh nos
9.	Production of wool	:	Nil

20. Livestock holding patterns

a. Livestock holding pattern for big farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Cattle	8	3
2.	Poultry	100	1
3.	Piggery	5	4
4.	Sheep	10	3
5.	Buffalow	4	5
6.	Duckery	15	2

b. Livestock holding pattern for small farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Cattle	5	3
2.	Poultry	50	1
3.	Piggery	3	4
4.	Sheep	5	3
5.	Buffalow	2	5
	Duckery	10	2

c. Livestock holding pattern for marginal farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Cattle	2	3
2.	Poultry	20	1
3.	Piggery	1	4
4.	Sheep	2	3
5.	Buffalow	-	-
6.	Duckery	5	2

d. Livestock holding pattern for agricultural labourers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Cattle	-	-
2.	Poultry	5	1
3.	Piggery	1	3
4.	Sheep	2	2
5.	Buffalow	-	-
6.	Duckery	-	-

e. Average yields of various animals and bird in the district.

Sl. No	Animal/bird	Average yield (Specify Units)
1.	Milch cattle (Milk)	
2.	Poultry (Meat)	
3.	Sheep/goat (meat)	
4.	Poultry (egg)	
5.	Pig (meat)	

21. Research Resources

1. Number of research stations : 1 Nos
2. Number of ICAR institutes/substations : Nil
3. Number of state seed farms : Nil
4. Number of private seed farms : Nil

22. Agricultural Marketing Status and Constraints

a. Ways of disposal of farm produce and bye-products

Sl. No	Major Farm produce	Marketing channel	Bye product (if any)	Marketing channel
1.	Paddy	Middleman purchase in weekly market	Paddy straw	Middle man purchase
2.	Rapeseed/ Mustard	Weekly market	Nil	
3.	Vegetables/ potato	Weekly market	Nil	
4.	Fish	Daily and weekly market	Nil	
5.	Meat (Chicken, Mutton, pork)	Daily market and weekly market	Nil	

b. Market types – whole sale and retail markets in the district : NA

c. Major modes of transport to market:
   1. Auto
   2. Tempo
   3. Riksha
   4. Bullock cart

d. Available/commonly used conveyance facilities (roads/waterways) to market :
   1. By bus
   2. tempo
   3. Riksha
   4. Own bicycle

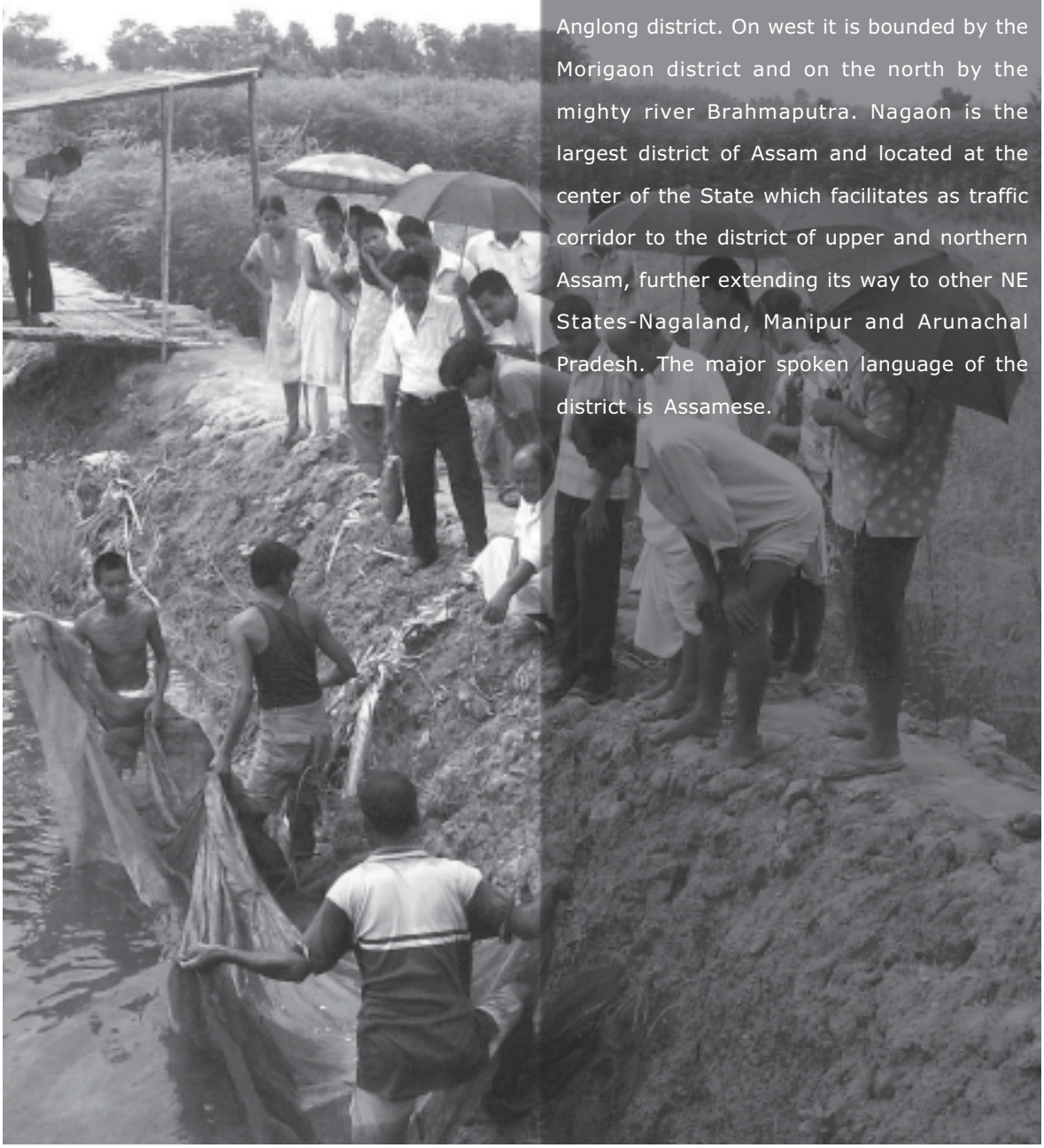
23. Agro-climatic Zones

1. Foot Hill Zone (I)
2. Plain Zone (II)
3. Hill Zone (III)

8. Agricultural Situation in Nagaon

Nagaon district lies between 25^{0}452 to 26^{0}452 N latitude and 91^{0}512 to 93^{0}212 E longitude and at an altitude of 50.2m above the mean sea level.

The district on its east is bounded by the Golaghat district and a part of Karbi Anglong district and on south by hills of Karbi Anglong district. On west it is bounded by the Morigaon district and on the north by the mighty river Brahmaputra. Nagaon is the largest district of Assam and located at the center of the State which facilitates as traffic corridor to the district of upper and northern Assam, further extending its way to other NE States-Nagaland, Manipur and Arunachal Pradesh. The major spoken language of the district is Assamese.



1. Position in relation to longitude and latitude:90°45/ E Longitude, 26°N Latitude
2. Altitude from MSL : 50.2 m above MSL
3. Boundaries of the district :
   - E : Golaghat
   - W : Morigaon
   - N : River Brahamaputra
   - S : Hills of Karbi Anglong
   - NE : Golaghat district
   - SE : NC Hills & Karbi Anglong
   - SW : Karbi Anglong
   - NW : River Brahmaputra
4. Total population : 23, 14,629 (As per Census, 2001)
5. Area of the district : 3734510 sq km
6. Population density : 620 person/sq km
7. Literacy percentage : 58.39% in rural areas and 85% in urban areas
8. Status of agriculture : Rainfed

9. Farmers :

a. Big farmers : 8334nos
b. Small farmers : 68515 nos.
c. Marginal farmers : 101001 nos.
d. Agricultural labourers : 77113 nos.

10. Farm labour mobility

a. Is sufficient farm labour available in the district: **YES**
b. If 'YES' whether they do work in near by or other districts also? **YES**
c. if 'YES' to which districts they go for work ? Morigaon, Golaghat, Jorhat, Sivsagar, Dibrugarh, Tinsukia & Dimapur district of Nagaland

11. Physiography

a. Highlands : 32.85 (in thousand ha)
b. Midlands : 228.53 (in thousand ha)
c. Lowlands : 37.39 (in thousand ha)
d. Hilly tract : 74.68 (in thousand ha)
e. General nature of the terrain:

The elevation of the hills is less than 500 m above MSL and most of them lie in between 100-300 msl. The hills either barren, cultivated or occupied by mixed or reserve forest. In between hills and lower alluvial plans there lie the undulating and rolling piedmont and highland areas in eastern and southern side of the district. The plans of district along the Brahamaputra river and their tributaries suffer from regular flood in rainy season. Within the recent flood plain of Brahamaputra valley particularly

on the main bank of the river there are almond shaped, sandy and / or silty areas formed due to oscillation of the river from side to side. Swampy areas are the natural depression formed within the plain as well as the other areas due to earth quake and other natural forces. Locally these depressions are known as Beels.

12. Climates

a. Sub-tropical/ Humid

b. Pattern of rainfall in different months

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low	Low	Medium	Medium	High	High	High	High	Medium	Low	Low	Low

c. Special weather phenomenon in the district:

A high velocity wind locally *Bordoisila* is observed in the month of April. Highest rainfall is generally recorded in the month of July- August. The average maximum and minimum temperature have been recorded during July and December respectively.

d. Maximum and minimum temperatures recorded: Max: 38◦ C Min: 8◦ C

e. Critical periods for plant growth in the district:

Sl. No	Crop	Critical periods of growth	Coinciding calendar month(s)
1	Rice	Germination	June- July
		Tillering	July- August
		Booting	Sept-Oct
		Heading	Oct- Nov
		Flowering	Nov- Dec
		Grain filling	Dec
2	Wheat	Germination	Nov-Dec
		Tillering Stage	Dec- Jan
		Jointing Stage	Jan- Feb
		Flowering Stage	Feb- March
		Milk Stage	March
		Dough Stage	April
3	Jute	Germination	April- May
		Initial Growth	May- June
		Grand Growth stage	June - July
		Bark Thickening/ Fibre accumulation stage	July - Aug
4	Sugarcane	Germination	Feb- March
		Tillering Stage	May- June
		Internode Differentiation	June- August
		Internodes elongation	Sept- Nov

5	Toria	Germination	Oct- Nov
		Branching	Nov
		Flowering	Nov- Dec
		Siliqua formation stage	Jan-Feb

13. Soils

a. Soil group classifications present in the district

1. Entisol
2. Inceptisols
3. Alfisols
4. Ultisols

b. Black soils : Not Present

c. Red soils : Not Present

d. Alluvial soils : 48450 ha

e. Sandy soils : 28389 ha

f. Laterite soils : Not Present

g. Saline and alkaline soils: Not Present

h. Acid soils : 22987 ha

i. Soil fertility status : Medium

14. Irrigation

a. Area under irrigation : 14929 ha

b. Irrigation potential : 25057 ha

c. Source of irrigation

1. Rivers : 14 nos
2. Tanks : 303 nos
3. Open wells : Nil
4. Bore wells : 23186 nos (STW) 91 nos. (DTW)
5. Any other sources : STW : 39071 nos
   Pond : 3224 nos
   LLP : 1564 nos
   Others : 5999 nos

15. Land use and cropping intensity

1. Gross cropped area : 271285 ha
2. Net Area sown : 217805 ha (80.29% of cultivated area)
3. Fallow lands : 9468 ha
4. Cultivable waste lands : 11154 ha
5. Forest cover : 90342 ha
6. Barren lands : 5320 ha
7. Cropping intensity : 192%

16. Major Crops

1. Principal crops, area, production and productivity

Sl. No	Principal Crops	Area (in ha)	Production (in tones) (1ton=1000kg)	Productivity (kg/ha)
1	Winter Rice	136000	326000	2400
2	Summer Rice	68000	256000	3770
3	Autumn Rice	41000	98000	2400
4	Wheat	5700	6730	982
5	Jute	7876	20000	2060
6	Sugarcane	4488	307750	35793
7	Blackgram	600	2100	544
8	Greengram	900	500	538
9	Toria	29000	19100	659
10	Sesamum	1100	1300	1182
11	Lentil	2000	1000	500
12	Pea	5000	3000	600

2. Crop rotations followed:
   1. Ahu Rice- Sali Rice- Vegetables- Jute- Sali Rice- Toria
   2. Ahu Rice- Sali Rice- Wheat- Jute- Sali Rice- Lentil
   3. Jute- Sali Rice- Smmer Pulses- Sali Rice- Boro Rice
3. Crop sequences followed:
   1. Sali Rice- Boro Rice
   2. Ahu Rice- Sali Rice- Vegetables
   3. Jute- Sali Rice - Toria
4. Inter-cropping done, if any:
   1. Brinjal + Coriander
   2. Potato + Pumpkin
   3. Potato + Brinjal
   4. Potato + Raddish
5. Mixed cropping done, if any:
   1. Radish + Mustard (leafy vegetables)
   2. Pudina + Chilli
   3. Lathyrus + Pea
   4. Carrot + Coriander
   5. Lentil + Toria
6. Catch crops grown, if any:
   1. Toria
   2. Coriander
   3. Summer Greengram
   4. Vegetables

17. Socio-economic Characteristics, Land Holding Pattern

1.	Average size of land holdings	: 1.01 ha
2.	Average fragmentation intensity	: 3 nos
3.	Existing land tenure system(s)	: Ownership right
4.	Source(s) of finance for farming	:
	Rank 1. Own source	
	Rank 2. Money lenders	
	Rank 3. Financial institutes	
5.	Main source of income for farmers	:
	Rank 1. Agriculture	
	Rank 2. Animal Husbandry & Fishery	
	Rank 3. Business/Service	
6.	Commercial commodities produced	:
	Rank 1. Rice	
	Rank 2. Vegetables	
	Rank 3. Jute	

18. Farm Machinery and Implements available in the district

1.	Number of tractors		: 366 nos
2.	Number of power tillers		: 932 nos
3.	Number of carts		: 8225 nos
4.	Types of implements-		
	a.	Ploughs	: 2
	b.	Cultivators	: 9175 nos
	c.	Discs	: 515 nos
	d.	Harrows	: 515 nos
	e.	Others	: NA
5.	Pumps (Oil and electrical)		: 24750 & 680 nos
6.	Harvesters and Threshers		: NA & 15 nos
7.	Sprayers and Dusters		: 45000 & 100 nos

19. Livestock

1.	Cattle	: 8, 59,232 nos
2.	Buffaloes	: 12,663 nos
3.	Sheep and goats	: 12,395 & 3, 56,954 nos
4.	Pigs	: 58510 nos
5.	Poultry and ducks	: 11, 86,796 & 16, 92,942 nos
6.	Production of milk	: 46450098 ltr
7.	Production of meat	: 1327.384 ton
8.	Production of eggs	: 28990541 nos

20. Livestock holding patterns

a. Livestock holding pattern for big farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Cattle	15	3rd
2.	Buffalo	5	5th
3.	Pig	12	4th
4.	Goat	20	2nd
5.	Poultry (Chicken & Duck)	50	1st

b. Livestock holding pattern for small farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Cattle	6	3rd
2.	Buffalo	2	5th
3.	Pig	5	4th
4.	Goat	15	2nd
5.	Poultry (Chicken & Duck)	20	1st

c. Livestock holding pattern for marginal farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Cattle	3	3rd
2.	Buffalo	-	-
3.	Pig	2	4th
4.	Goat	5	2nd
5.	Poultry (Chicken & Duck)	15	1st

d. Livestock holding pattern for agricultural labourers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Cattle	2	3rd
2.	Buffalo	-	-
3.	Pig	1	4th
4.	Goat	3	2nd
5.	Poultry (Chicken & Duck)	7	1st

e. Average yields of various animals and bird in the district.

Sl. No	Animal/bird	Average yield (Specify Units)
	Milk	
1	Milch Cattle (Local)	0.628 lit/day
2.	Milch Cattle (Crossbreed)	2.13 lit/day
3.	Milch Buffalo	5.48 lit/day
	Meat	
4.	Pig	65 kg/yr
5.	Goat	20 kg/yr
6.	Sheep	20 kg/yr
7.	Fowl	2.62 kg
8.	Duck	2.92 kg
	Egg	
9	Local Fowl	70 nos/yr
10	Local Duck	90 nos/yr
11	Improved Fowl	150 nos/yr
12	Improved Duck	170 nos/yr

21. Research Resources

1. Number of research stations : 1 nos
2. Number of ICAR institutes/substations : NIL
3. Number of state seed farms : 4 nos
4. Number of private seed farms : NIL

22. Agricultural Marketing Status and Constraints

a. Ways of disposal of farm produce and bye-products

Sl. No	Major Farm produce	Marketing channel	Bye product (if any)	Marketing channel
1.	Food Grains	i. Farmers/producer → Consumer ii. Farmer/producer → Retailer/Village traders → Consumer iii. Farmer/producer → Wholesaler → Retailer/village traders → Consumer iv. Farmer/producer → Village traders →Wholesaler → Retailer→ Consumer v. Farmer/producer → Co-operative marketing society → Retailer→ Consumer vi. Farmer/producer → Govt. Agency (FCI etc.) → Fair Price shop→ Consumer	Paddy straw/ Wheat straw	Producer → Consumer Producer → Village traders → Consumer

		vii. Farmer/producer → Wholesaler→ Flour miller → Retailer→ Consumer		
2.	Oilseeds	i. Farmers/producer → Consumer ii. Farmer/producer → Village traders →Retailer→ Consumer iii. Farmer/producer → Oilseed wholesaler →Processor → Oil wholesaler →Retailer→ Oil consumer iv. Farmer/producer → Village traders → Processor → Oil consumer		
3.	Fruits and Vegetables	i. Producer → Consumer ii. Farmers/producer → Primarywholesaler →Retailers →Consumer iii. Farmers/producer → Processor →Retailers →Consumer v. Farmers/producer → Primary wholesaler → Processor →Retailers → Consumer vi. Farmers/producer →Local Assembler →Primary wholesaler →Retailers → Consumer		
4.	Live stock	i. Producer → Consumer ii. Producer → Retailer → Consumer	Ghee, Dahi, Cream	Producer → Consumer
5.	Fish	i. Producer → Consumer ii. Producer → Retailer → Consumer Producer → Wholesaller → Retailer → Consumer Iv. Producer → Fish Co-operative Society → Retailer → Consumer		

b. Whole sale and retail markets in the district

a. Wholesale markets : 1.Borabazar (Nagaon) 2. Hojai 3.Dhing (Total: 3)

b. Retail markets : 1.Phuloguri 2. Doboka 3.Samuguri (Total: 3)

c. Major modes of transport to market:

By Rail

By Road

By River

d. Available/commonly used conveyance facilities (roads/waterways) to market :

1. By Bus/truck
2. By Bicycle
3. By Autovans
4. By Thela/ carts

23. Agro-climatic Zones

1. Central Brahamaputra Valley Zone

9. Agricultural Situation in Nalbari

Nestled within the bosom of Assam state, Nalbari district is 24 years old, being carved out from the erstwhile Kamrup district in 1985. Located strategically in the lower Brahmaputra valley of Assam, the district is a melting pot of people, cultures and traditions. Flanked by the mighty river Brahmaputra on its southern fringes and the foothills of Baksa district towards its northern end, the district represents diversity in agro-climatic and geographical situations. Nature has bestowed both its bounty and curses upon the district. Fertile soils, favourable climate, available water etc. have been the boons of nature while recurring floods have been the bane. The economy of the district is primarily agrarian, albeit of a subsistence nature. Majority of the farm families are small and marginal, practicing traditional agriculture. The district has a favourable literacy rate, which , however, has not served the interest of the agricultural sector, as in the absence of a motivational climate, the new breed of educated youth are gradually shying away from agriculture in search of white collar jobs in urban areas. In the absence of an industrial climate, unemployment levels are high. From the point of view of self sufficiency of agricultural commodities, the district presents a sorry picture as almost all required commodities have to be procured from outside, either to compensate shortfalls or to wholly import. Further, low cropping intensity, unscientific resource management practices, low levels of knowledge, awareness and motivation have been compounding problems. Forward linkages in the agricultural sector are woefully inadequate as is the case with institutional support. The agro processing sector too, leaves a lot to be desired. Against this pretty grim scenario, however, the district can boast of inherent strengths, which, if properly streamlined, targeted and planned, can totally and dramatically change the present situation to a bright, if not a rosy one. The strengths of the district lies in its fertile soils, favourable climate, available water, good communication network, market access, comparatively high literacy, availability of institutions capable of providing technological backstopping etc. It would require envisioning the unforeseeable future, taking into account the problems and potentials to prepare a roadmap for development that can effectively bridge the gap between the existing and the desirable situation. The need of the hour is to devise effective strategies for the holistic development of the entire sector on a priority basis and in a phased manner while ensuring that institutional synergy and convergence of resources and efforts takes place.

1. Position in relation to longitude and latitude: 91^0 07'E and 91^0 47' E longitudes and 26^0N and $58^0$5'N latitude.

2. Altitude from MSL : 89 m above msl.

3. Boundaries of the district :

E: Kamrup district	W: Barpeta district	N: Baksa district
S: Brahmaputra River	NE: Kamrup district	SE: Kamrup district
SW: Barpeta district	NW: Barpeta district	

4. Total population : 653328 (2001 census)

5. Area of the district : 9842859 sq km

6. Population density : 504/sq km

7. Literacy percentage : 68.08%

8. Status of agriculture : Rainfed

9. Farmers : 77477
- a. Big farmers : 4653
- b. Small farmers : 27995
- c. Marginal farmers : 25562
- d. Agricultural labourers : 19267

10. Farm labour mobility
- a. Is sufficient farm labour available in the district: YES
- b. If 'NO' from which places do they come from?
- c. If 'YES' whether they do work in near by or other districts also? YES
- d. If 'YES' to which districts they go for work? Kamrup

11. Physiography
1. Highlands : NA
2. Midlands : NA
3. Lowlands : NA
4. Hilly tract : NA
5. General nature of the terrain

The district is characterized by almost plain topography with gentle slope from north towards south. There are five land forms in the district *viz.* foothills and high lands, uplands, transitional medium lands, low lands, and natural depressions.

12. Climates
- a. Sub-tropical/ Humid/Sub-humid
- b. Pattern of rainfall in different months

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low	Low	Low	Medium	Medium	High	High	High	Medium	Medium	Low	Low

c. Special weather phenomenon in the district

Lower rainfall during peak monsoon as compared to average normals during 2006 and 2009, accompanied by rise in day temperature.

d. Maximum and minimum temperatures recorded: Max: 37^{O}C Min: 7^{O}C

e. Critical periods for plant growth in your district

Sl. No	Crop	Critical periods of growth	Coinciding calendar month(s)
1.	Rice	Tillering, flowering	July-August, Sept-Oct
2.	Toria	Flowering	Dec-Jan
3.	Jute	Early vegetative stage	April-May
4.	Pea	Vegetative, pod formation	Dec-Jan
5.	Lentil	Vegetative, pod formation	Nov-Dec
6.	Banana	Vegetative, reproductive	Jun-July, Aug-Sept
7.	Arecanut	Flowering, fruiting	Jan-Feb
8.	Coconut	Flowering, fruiting	Mar-April, Oct-Nov
9.	Potato	Stolon initiation, tuber formation, tuber development	Nov-Jan
10.	Rabi vegetables	Vegetative	Nov-Dec

13. Soils

Soil group classifications present in the district

1. Old alluvial
2. New alluvial
3. Black soils : Not Present
4. Red soils : Not Present
5. Alluvial soils : 121222 ha
6. Sandy soils : 21602 ha
7. Laterite soils : Not Present
8. Saline and alkaline soils : Not Present
9. Acid soils : 101222 ha
10. Soil fertility status (in general) : Medium

14. Irrigation

a. Area under irrigation : 10962 ha

b. Irrigation potential : 17394 ha

c. Source of irrigation

1. Rivers : 05 nos
2. Tanks : 98 nos
3. Open wells : NA
4. Bore wells : 4250 nos
5. Any other sources : NA

15. Land use and cropping intensity

1. Gross cropped area : 93250 ha
2. Net Area sown : 56071 ha
3. Fallow lands : 1093 ha
4. Cultivable waste lands : 2252 ha
5. Forest cover : 19987 ha

6. Barren lands : NA
7. Cropping intensity : 161%

16. Major Crops

1. Principal crops, area, production and productivity

Sl. No	Principal Crops	Area (in ha)	Production (in tones) (1ton=1000kg)	Productivity (kg/ha)
	Autumn Paddy	20500	36900	1800
	Winter Paddy	103000	293550	2850
	Summer Paddy	17000	56100	3300
	Jute	1260	1575	1250
	Sesamum	640	322	500
	Toria	11270	6762	520
	Linseed	1790	555	310
	Niger	1500	525	350
	Blackgram	810	407	500
	Lentil	2990	1585	530
	Pea	2460	1845	750
	Banana	2060	28920	14100
	Papaya	650	9825	15000
	Arecanut	4250	6500	1530
	Coconut	2460	16550	6700
	Potato	4140	9310	2200
	Chillies	720	390	540
	Turmeric	640	390	1410
	Ginger	670	3810	5700
	Kharif vegetable	3050	22375	5700
	Rabi vegetable	7230	10845	2210

2. Crop rotations followed :
   1. Rice followed by Rice
   2. Rice followed by toria
   3. Rice – fallow
   4. Autumn rice followed by rabi crops
3. Crop sequences followed:
   1. Winter Paddy – Oilseeds
   2. Winter Paddy – Pulses
   3. Winter Paddy – Vegetables
   4. Summer /Autumn Paddy- Winter Paddy
4. Inter-cropping done, if any:
   1. Coconut-Assam lemon-Ginger/Turmeric
   2. Coconut-Banana-Ginger/Turmeric
5. Mixed cropping done, if any:
   1. Rapeseed & lentil
   2. Rice & Pea(relay)
   3. Rice & Lentil(relay)
   4. Coconut & Betel vine
   5. Potato & Pumpkin

6. Potato & mustard
7. Rice & Lathyrus (relay)

6. Catch crops grown, if any:
   1. Green gram
   2. Blackgram
   3. Sunhemp

17. Socio-economic Characteristics, Land Holding Pattern

1. Average size of land holdings : 0.95 ha
2. Average fragmentation intensity : 3 nos
3. Existing land tenure system(s) : Own land & leased land
4. Source(s) of finance for farming :
   Rank 1. Own
   Rank 2. Financial Institution
5. Main source of income for farmers :
   Rank 1. Crop production
   Rank 2. Animal Production
   Rank 3. Fisheries
6. Commercial commodities produced :
   Rank 1. Grain
   Rank 2. Fruits & Nut
   Rank 3. Vegetables
   Rank 4. Milk
   Rank 5. Fish

18. Farm Machinery and Implements available in the district

1. Number of tractors : 255 nos
2. Number of power tillers : 610 nos
3. Number of carts : NA
4. Types of implements-
   a. Ploughs : NA
   b. Cultivators : 50 nos
   c. Disc Harrows : 200 nos
   d. Others – Weeder : 104 nos
5. Pumps (Oil and electrical) : 6620 & (NA) nos
6. Harvesters and Threshers : Nil & 5 nos
7. Sprayers and Dusters : 1059 & Nil

19. Livestock

1. Cattle : 33050 nos
2. Buffaloes : 1290 nos
3. Sheep and goats : 7820 & 101900 nos
4. Pigs : 5246 nos
5. Poultry and ducks : 142483 & 68224 nos
6. Production of milk : 27166152 ltr
7. Production of meat : 598.145 ton
8. Production of eggs : 17150000 nos
9. Production of wool : NA

20. Livestock holding patterns

a. Average yields of various animals and bird in the district.

Sl. No	Animal/bird	Average yield (Specify Units)
1.	Cow –Local Cow-CB	1.2 L/day/head 3.9 L/day/head
2.	Buffalo	2.02 L/day/head
3.	Goat	6.7 Kg/head
4.	Poultry & Duck-Local Poultry & Duck-Imp.	36 egg/head/yr 70 egg/head/yr
5.	Poultry & Duck	084-1.00 kg/head

21. Research Resources

1. Number of research stations : Nil
2. Number of ICAR institutes/substations : Nil
3. Number of state seed farms : NA
4. Number of private seed farms : NA

22. Agricultural Marketing Status and Constraints

a. Ways of disposal of farm produce and bye-products

Sl. No	Major Farm produce	Marketing channel	Bye product (if any)	Marketing channel
1.	Vegetables Fruits Nuts	Producer-Consumer	-	Producer-Consumer
2.	Rice Oilseeds Meat	Producer-Trader/Commission agent-Wholesaler/Retailer-	Rice straw, rice bran, oil cake, Kharali, Cowdung, Animal hide	Producer-Trader/Commission agent-Wholesaler/Retailer-Consumer
3.	Rice Vegetables Fruits Egg Fish	Producer-Trader/Commission agent-Retailer-Consumer	Rice straw, rice bran	Producer-Trader/Commission agent-Retailer-Consumer
4.	Pulse	Producer-Retailer-Consumer	Stover	Producer-Retailer-Consumer

b. Whole sale and retail markets in the district

a. Wholesale markets : 1. Nalbari 2. Mukalmua 3. Nadla

b. Retail markets : 1. Alliya 2. Koria 3. Moroa 4. Koithalkuchi 5. Tihu

c. Major modes of transport to market:

1. Truck
2. Bus
3. Tractor
4. Bullock cart/Hand cart

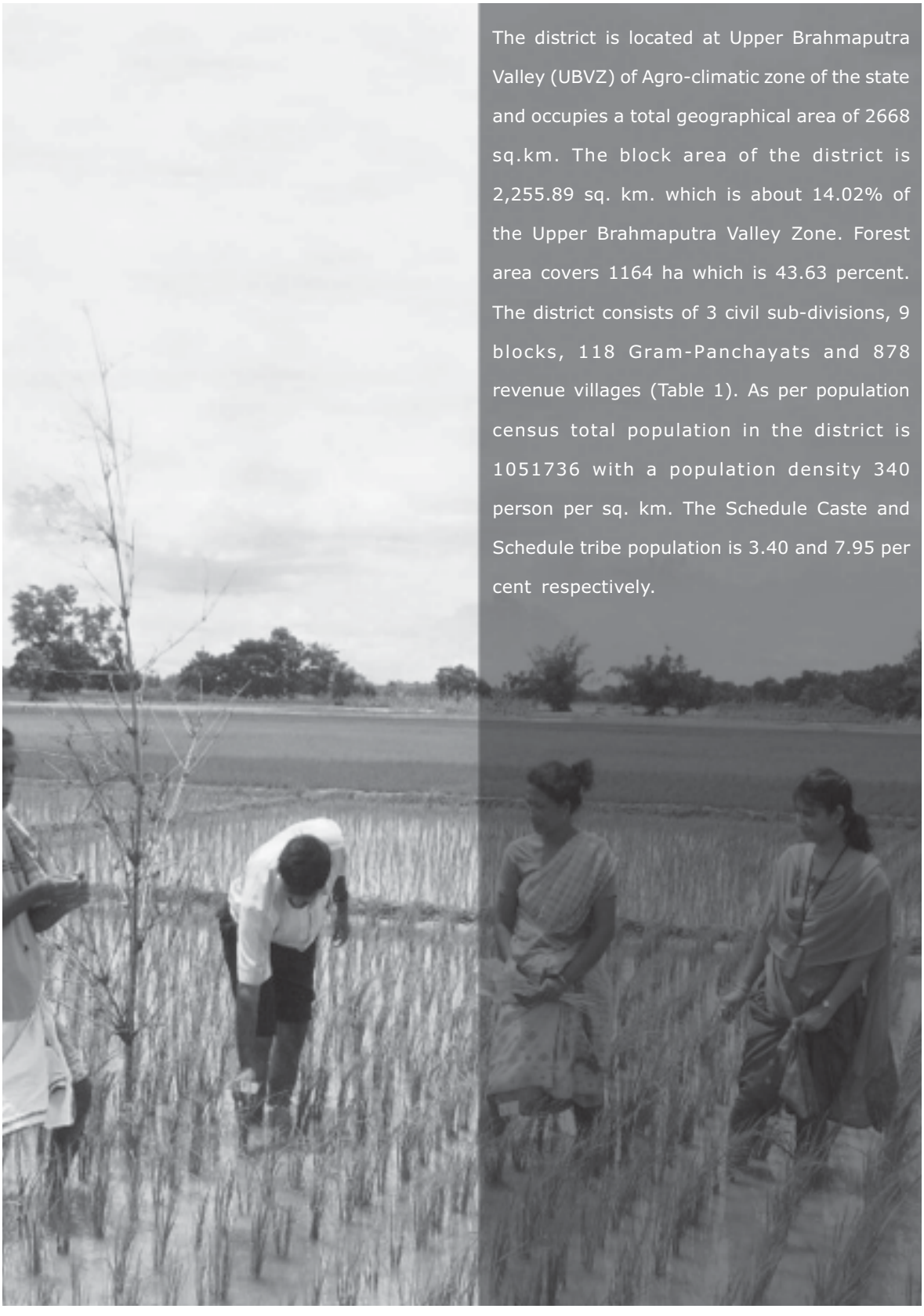
d. Available/commonly used conveyance facilities (roads/waterways) to market :

1. Road
2. Waterways

23. Agro-climatic Zones

1. Lower Brahmaputra Valley Zone

10. Agricultural Situation in Sivasagar



The district is located at Upper Brahmaputra Valley (UBVZ) of Agro-climatic zone of the state and occupies a total geographical area of 2668 sq.km. The block area of the district is 2,255.89 sq. km. which is about 14.02% of the Upper Brahmaputra Valley Zone. Forest area covers 1164 ha which is 43.63 percent. The district consists of 3 civil sub-divisions, 9 blocks, 118 Gram-Panchayats and 878 revenue villages (Table 1). As per population census total population in the district is 1051736 with a population density 340 person per sq. km. The Schedule Caste and Schedule tribe population is 3.40 and 7.95 per cent respectively.

Table1: General Information

Taluk/ Block	General					Population(As per the 2001 Census)				
	Villages in habitated	Un-in habitated	No. of Revenue Villages	Area (ha)	No. of G.Ps	Male	Female	Total	S.C.	S.T.
Sonari	152		152	25465	11	58969	55705	114674	763	3375
Pachim Abhaipur	44		44	21239	6	41423	39481	80904	2496	1119
Sapekhati	135		135	35981	15	71642	67107	138749	2099	4866
Lakowa	28		20		4	37755	35080	72835	308	277
Nazira	109	2	111	35288.1	20	79788	74068	153855	1864	2500
Sivasagar	116	2	112	31440	17	60006	56924	116930	7295	8940
Demou	141		141	30080	20	71637	63128	134765	1306	3666
Gaurisagar			105	25252	15	53629	50941	104570	9412	2250
Amguri	56	2	58	10587	10	34903	33482	68385	1340	1086
Total	781	6	878	215332	118	509752	475916	**1051736**	35759	41533

Agro-Climatic Zones

The district is situated under the agro-climatic zone of Upper Brahmaputra Valley of Assam. The mean annual rainfall of the district is 1478.1 mm (Statistical Hand Book, 2007)) against the state average of 1741.0 mm. Highest rainfall recorded in the month of July. January is the coldest month with minimum average temperature of 140C and average maximum temperature of 35.390C. The maximum and minimum Relative Humidity is 65.74 and 88.01 per cent respectively. The district is situated in the humid sub tropical region characterized by heavy rainfall. The district is having elevation of about 86.6 m above MSL.

Agro-ecological situation :

Sivasagar district which is lying in the Upper Brahmaputra Valley Agro-climatic zone is characterized by the existence of hill, high land, and plain and char-ilike areas. The soils of this zone is immature alluvial in char to mature ultisol in the piedmont high and hill areas. Considerable variations were observed in physiography, climate, soil, flood proneness, socio-economic condition and cropping pattern.

On the basis of these variations the district is again divided into 5 Agro-ecological situations excluding the forest and tea garden. They are :

1. Alluvial flood free (AES I)
2. Alluvial flood prone (AES II)
3. High land (AES III)
4. Hill areas (AES IV)
5. Char area (AES V)

1. Alluvial flood free (AES I):

This AES consists of 128624.4 ha which is 57.02% of total block area of the district covering all 9 blocks. Some of the major crops and enterprises in this AES are rice, sugarcane, tea, vegetables, dairy, piggery, fishery, sericulture and sasi plantation. This situation is almost level and soil type is sandy loamy to clay in nature.

2. Alluvial flood prone (AES II):

This situation comprises 58,723.79 ha which is 26.03% of the total block area. This situation prevails in all the blocks except Sonari Development Block. Flood is regular features of this situation causing extensive damage to crops and livestocks of the farmers. Some of the crops and enterprises are rice, rape and mustard, livestock and fisheries.

3. High land (AES III):

Total area under this AES is 23965.24 ha which 10.6% of the total block area is. This situation prevails in the blocks of Nazira, Amguri, Sonari, Pachim Abhaypur and Sapekhati. Some of important crops and enterprises are rice, pulse, horticulture, animal husbandry, and sericulture and tea plantation.

4. Hill areas (AES IV):

Only 4840.25 ha of land under this AES which is 2.15% of total block area of the district. This situation prevails in the part of blocks of Nazira, Amguri and Sonari. Animal husbandry, horticulture and vegetables are some of important ventures in this situation.

5. Char-like area (AES V):

This situation confined mostly on river bank of the mighty Brahmaputra. This situation consists of 9434.1 ha which is 4.18% of the total block area. This situation prevails on the blocks of Sivasagar, Demow and Gaurisagar. Some of the important commodities are rice, wheat, mustard, pulses, horticultural crops, livestocks, etc.

Land and Soil

The net sown area of the district is 1,47,998 ha which accounts for 55.5 percent of the geographical area of the district while the forest area is 12.87 per cent only.

The gross cropped area of the district is 198317.32 ha with cropping intensity of 134 percent. The soils are mostly of two types Inceptisol (old alluvial) and Entisol (recent alluvial). The texture of surface soil ranges from fine loamy, coarse loamy, coarse silty and fine soil. 58% of total are categorised under fine loamy soil under of Inceptisol. The soils are mostly of acidic in reaction.

Information on operational land holdings

Out of the 1, 01,364 holdings the small and marginal accounts 78.80% which operating 35.1% of total area. Total workforce in the district accounts for 39.79 percent of the total population. Cultivators and agricultural labourers together accounts for 58.34 percent of the total work force in the district who are directly depend on agriculture for their livelihoods.

River System

The river Mighty Brahamaputra marks the Northern boundary of this district. There are four major rivers namely Janji, Disang, Dikhow, Demow and its tributaries flows through the district and the water is readily available for irrigation purpose. The banks of the rivers are very fertile and have the potential for vegetable cultivation. On the other hand, the river network in the district provides scope for irrigation and fishery development but threats of flood are always there due to heavy monsoon shower.

Irrigation Potential

Irrigation is the life blood of modern agriculture. But in spite of having lots of scope to develop irrigation facility, the district is lagging behind. Irrigation potential has been created to irrigate only 1563 ha of cultivated land as reported by the Irrigation department. There are no major and medium irrigation project exist in the district. Another 4027 ha of irrigation potential was created through STW by the Agriculture Department. The total irrigation potential does created comes to 5590 ha which accounts only 3.78 % of the net sown area. The scope of further creating irrigation potentials through STW in two civil subdivisions i.e. Nazira and Sonari has very little opportunity as suggested by Agricultural Engineering. Hence, the lift irrigation is the only option for irrigation development utilizing the river water in the district.

The gross cropped area in the district is 185159 ha (2006-07) with cropping intensity of 134% which is lower than that state average of 154.34% (Agricultural Technology Inventory for North Eastern Region, 2008). Rice is the main crop of the district during Kharif season which occupies 49% of the cropped area (2006-07).

The crop production and productivity of crops in the district fluctuates from year to year due to several factors including weather.

1. Position in relation to longitude and latitude: 94.8 & 95.4 East Longitude and 26.7 & 27.2 North Latitude
2. Boundaries of the district:
   - E: Arunachal Pradesh
   - W: Jorhat
   - N: Dibrugarh
   - S: Nagaland
   - NW: Dibrugarh & Jorhat

3. Total population : 1052,802
4. Area of the district : 2668 sq km
5. Population density : 395/km^2

6. Literacy percentage : 75.33%
7. Status of agriculture : Rainfed

8. Farmers :

a. Big farmers : 19378 (nos)
b. Small farmers : 45925
c. Marginal farmers : 34468
d. Agricultural labourers : 4141

9 Farm labour mobility

a. Is sufficient farm labour available in the district: YES

10. Physiography

1. Highlands : 23965 (in ha)
2. Midlands : 128624
3. Lowlands : 58723
4. Hilly tract : 4840

11. Climates

a. Sub-tropical
b. Pattern of rainfall in different months (Provide as high, medium or low)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low	Low	Med	Med	High	High	High	High	Med	Low	Low	Low

c. Maximum and minimum temperatures recorded: Max: 37^0C Min: 7^0C
d. Critical periods for plant growth in the district

Sl. No	Crop	Critical periods of growth	Coinciding calendar month(s)
1.	Rice	Tillering / Panicle imitation	July, Aug, Sep, Oct
2.	Wheat	CRT/ Tillering stage, Boot leaf stage.	Nov, Dec, Jan
3.	Pulses	Early growth stage, Pod formation	Nov, Dec, Jan
4.	Mustard	Preflower, siliqua formation	Jan, Feb
5.	Banana	Growth stage & fruit bearing stage	Nov – Feb
6.	Potato	Growth stage, Tuber formation	Dec, Jan

12. Soils

a. Soil group classifications present in the district:
   1. Old alluvial Soils (Inceptisols)
   2. Recent Alluvial (Entisols)
b. Black soils : Not Present
c. Red soils : Not Present
d. Alluvial soils : Present (136863 ha)
e. Sandy soils : Present (88325 ha)
f. Laterite soils :
g. Saline and alkaline soils :
h. Acid soils : Present (225188 ha)
j. Soil fertility status (in general) : Medium

13. Irrigation

a. Area under irrigation : 8100 ha
b. Irrigation potential : 15040 ha
c. Source of irrigation
   1. Rivers : 14 nos
   2. Tanks : 22 nos
   3. Any other sources :
      a. Deep : 17 nos
      b. LL-P : 1 nos
      c. STW : 7 nos

14. Land use and cropping intensity

1. Gross cropped area : 1534677 ha
2. Net Area sown : 126785 ha
3. Fallow lands : 19557 ha
4. Cultivable waste lands : 29719 ha
5. Forest cover : 21946 ha
6. Barren lands : 18840 ha
7. Cropping intensity : 133%

15. Major Crops

1. Principal crops, area, production and productivity

Sl. No	Principal Crops	Area (in ha)	Production (in tones) (1ton=1000kg)	Productivity (kg/ha)
1.	Rice (Total)	103340	313430	3033
2.	Potato	742	445	600
3.	Wheat	56	73	1300
4.	Mustard	3209	1765	550
5.	Pulses	852	563	660
6.	Summer vegetable	1868	11208	6000
7.	Winter vegetable	3050	27450	9000

2. Crop rotations followed :
   1. Potato-pea
   2. Mustard-Green gram
   3. Summer vegetables
   4. Winter vegetables
3. Crop sequences followed:
   1. Sali rice-Potato
   2. Sali rice-Pea
   3. Salirice- Winter vegetables
   4. Sali rice – Oilseed
4. Inter-cropping done, if any:
   1. Pine apple- Blackgram
   2. Potato- Mustard
   3. Potato- Cabbage
   4. Pineapple- Banana
   5. Ericanut – Banana
   6. Ericanut – Pineapple
5. Mixed cropping done, if any:
   1. Potato- Radish
   2. Betal vine- Black peeper
6. Catch crops grown, if any:
   1. Tea
   2. Sugarcane

16. Socio-economic Characteristics, Land Holding Pattern

1. Average size of land holdings : 1.7 ha
2. Average fragmentation intensity: 3 nos
3. Existing land tenure system(s) : Adhiar/ mortgage.
4. Source(s) of finance for farming :
   Rank 1. Own
   Rank 2. Bank
   Rank 3. Private Finance
5. Main source of income for farmers:
   Rank 1. Agriculture
   Rank 2. Livestock
   Rank 3. Fish farming
6. Commercial commodities produced:
   Rank 1. Banana
   Rank 2. Citrus
   Rank 3. Arecanut, Betelvine.

17. Farm Machinery and Implements available in the district

1.	Number of tractors	: 95 nos
2.	Number of power tillers	: 893 nos
3.	Number of carts	: 300 nos
4.	Types of implements-	
	a. Ploughs (MB)	: 10,000 nos
	b. Cultivators	: 95 nos
	c. Discs	: 95 nos
	d. Harrows	: 95 nos
5.	Pumps (Oil and electrical)	: 3120 (oil)
6.	Sprayers and Dusters	: 25000

18. Livestock

1.	Cattle	: 416137 nos
2.	Buffaloes	: 24144 nos
3.	Sheep and goats	: 105 & 176639 nos
4.	Pigs	: 74566 nos
5.	Poultry and ducks	: 597765 & 307052 nos
6.	Production of milk	: 13741280 ltr /day
7.	Production of meat	: 3677 ton
8.	Production of eggs	: 4546000 nos

19. Research Resources

1.	Number of research stations	: Nil
2.	Number of ICAR institutes/substations	: Nil
3.	Number of state seed farms	: 3 nos
4.	Number of private seed farms	: NA

20. Agro-climatic Zones

1. Upper Brahmaputra Valley Zone

Blank

11. Agricultural Situation in Tinsukia

The district of Tinsukia in the Eastern part of Assam is an exceptionally rich area from bio-diversity point of view. The district consists of three Sub-divisions *viz.* Tinsukia, Margherita and Sadiya; 7 nos of Developmental blocks *viz.* Itakhuli, Guijan, Chapman, Sadiya, Saikhowa, Kakopothar and Margherita; 88 Gaon panchayats and 1162 revenue villages. The Geographical area of the district is 420393 ha. out of which 115221 ha. is net sown area. The area under forest, tea and hills constitute 73% of the total geographical area. The district is in the sub-tropical region and therefore experiences high rainfall and humidity. The agricultural system is totally rain-fed (97.3%) and only 2.7% of the total cultivable area is covered with irrigation facilities. Paddy is the main crop of the district which occupies 75.94% of the gross cropped area. The average annual rainfall is about 2000 mm and average rainy days are 140 – 150 days. The average temperature is about 39°C (maximum) and 9°C (minimum). The climate is excellent and the nature has bestowed all its blessings in the form of deep forest, grand rivers, exquisitely beautiful landscapes, diverse flora and fauna, tea garden and bio-diversity hotspot. The type of the soil is sandy to clay. Based on the criteria of altitude, soil type and rainfall pattern, irrigation facilities, topography etc. the district has been divided into 3 Agro-Ecological-Situations (AES). Regarding organic farming, majority of the crop by default are grown organically. So, the district has the scope of becoming pioneer in organic farming system, particularly in case of agricultural crops like paddy and horticultural crops like citrus, pineapple, banana and arecanut.

1. Position in relation to longitude and latitude : Longitude: $95^0$22 - $95^0$38 E, Latitude: $27^0$23 - $27^0$48 N
2. Altitude from MSL : 147.83 to 148.30 meters
3. Boundaries of Tinsukia district :

E:	Arunachal,	W:	Dibrugarh,	N:	Dhemaji,
S:	Dibrugarh & Arunachal	NE:	Dhemaji & Arunachal,	SE:	Arunachal,
SW:	Dibrugarh,	NW:	Dibrugarh & Dhemaji		

4. Total population : 9,68,383 nos. according to 1991 census
5. Area of the district : 4203930000 sq.m.
6. Population density : 254 per sq. kilometer
7. Literacy percentage : 63.45%
8. Status of agriculture : Rainfed

9. Farmers :

a. Big farmers : 9551 nos household out of 841927 nos
b. Small farmers : 32272 nos household out of 841927 nos
c. Marginal farmers : 32279 nos household out of 841927 nos
d. Agricultural labourers : 10825 nos household out of 841927 nos

10. Farm labour mobility

a. Is sufficient farm labour available in the district: YES
b. If " YES" whether they do work in near by or other district also ? YES
c. If "YES" to which districts they go for work: Nearby districts like Dibrugarh & even upto Sivsagar district.

11. Physiography

1. High lands : 37.78% of geographical area
2. Mid lands : No record
3. Lowlands : 7.26% of geographical area
4. Hilly tract : No record
5. General nature of the terrain :

The district has diverse pattern of terrain ranging from nearly level to steep sloppy hilly tract. Majority of land falls under nearly level category with 0 – 1% slope. Sizable portion of geographical area has undulated topography with hilly tract (30-40% slope)

12. Climates

a. Sub-tropical
b. Pattern of rainfall in different months

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low	Low	Low - Medium	Medium	Medium to high	High	High	High	High to Medium	Medium to low	Low	Scanty

c. Special weather phenomenon in the district
Temperature of Tinsukia district of Assam generally falls 15 days earlier as compared to other parts of the State.

d. Maximum and minimum temperatures recorded : Max. 39^0 C, Min 9^0 C
e. Critical periods for plant growth in Tinsukia district

Sl. no.	Crop	Critical periods of growth (Stage)	Coinciding calendar month(s)
Field crops			
1	Paddy	Tillering	August
2	Rape & Mustard	Pod formation	December-January
3.	Tea	Prunning & Training	December - January
Horticultural crops			
1	Orange	Flowering to fruit retention	February to August
2	Ginger	Sprouting	April
3	Banana	Flower bud initiation	July - August
4	Black peeper	Flowering	October - November
5	Potato	Seed formation stage	October - November
6	Pineapple	Flowering stage	February - April
7	Kharif vegetables		
8	Rabi vegetabes		

13. Soils

Soil group classifications present in the district

1. Taxonomic class : Fine loamy mixed hyperthermic Typic Haplustept
2. Soil fertility status (in general) : High/ Medium/ Low
   Phosphorus : Low
   Potassium : Medium to Low

14. Irrigation

1. Area under irrigation : 2,970 ha (2.7% of total cultivable area)
2. Irrigation potential : No record

15. Land use and cropping intensity

1. Gross cropped area : NA
2. Net area sown : 115221 ha
3. Fallow lands : 3801 ha
4. Cropping intensity : 1.47%

16. Major crop

1. Principal crops, area, production and productivity

Sl.No.	Principal Crops	Area (in ha)	Production (tones)	Productivity (kg / ha)
1	Paddy	65560	106650	1626
2	Rape & Mustard	8056	2940	365
3	Orange	1350	19760	16000
4	Ginger	660	13200	20000
5	Banana	2010	29970	13730
6	Black peeper	230	230	1000
7	Potato	2518	15363	6300
8	Pineapple	385	4620	12000
9	Kharif vegetables	3050	24705	8100
10	Rabi vegetables	5177	57050	11020

2. Crop rotations followed : 1. Rice - Toria
   2. Rice - Rice - Vegetables

				3. Rice – Vegetables
3.	Crop sequences followed	:	1.	Rice - Rice
			2.	Rice – Toria - Vegetables
			3.	Rice – Oilseeds - Pulses
4.	Inter-cropping done, if any	:	1.	Khasi mandarin - Frenchbean
			2.	Arecanut - Turmeric
5.	Mixed cropping done, if any	:	1.	Tea - Khasimandarin
6.	Catch crops grown, if any	:	1.	Summer Mungbean
			2.	Ladies finger/frenchbean
			3.	Tomato

17. Socio-economic Characteristics, Land Holding Pattern

1.	Average size of land holdings	:	0.3 to 2 ha.
2.	Average fragmentation intensity	:	3 – 4 nos.
3.	Existing land tenure system(s)	:	Mostly mono-crop of rice and Tea
4.	Sources of finance for farming	:	Rank 1. Self Source
			Rank 2. redit from Bank (KCC) etc.
5.	Main source of income for farmers	:	Rank 1. Agriculture and allied sector
6.	Commercial commodities produced	:	Rank 1. Bamboo made craft
		:	Rank 2. Livestock and their product
		:	Rank 3. Sericultural commodities

18. Farming Machinery and Implements available in the district

1.	Number of tractors	:	85 nos
2.	Number of power tillers	:	380nos
3.	Cultivators	:	85 nos
4.	Harrows	:	85 nos
5.	Others	:	150 nos
6.	Pumps (Oil and electrical)	:	2250
7.	Harvester and Threshers	:	2
8.	Sprayers and dusters	:	200 nos.

19. Livestocks

1.	Cattle	:	274673 nos
2.	Buffaloes	:	14438 nos
3.	Sheep and goats	:	85023 nos
4.	Pigs	:	40539 nos
5.	Poultry and ducks	:	563280 nos
6.	Production of milk	:	274673 lit
7.	Production of meat	:	104873 ton
8.	Production of eggs	:	192797 nos

20. Livestock holding patterns

a. Livestock holding pattern for marginal farmers

Sl. No.	Animal/ bird	Average nos. possessed	Rank according to nos. possessed
1	Milch cow	0.387 per house hold	2
2	Buffalo	0.017 per household	5
3	Goat	0.100 per house hold	3
4	Poultry birds	0.670 per house hold	1

5	Commercial hybrid layers	0.006 per house hold	6
6	Piggery	0.05 per house hold	4

b. Average yields of various animals and birds in the district

Sl. No.	Animal/ bird	Average yield (Specify Units)
1	Milch cow	0.80 Liters/cow/day
2	Milch Buffalo	3.5 Liters/buffalo/day
3	Goat (meat)	9 kg per goat
4	Poultry birds	80 nos/bird
5	Piggery	25 kg/pig

21. Research Resources

1. Number of research stations : 1 no.
2. Number of ICAR institutes/substations : Nil
3. Number of state seed farms : 1 no
4. Number of private seed farms : 1 no

22. Agricultural Marketing Status and Constraints

a. Ways of disposal of farm produce and bye-products

Sl. No.	Major Farm Produce	Marketing Channel	Bye Product	Marketing Channel
1	Rice	Through middle man	Husk	Used for poultry birds
2	Oilseeds & Pulses	--do--	Oil Cake	Used as manures
3	Vegetables	Direct	Left over	Used for development of pits
4	Tea	Middle man		
5	Orange	Middle man		

b. Whole sale and retail markets in the district

a. Whole sale markets : 1. Vegetable, 2. Fish 3. Other grossery items

b. Retail markets : 1. All sorts of agricultural commodities & other sectors

c. Major modes of transport to market:

1. Cart load
2. Tempo
3. Bicycle
4. Truck (occasionally)

d. Available/commonly used conveyance facilities (Roads/water ways) to market

1. Tempo
2. Bicycle
3. Cart

23. Agro-climatic Zones

1. Upper Brahmaputra Valley Zone
2. Lower Brahmaputra Valley Zone
3. Central Brahmaputra Valley Zone
4. Hill Zone
5. North Bank Plain
6. Barak Valley Zone

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3.3 Agricultural Situation in Manipur

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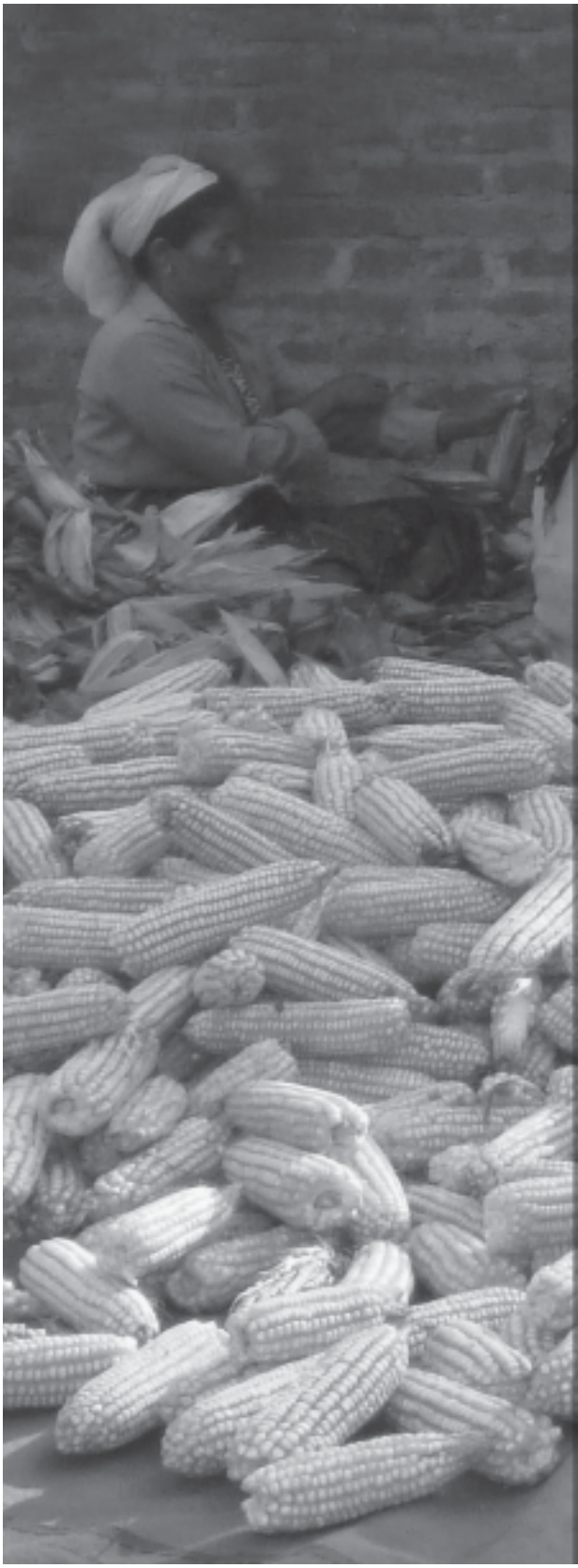
1. Agricultural Situation in Bishnupur



Bishnupur district has its headquarters at Bishnupur, 27km from the state capital, Imphal. Bishnupur was named after the "Bishnu Mandir" located at this place. It was opened on the 25th May, 1983. It is bounded on the North by Imphal West District, Churachandpur on the South, Imphal West & Thoubal districts on the East. The Nambol (Yangoi), the Thongjaorok and the Khuga are important rivers of the district. Keibul Lamjao is a floating National Park in the southern part of the lake, where the brow-antlered deer (*Cervus eldi eldi*), an endangered species, is found. This particular species of deer is not found anywhere in the world except at Keibul Lamjao with its floating mass (Phumdis) making a natural habitat of the animal. This is the only floating park in the world. The district has upland situation in the hills of Maibam Lotpaching, Chingphuching, Thanga and Karangching and along the western boundary adjoining Senapati and Churachandpur districts where upland crops like maize, pulses and fruits plants are grown. It has vast medium land where rice crop is grown abundantly. It has low-lying areas where traditional varieties of rice are grown. Over and above, the district has deep water areas where floating rice, giant water lily (*Eurale pherox*), singhara (*Trepa bispinosa*), etc. are grown in the periphery of lakes. Fishery is carried out in the deep water areas and Sanapat, Utrapat, Ngakijoupokpi and other subsidiary lakes along with Loktak lake.

1. Position in relation to longitude and latitude: $93^0$30 E to $94^0$0 E & $24^0$15 N to$24^0$45 N

2. Altitude from MSL : 828.2m

3. Boundaries of the district :
   E: Thoubal district W: Senapati district N: Imphal West district
   S: Churachanpur district NE: Imphal West

4. Total population : 2, 08,368 (2001 census)

5. Area of the district : 496 sq.km.

6. Population density : 419

7. Literacy percentage : 2, 08,368

8. Status of agriculture : Rainfed

9. Farmers :
   a. Big farmers : 216 (Nos)
   b. Small farmers : 17,366
   c. Marginal farmers : 34,146
   d. Agricultural labourers : 14,107 (2004, census)

10. Farm labour mobility
Is sufficient farm labour available in the district: YES

11. Physiography
   1. Highlands : 2,000 (in ha)
   2. Midlands : 30,000ha
   3. Lowlands : 10,000 ha
   4. Hilly tract : NA
   5. General nature of the terrain: Except two hills, Bishnupur district consist of some foothills adjacent to Senapati and Churachandpur districts, midlands (medium lowland), lowlands and lakes including Loktak lake (greatest freshwater lake in NE Region) more than half of it laying in the district. There are other lakes, like Utrapat, Sanapat, Ngakjoupat, etc. in the district. Most of the fields has a gentle slope from West to East towards the lakes.

12. Climates
   a. Sub-tropical/Sub-temperate/ Humid
   b. Pattern of rainfall in different months

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
L	L	L	M	M	H	H	H	M	M	L	

   c. Maximum and minimum temperatures recorded: Max: 35^{o}C Min: 2^{o}C

d. Critical periods for plant growth in the district

Sl.No.	Crop	Critical periods of growth	Coinciding calendar month(s)
1.	Rice	Booting to dough stage	15th to 15th Oct.
2.	Potato	Germination, Tuberisation	Nov.-Jan.
3.	Chilli	Flowering to fruiting	May
4.	Cabbage	Head formation	Nov. – Dec.
5	Cauliflower	Curd invitation to cued development	Nov. – Dec.
6.	Tomato	Flowering to fruiting	Sept. – Oct.

13. Soils

Soil group classifications present in the district

1. Silty clay loam to clay
2. Alluvial soils : 42,000 ha
3. Acid soils : 30,000 ha
4. Soil fertility status (in general) : Medium

14. Irrigation

1. Area under irrigation : 16.47 ha.
2. Irrigation potential : 13.25 ha.
3. Source of irrigation :
   - 1. Rivers : 4 nos.
   - 2. Tanks : 2 nos.
   - 3. Open wells : 55 nos.
   - 4. Bore wells : 1 no.
   - 5. Any other sources : Canals & Others: 12 nos.

15. Land use and cropping intensity:

1. Gross cropped area : 42,366 ha.
2. Net Area sown : 38,671 ha.
3. Fallow lands : 60 ha.
4. Cultivable waste lands : 325 ha.
5. Forest cover : 35,490 ha.
6. Barren lands : 225 ha.
7. Cropping intensity : 109.5 %

16. Major Crops

1. Principal crops, area, production and productivity

Sl.No.	Principal Crops	Area (in ha) A=000ha)	Production (in tones)	(Productivity (kg/ha)
1.	Rice	27500	96380	3500
2.	Maize	1010	1730	1710
3.	Wheat	260	690	2650
4.	Potato	2070	18380	8880
5.	Sugarcane	1660	96880	58310
6.	Oilseeds	6070	4420	730
7	Pulses	4650	3930	850
8	Cabbage	310	4190	13520
9	Cauliflower	240	2080	8650
10	Tomato	110	1030	9360
11	Chilli	630	2520	4000

2. Crop rotations followed: NA
3. Crop sequences followed:
   1. Rice -fallow
   2. Rice - Mustard
   3. Rice –Pea
4. Inter-cropping done, if any :
   1. Potato + Mustard, Chilli + Bhindi
   2. Potato + Broadbean, Chilli + Maize
   3. Cabbage + Mustard, Ginger + Turmeric
5. Mixed cropping done, if any:
   1. Mustard and Pea
   2. Sugarcane and Calocasia
   3. Maize and Rice bean
6. Catch crops grown, if any :
   1. Blackgram in rice field
   2. Tomato in rice field
   3. Rajmah in rice

17. Socio-economic Characteristics, land Holding Pattern

1. Average size of land holdings : 1 to 2 ha.
2. Average fragmentation intensity: 4-5nos
3. Existing land tenure system(s) : More than half of the land is cultivating by tenants
4. Source(s) of finance for farming:
   Rank 1. Self
   Rank 2. Money Lender
5. Main source of income for farmers:
   Rank 1. Agriculture
   Rank 2. Fisheries
   Rank 3. Livestock & Poultry
6. Commercial commodities produced:
   Rank 1. Fish
   Rank 2. Vegetable
   Rank 3. Milk

18. Farm Machinery and Implements available in the district

1.	Number of tractors	:	82 nos. (2003 census)
2.	Number of power tillers	:	231 nos. (2003 census)
3.	Number of carts	:	1819 nos.
4.	Types of implements-		
	a. Ploughs	:	12 nos.
	b. Cultivators	:	305 nos.
	c. Harrows	:	28 nos.
5.	Pumps (Oil and electrical)	:	47 & 3 nos. (2003 census)
6.	Harvesters and Threshers	:	0 & 16,224 nos.
7.	Sprayers and Dusters	:	Manual: 379 & Power operated 21 nos.

19. Livestock

1.	Cattle	:	63,554 nos. (2003 census)
2.	Buffaloes	:	2609 nos. (2003 census)
3.	Sheep & goats	:	0 & 80 nos.

4. Pigs : 8811 nos.
5. Poultry & ducks : 2, 39,779 & 93,260 nos.
6. Production of milk : 9650 ltr.
7. Production of meat : 0.71 ton.
8. Production of eggs : 63.28 lack nos.

20. Livestock holding patterns

a. Livestock holding pattern for big farmers: NA

b. Livestock holding pattern for small farmers

Sl. No.	Animal/bird	Average nos possessed	Rank according to nos possessed
1	Cattle	5	Birds
2	Birds	500	Pigs
3	Pigs	10	Cattles
4	Buffalo	2	Buffalo
5	Goat	2	Goat

c. Livestock holding pattern for marginal farmers

Sl. No.	Animal/bird	Average nos. possessed	Rank according to nos possessed
1	Cattles	2	Birds
2	Birds	100	Cattles
3	Pigs	2	Pigs
4	Buffalos	1	Buffalo
5	Goats	1	Goat

d. Livestock holding pattern for Agricultural labourers

Sl. No.	Animal/bird	Average nos possessed	Rank according to nos possessed
1	Cattles	1	Birds
2	Birds	20	Cattles
3	Pigs	1	Pigs
4	Buffalos	1	Buffalo
5	Goats	1	Goat

e. Average yields of various animals and birds in the district.

Sl. No.	Animal/bird	Average yield (Specify Units)
1	Cross breed cows	7.72 l/cow/day
2	Indigenous cows	1.45 l/cow/day
3	Buffalos	3.44 l/cow/day
4	Desi fowl (local)	64 eggs/bird/year
5	Improved fowl	120 eggs/bird/year
6	Improved duck	108 eggs/bird/year
7	Desi ducks	91 eggs/bird/year

21. Research Resources

1. Number of research stations : Nil
2. Number of ICAR institutes/substations : Nil

3. Number of State seed farms : Nil
4. Number of private seed farms : Nil

22. Agricultural Marketing Status and Constraints

a. Ways of disposal of farm produce and bye- products

Sl. No.	Major farm produce	Marketing channel	Bye product (if any)	Marketing channel
1	Cabbage	Wholesaler-Retailer	–	–
2	Sugarcane	Wholesaler-Retailer	–	–
3	Tomato	Wholesaler-Retailer	–	–
4	Chilli	Wholesaler-Retailer	–	–
5	Fish	Wholesaler-Retailer	–	–

b. Whole sale and retail markets in the district.

a. Wholesale markets : 1. Bishnupur Market 2. Moirang Market 3. Ningthoukhong Market

b. Retail markets : 1. Utlou Market 2. Nambol Market 3. Oinam Market 4. Kumbi Market 5. Kwakta Market

c. Major modes of transport to market:

1. Bus
2. Auto
3. By foot
4. Bi-cycle

d. Available/commonly used conveyance facilities (roads/waterways) market:

1. Bus
2. Truck
3. Auto-rickshaw
4. Mini- Bus

23. Agro-climatic Zones

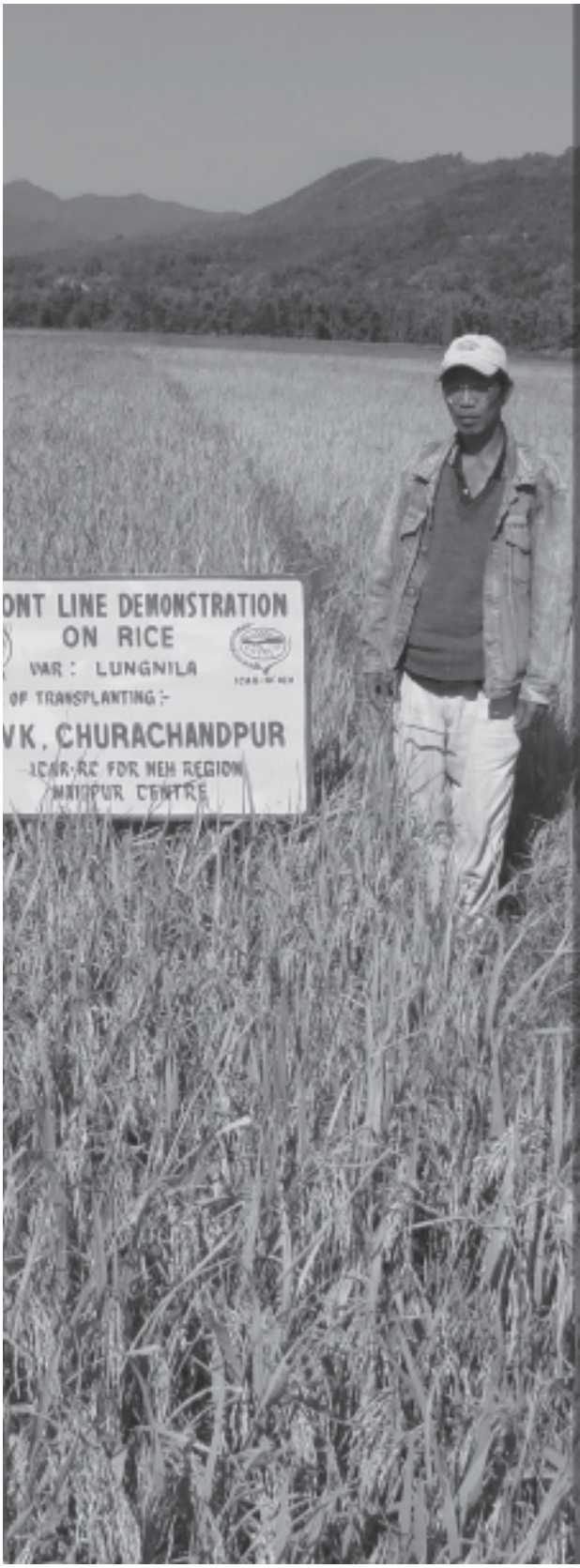
a. Various zones in Manipur:

1. Sub-tropical plain zone
2. Sub-tropical hill zone
3. Mild-temperate

b. Various zones in the District:

1. Sub-tropical plain Zone
2. Sub-tropical Hill Zone.

2. Agricultural Situation in Churachandpur



Churachandpur is a hilly district with a very small percentage of the area being plain . As per the 1994-95 satellite imagery, the total built up area is 6,726 Ha. (Urban - 585 Ha. and Rural - 6,141 Ha.) and the cropland area is 9,928 Ha. A large portion of the area is either under current jhum or abandoned jhum: 29,323 Ha and 190,447 Ha. respectively. There is no primary forest in the district and the secondary forest including mixed bamboo forest, covers an area of 118,092 Ha. The area under wasteland is 98,424 Ha. and the total area of the water bodies is 2,144 Ha.(2,072 Ha. of river/streams and 72 lakes/ tanks/ponds). The road network covers an area of 3581 Ha located in and around the district headquarter. The maximum temperature is 37^0C while the minimum is 1^0C. The highest rainfall is 3080 mm (Tinsong) and the lowest is 597 mm (Geljang). The maximum humidity is 100% and the minimum is 61%. Agriculture is the single largest source of livelihood and has a vital place in the economy of Churachandpur district. However, the performance of agriculture in the district mainly depends on timely rainfall and weather conditions. Agriculture in the district is confined to just 7% of the total geographical area with vast tracts of land unexplored and not available for cultivation with just 6.66% i.e. 2030 ha of the net agricultural land under irrigation. Monocropping is being practiced in some pockets of the hills while jhuming or shifting cultivation is widely adopted in most of the areas in the district. The area under rice cultivation was 2490 ha with total production of 46700 tonnes in 2006-'07 while in case of maize the area under cultivation was 350 ha with production of 920 tonnes in 2006-'07 which indicates that there is negligible increase in area and production during the last five years.

1. Position in relation to longitude and latitude : 93.15^0 E to 94^00 E & 24^0 N to24.3^0 N

2. Altitude from MSL : 914.0 m

3. Boundaries of the district:

E:	Chandel district	W:	Assam
N:	Tamenglong district	S:	Mizoram & Myanmar
NE:	Imphal West	SE:	

4. Total population : 227905

5. Area of the district : 4570 sq.km.

6. Population density : 50

7. Literacy percentage : 45.59 (2001, census)

8. Status of agriculture : Rainfed

9. Farmers:

a. Big farmers : NA
b. Small farmers : 5005
c. Marginal farmers : 9090
d. Agricultural labourers : NA

10. Farm labour mobility

a. Is sufficient farm labour available in the district: YES
b. If 'YES' whether they do work in near by or other districts also? YES
c. Districts they go for work: Imphal

11. Physiography

Churachandpur District is a hilly district with a very small percentage of the area being plain. As per the 1994-95 satellite imagery, the total built up area is 6,726 Ha. (Urban - 585 Ha. and Rural - 6,141 Ha.) and the cropland area is 9,928 Ha. A large portion of the area is either under current jhum or abandoned jhum: 29,323 Ha and 190,447 Ha. respectively. There is no primary forest in the district and the secondary forest including mixed bamboo forest, covers an area of 118,092 Ha. The area under wasteland is 98,424 Ha. and the total area of the water bodies is 2,144 Ha.(2,072 Ha. of river/streams and 72 lakes/tanks/ponds). The road network covers an area of 3581 Ha located in and around the district headquarter.

12. Climates

a. Sub-tropical and Mild-tropical/ Humid
b. Pattern of rainfall in different months

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
L	L	L	M	M	H	H	H	M	M	L	L

c. Maximum and minimum temperatures recorded: Max: 39^oC Min: 0.5^oC

d. Critical periods for plant growth in the district

Sl.No.	Crop	Critical periods of growth	Coinciding calendar month(s)
1.	Rice	Tillering and Panicle Initiation	15th Sept to 15th Oct.
2.	Potato	Germination, Tuberisation	Nov.-Feb.
3.	Chilli	Flowering to fruiting	May-June
4.	Cabbage	Head formation	Feb.- March & Nov. – Dec.
5	Maize	Flowering	June
6.	Pea	Vegetative	Oct.-Nov
7	Groundnut	Rapid flowering, pegging, ear pod formation	July - Aug

13. Soils

a. Soil group classifications present in the district:
   1. Fine Loamy 2. Clay loam 3. Laterite
b. Black soils : Present
c. Red soils : Present
d. Alluvial soils : Present
e. Sandy soils : Present
f. Laterite soil : Present
g. Saline and alkaline soils: Not Present
h. Acid soils : Present
i. Soil fertility status (in general): Medium

14. Irrigation

a. Area under irrigation : NA
b. Irrigation potential : 150000 ha. (Khuga Dam project)

15. Land use and cropping intensity

1. Gross cropped area : 16053.50 ha.
2. Net Area sown : 13855 ha.
3. Fallow lands : 190447 ha.
4. Cultivable waste lands : 29323 ha.
5. Forest cover : 118092 ha.
6. Barren lands : 98424ha.
7. Cropping intensity : 121.17 %

16. Major Crops

1. Principal crops, area, production and productivity

Sl.No.	Principal Crops	Area (in ha) A=000ha)	Production (in tones)	(Productivity (kg/ha)
1.	Rice	29320	24320	830
2.	Maize	5440	10160	1870
3	Pulses	2200	2030	920
4	Potato	1680	14790	8800

2. Crop rotations followed:
   1. Not specified crop-relation is followed
   2. Rice - Potato - Pea - Mustard
   3. Maize - Potato – Beans
3. Crop sequences followed:

1. Rice - fallow
2. Rice - Mustard - Beans
3. Chilli - Pea – Beans

4. Inter-cropping done, if any :
   1. Maize + Groundnut + Soyabean,
   2. Citrus + pulses
   3. Tree bean + Turmeric + Ginger
5. Mixed cropping done, if any:
   1. Maize + Cucumber/pumpkin+Chilli
   2. Mustard + Pea + Onion
   3. Maize and Rice bean
6. Catch crops grown, if any :
   1. Blackgram in rice field
   2. Sugarcane
   3. Potato

17. Socio-economic Characteristics, land Holding Pattern

1. Average size of land holdings : 1 .1 ha.
2. Average fragmentation intensity: NA
3. Existing land tenure system(s): Land belongs to traditional hereditary village chiefs
4. Source(s) of finance for farming:
   Rank 1. Local Money Lender
   Rank 2. Society
   Rank 3. Banks
5. Main source of income for farmers:
   Rank 1. Agriculture
   Rank 2. Wages
   Rank 3. Livestock & Poultry
6. Commercial commodities produced:
   Rank 1. Passion fruit
   Rank 2. Pineapple
   Rank 3. Vegetables

18. Farm Machinery and Implements available in the district

1	Number of tractors	:	8 nos. (2003 census)
2	Number of power tillers	:	12 nos. (2003 census)
3	Number of carts	:	233 nos.
4	Types of implements-		
	a. Ploughs wooden	:	2214 nos.
	b. Cultivators	:	36 nos.
5	Pumps (Oil and electrical)	:	2 & Nil nos. (2003 census)
6	Harvesters and Threshers	:	Nil & 1000 nos.
7	Sprayers and Dusters	:	Manual: 280 & Power operated Nil

19. Livestock

1.	Cattle	:	24430 nos. (2003 census)
2.	Buffaloes	:	5413 nos. (2003 census)
3.	Sheep & goats	:	739 & 4007 nos.
4.	Pigs	:	80608 nos.
5.	Poultry & ducks	:	310542 & 11883 nos.

6. Production of milk : 7930litres
7. Production of meat : 3401 tons
8. Production of eggs : 8241 lakhs

20. Livestock holding patterns

a. Average yields of various animals and bird in the district.

Sl. No.	Animal/bird	Average yield (Specify Units)
1	Cross bred cows	7.2 kg per day
2	Indigenous cows	1.42 kg per day
3	Buffalo	2.9 kg per day

21. Research Resources

1. Number of research stations : Nil
2. Number of ICAR institutes/substations : Nil
3. Number of State seed farms : Nil
4. Number of private seed farms : Nil

22. Agricultural Marketing Status and Constraints

1. Ways of disposal of farm produce and bye- products

Sl. No.	Major farm produce	Marketing channel	Bye product (if any)	Marketing channel
1	Cabbage	Wholesaler- Retailer	NA	NA
2	Maize	Wholesaler- Retailer	NA	NA
3	Sugarcane	Wholesaler- Retailer	NA	NA
4	Tomato	Wholesaler- Retailer	NA	NA
5	Chilli	Wholesaler- Retailer	NA	NA
6	Fish	Wholesaler- Retailer	NA	NA
7	Passion fruit	Wholesaler- Retailer	NA	NA
8	Pineapple	Wholesaler- Retailer	NA	NA
9	Rice bean	Wholesaler- Retailer	NA	NA
10	Mustard	Wholesaler- Retailer	NA	NA
11	Banana	Wholesaler- Retailer	NA	NA
12	Pomegranate	Wholesaler- Retailer	NA	NA
13	Papaya	Wholesaler- Retailer	NA	NA

2. Whole sale and retail markets in the district.
   a. holesale markets : 1. New Lamka 2. Old Bazar 3. Tuibuong
   b. Retail markets : 1. New Lamka 2. Old Bazar 3. Damkam Bazar
   4. Bungmual 5. Tuibuong 6. Phailen Bazar
3. Major modes of transport to market:
   1. Town Bus 2. Auto 3. Foot
   4. Bi-cycle 5. Taxi /Jeep Service
4. Available/commonly used conveyance facilities (roads/waterways) market:
   1. Bus 2. Truck 3. Auto-rickshaw
   4. Mini- Bus

23. Agro-climatic Zones : 1. Sub-tropical hill zone
2. Mild tropical humid hill zone

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3. Agricultural Situation in Senapati

Senapati is one of the hill districts of Manipur with a geographical area of about 3271 sq.km. It lies between 24°58' to 25°04' north latitude and 93°48' to 93°54' east longitude. It is bounded by Nagaland in North, Ukhrul district in East, Tamenglong district to the West and Imphal district to the South. The district is hilly terrain with an altitude ranging from 800 to 2800 m above MSL.

The district is divided into six sub divisions. They are Mao-Maram, Paomata, Purul, Sadar Hill West, Saitu Gamphazol and Sadar Hill East. The district headquarter is Senapati and it is 65 km from the state capital Imphal. The NH-39 which is the lifeline of Manipur passes through this district. Almost all the villages of the district are connected by pacca or kacha motorable road. The important rivers flowing in this district are the Imphal, Tapiki, Barak and Iril.

The district comes under humid sub tropical climate and the minimum and maximum temperature range is between 0-3°C and 30-35°C respectively. The annual rainfall ranges from 1102mm to 2500mm and the relative humidity ranges from 82% to 96%. The total area of the district can be broadly grouped as 41% forest, 3.4% agriculture, 0.8% settlement and 54.8% shrubs or small trees.

The Senapati district is inhabited by different tribes. Majority are the Naga, Kuki, Vaiphei and Nepali. According to 2001 census, the total population of the district is 3,79,214 consisting of 1,96,646 males and 1,82,568 females. Majority of the people are farmers. The women equally participate in farming activities.

1. Position in relation to longitude and latitude : $93^0 3^0$'E to $94^0 3^0$'E & $24^0 3^0$'N to $25^0 45$'N

2. Altitude from MSL : 1061.5 m

3. Boundaries of the district :
   E : Ukhrul W : Tamenglong N : Nagaland S : Imphal

4. Total population : 283621

5. Area of the district : 3271 sq.km.

6. Population density : 87

7. Literacy percentage : 59.8%

8. Status of agriculture : Rainfed

9. Farmers:

a. Big farmers : NA
b. Small farmers : NA
c. Marginal farmers : 34867
d. Agricultural Labour : 3048

10. Farm labour mobility

a. Is sufficient farm labour available in the district: No
b. If "NO" from which places do they come from: Other districts of Manipur

11. Climates

a. Sub-tropical/ Humid
b. Pattern of rainfall in different months

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low	Low	Low	Low	Medium	High	High	Medium	Medium	Low	Low	Nil

c. Maximum and minimum temperatures recoded: Max: 36^0C Min: 2^0C
d. Critical periods for plant growth in your district

Sl. No.	Crop	Critical periods of growth	Coinciding calendar months(s)
1.	Rice	Tillering, Penicle initiation, Flowering	Aug. Sept. Oct.
2.	Maize	Seedling, flowering, grain filling	March, May, June
3.	Potato	Germination, Stolon formation, tuber bulking	March, April, May
4.	Cabbage	Head formation, until becoming firm	

12. Soils

1. Soil group classifications present in the district:
   1. Clayey red Loamy soil
   2. Laterite soil
   3. Yellow soil.

2.	Black soils	:	Present
3.	Red soils	:	Present
4.	Alluvial soils	:	Present
5.	Sandy soils	:	Present
6.	Laterite soils	:	Present
7.	Saline and alkaline soils	:	Not Present
8.	Acid soils	:	Present
9.	Soil fertility status (in general)	:	Low

13. Irrigation

1. Area under irrigation : 5450 ha.
2. Source of irrigation
   (i) Stream
   (ii) Spring

14. Land use and cropping intensity:

1. Gross cropped area : Data not available
2. Forest cover : 14500 ha. (Reserve)

15. Major Crops:

1. Principal crops, area, production and productivity

Sl. No.	Principal Cops	Area(in ha)	Production (in tones)	Productivity (kg/ha)
1.	Rice	25200	53690	2130.56
2.	Maize	1210	3210	2652.89

2. Crop rotations followed
   1. Potato-Cabbage-Bean
   2. Potato – Pea – Potato
3. Crop sequences followed
   1. Rice- fallow -Rice
   2. Potato-Cabbage-Bean
   3. Potato – Pea – Potato
   4. Maize-rapeseed
4. Inter-cropping done, if any : NA
5. Mixed cropping done, if any
   1. Maize + beans
   2. Paddy + Maize
   3. Pumpkin + Colocasia + Cucumber/Topioca
6. Catch crops grown, if any
   1. Potato 2. Cabbage
   3. Passion fruit 4. Oilseed
   5. Pea 6. Ginger/Turmeric
   7. Banana

16. Socio-economic characteristics, land Holding Pattern.

1. Average size of land holdings : 0.75
2. Average fragmentation intensity : 2 nos.
3. Existing land tenure system(s) : Community owned land system
4. Source(s) of finance for farming :
   Rank 1. : Own
   Rank 2 : Trader
   Rank 3. : Relatives/NGO/Bank

5. Main source of income for farmers :
   Rank 1. : Agriculture
   Rank 2. : Livestock
   Rank 3. : Forest produce & Charcoal
6. Commercial commodities produced :
   Rank 1. : Maize
   Rank 2. : Potato
   Rank 3. : Cabbage & Passion Fruit

17. Farm Machinery and Implements available in the district

1. Number of tractors : NA
2. Number of power tillers : 43 nos.
3. Number of carts : 647 nos.
4. Types of implements-
   a. Ploughs : NA
   b. Cultivators : NA
   c. Discs : NA
   d. Harrows : NA
   e. Others (Wooden Plough) : 473

18. Livestock

1. Cattle : 73159
2. Buffaloes : 25922
3. Sheep and goats : 3717 & 12882
4. Pigs : 137775
5. Poultry and ducks : 303622 & 119932
6. Production of milk : 12000 ltr
7. Production of meat : 3.22 ton
8. Production of eggs : 7900000 nos.

19. Livestock holding patterns

a. Livestock holding pattern for big farmers : Not available

b. Livestock holding pattern for small farmers. : Not available

c. Livestock holding pattern of marginal farmers

Sl. No.	Animal/bird	Average nos possessed	Rank according to nos possessed
1.	Cattle	2	3rd
2.	Buffaloes	1	4th
3.	Pig	3	2nd
4.	Duck	3	2nd
5.	Poultry	8	1st

d. Livestock holding pattern for agricultural labourers

Sl. No.	Animal/bird	Average nos possessed	Rank according to nos possessed
1.	Pig	3	2nd
2.	Poultry	4	1st

3.	Duck	2	3rd
4.	Sheep	1	4th
5.	Goat	4	1st

20. Research Resources

1. Number of research stations : NIL
2. Number of ICAR institutes/substations : NIL
3. Number of state seed farms : 1 (one)
4. Number of private seed farms : NIL

21. Agricultural Marketing Status and Constraints:

1. Ways of disposal of farm produce and bye-products

Sl. No.	Major Farm produce	Marketing channel	Bye product (if any)	Marketing channel
1.	Potato	Local trader	Nil	Nil
2.	Maize	- do -	Nil	Nil
3.	Cabbage	- do -	_	_
4.	Pig/Pork	Producer	_	_
5.	Cattle/Beef	Local trader	Hide	Local trader
6.	Milk	Local Trader	Curd, Ghee	Local trader

2. Whole sale and retail markets in the district:
   a. Wholesale markets: 1. Potato 2. Cabbage 3. Maize
   b. Retail markets 1. Rice 2. Fruit 3. Vegetable
3. Major modes of transport to market:
   1. Head Load
   2. Bus
   3 Lorry
4. Available/commonly used conveyance facilities (roads/waterways) to market:
   1. Roadway

22. Agro-Climatic Zones

1. Sub-Alpine zone
2. Topical hill zone

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4. Agricultural Situation in Ukhrul

Ukhrul District is bounded by Myanmar in the East, Chandel District in the South, Imphal East and Senapati Districts in the West and Nagaland State in the North. The terrain of the district is hilly with varying heights of 913 m to 3114 m (MSL). Ukhrul is linked with Imphal, the state capital by a NH 150 about 84 Km. By ordinary passenger bus it takes about 3 hours. The climate of the district is of temperate nature with minimum and maximum degrees of 3°C to 33°C. The average annual rainfall is 1,763.7 mm (1991). The exact location of the district in the globe is 24N - 25.41 N and 94 E - 94.47 E. The rainy season in the district is from May to beginning of October broadly but Winter is chilly. The highest peak is the Khayang peak-3114 m (MSL), though the more popularly known peak is the Shirui Kashung Peak - 2,835 m (MSL). Ukhrul, the District HQ, is 2,020 m (MSL). Most of the major rivers originate from the crevices and slopes of Shirui Peak.The terrain of the district is rippled with small ranges and striped by few rivers. 1. Somrah - Angkoching range, striped by Sanalok and Namba Lok; Shangshak - Phungyar range adjacent to which is the Shokvao - Mapithel - Kasom range striped by Tuyungbi and Taret Lok in the middle and Thoubal river in the West and Kachai - Hoome - Tampak Ngashan (Mahadev) range, striped by the tributaries of Thoubal river in Eastern side and Iril River in the Western side.

Tangkhul Nagas constitute the major bulk of the population. Others are some small percentage of Kukis, Nepalese and other Non-tribals. The Tangkhuls are fair in complexion and more akin to the Mongolians in facial appearance and stature.

The population of the district is 1,40,778 (2001 Census) with a population density of 24 per Sq. Km. The male to female ratio is 1000 : 878 with a decennial growth rate of 32 %. The total population of the district constitutes 6.02 % of the total population of the state, spread over about 230 villages. Literacy percentage is 62.54 (1996).

1. Position in relation to longitude and latitude: 24N to 25.41 N, 94E to 94.47E

2. Altitude from MSL : 913 m – 3114 m (MSL)

3. Boundaries of the district :

E:	Myanmar	W:	Imphal East & Senapati	S:	Chandel
NE:	Myanmar	SE:	Myanmar	SW:	Chandel
NW:	Senapati				

4. Total population : 1, 40,778 (2001 census)

5. Area of the district : 4544 sq.km.

6. Population density : 31

7. Literacy percentage : 62.54

8. Status of agriculture : Shifting & rainfed

9. Farmers :

a. Big farmers : 1815 (nos)
b. Small farmers : 5005
c. Marginal farmers : 5245
d. Agricultural labourers : NA

10. Farm labour mobility

a. Is sufficient farm labour available in the district: YES
b. If 'YES' whether they do work in near by or other districts also? YES
c. if 'YES' to which districts they go for work? Adjacent district

11. Climates

a. Humid/Sub-tropical
b. Pattern of rainfall in different months

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
24.8	77.6	45.0	166.4	208.5	185.71	312.0	144.2	183.1	-	-	-

c. Maximum and minimum temperatures recorded: Max: 33 Min: 3 degree Celsius
d. Critical periods for plant growth in the district

Sl. No	Crop	Critical periods of growth	Coinciding calendar month(s)
1.	Rice	Flowering, grain filling	August-September
2.	Maize	Grain filling	August
3.	Lime	Flowering & Fruiting	April-May
4.	Cabbage	Head formation	March-April
5.	Ginger/ Turmeric	Initiation of rhizome formation	Sept.-October

12. Soils

1. Soil group classifications present in the district
   1. Inceptisols
   2. Ultisols
2. Soil fertility status (in general) : Medium

13. Land use and cropping intensity

1. Gross cropped area : 15977 ha
2. Net Area sown : 15100 ha
3. Cropping intensity : 153.02

14. Major Crops

1. Principal crops, area, production and productivity

Sl. No	Principal Crops	Area (in ha)	Production (in tones) (1ton=1000kg)	Productivity (kg/ha)
1.	Paddy	13,400	31.03	2315.67
2.	Maize	1,310	3.08	2354.04
3.	Pulses Kharif	540	0.63	1170
4.	Pulses Rabi	2,330	2.96	1270
5.	Oilseed Kharif	770	0.37	480
6.	Oilseed Rabi	3,540	2.61	740
7.	Sugarcane	110	8.45	76820
8.	Potato	114	880	7720
9.	Cabbage	200	3000	1500
10.	Pea	145	104	720
11	Passion Fruit	700	6300	9000
12.	Lime	750	5625	7500
13.	Orange	270	2025	7500
14.	Ginger	90	900	10000
15.	Turmeric	120	840	7000

2. Crop rotations followed :
   1. Rice-Rice
   2. Ginger & Turmeric-Ginger & Turmeric
   3. Banana-Banana
   4. Potato-Potato
3. Crop sequences followed :
   1. Rice-Mustard-Ginger/Potato
   2. Maize-Mustard-Potato
4. Inter-cropping done, if any :
   1. Maize+Bean
   2. Rice+ Rice Bean
5. Mixed cropping done, if any :
   1. Rice + Maize + Chilly+ Colocasia+Bean
   2. Rice+Til+Chilly+Cucumber+Pumpkin+Bean
   3. Rice+Maize+Ash gourd+Chilly+Bhindi+Bean
6. Catch crops grown, if any :
   1. Potato
   2. Ginger
   3. Turmeric

15. Socio-economic Characteristics, Land Holding Pattern

1. Average size of land holdings : 1.25 ha
2. Existing land tenure system(s) : Wholly owned and self operated holding

3. Source(s) of finance for farming:
   Rank 1. Bank
   Rank 2. Local money lender
   Rank 3. Self finance
4. Main source of income for farmers:
   Rank 1. Agriculture
   Rank 2. Horticultural Crops.
   Rank 3. Animal Husbandry/Fishery
5. Commercial commodities produced:
   Rank 1. Potato
   Rank 2. Ginger
   Rank 3. Lemon

16. Farm Machinery and Implements available in the district

1.	Number of tractors	:	Nil nos
2.	Number of power tillers	:	Nil nos
3.	Number of carts	:	394 nos
4.	Types of implements-Ploughs	:	5797 nos
	Others	:	3203 nos
5.	Pumps (Oil and electrical)	:	7 & nil nos
6.	Threshers	:	2343 nos
7.	Sprayers	:	119 nos

17. Livestock

1.	Cattle	:	28953 nos
2.	Buffaloes	:	18090 nos
3.	Sheep and goats	:	15 & 841 nos
4.	Pigs	:	43809 nos
5.	Poultry and ducks	:	55,809 & 8760 nos
6.	Production of milk	:	10,090 ltr
7.	Production of meat	:	3855.83 ton
8.	Production of eggs	:	1, 78,800 nos

18. Livestock holding patterns

a. Average yields of various animals and bird in the district.

Sl. No	Animal/bird	Average yield (Specify Units)
1.	Crossbred cow	7.644 lit / animal
2.	Indigenous cow	1.420 lit / animal
3.	Indigenous Buffalo	2.928 lit /animal
4.	Desi Fowls	59 eggs /bird / year
5.	Improved Ducks	99 eggs / bird /year

19. Research Resources

1.	Number of research stations	: Nil
2.	Number of ICAR institutes/substations	: One (1) no.
3.	Number of state seed farms	: Nil
4.	Number of private seed farms	: Nil

20. Agricultural Marketing Status and Constraints

1. Ways of disposal of farm produce and bye-products

Sl. No	Major Farm produce	Marketing channel	Bye product (if any)	Marketing channel
1.	Paddy	Retail	Straw	NA
2.	Maize	Retail	Maize stem	NA
3.	Lime	Local/retail	--	--
4.	Potato	Local/retail	--	--
5.	Ginger	Retail	--	--

2. Wholesale and retail markets in the district.
   a. Wholesale markets : NA
   b. Retail markets : 1. Vegetables 2. Cereals 3. Fish and meat
3. Major modes of transport to market:
   1. On foot
   2. Bus
   3. Trucks
   4. Jeep
4. Available/commonly used conveyance facilities (roads/waterways) to market:
   1. Road

21. Agro-climatic Zones

1. Sub-Himalayan humid Region zone-3
2. Sub-temperate.

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3.4 Agricultural Situation in Meghalaya

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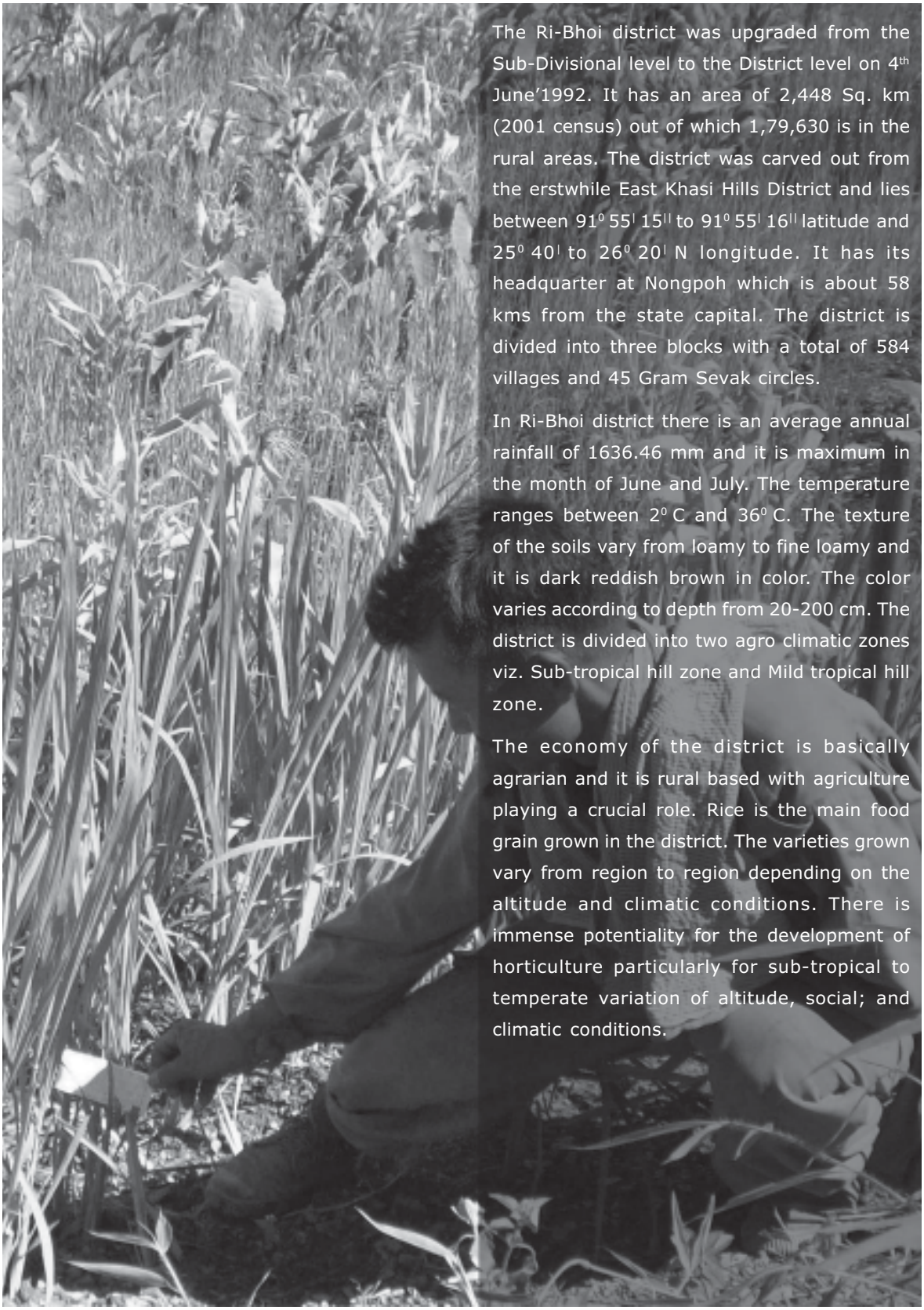
1. Agricultural Situation in Ri-Bhoi



The Ri-Bhoi district was upgraded from the Sub-Divisional level to the District level on 4th June'1992. It has an area of 2,448 Sq. km (2001 census) out of which 1,79,630 is in the rural areas. The district was carved out from the erstwhile East Khasi Hills District and lies between $91^0\,55^{l}\,15^{ll}$ to $91^0\,55^{l}\,16^{ll}$ latitude and $25^0\,40^{l}$ to $26^0\,20^{l}$ N longitude. It has its headquarter at Nongpoh which is about 58 kms from the state capital. The district is divided into three blocks with a total of 584 villages and 45 Gram Sevak circles.

In Ri-Bhoi district there is an average annual rainfall of 1636.46 mm and it is maximum in the month of June and July. The temperature ranges between 2^0 C and 36^0 C. The texture of the soils vary from loamy to fine loamy and it is dark reddish brown in color. The color varies according to depth from 20-200 cm. The district is divided into two agro climatic zones viz. Sub-tropical hill zone and Mild tropical hill zone.

The economy of the district is basically agrarian and it is rural based with agriculture playing a crucial role. Rice is the main food grain grown in the district. The varieties grown vary from region to region depending on the altitude and climatic conditions. There is immense potentiality for the development of horticulture particularly for sub-tropical to temperate variation of altitude, social; and climatic conditions.

1. Position in relation to longitude and latitude: $25^0\ 40^{|}$ to $26^0\ 20^{|}$ N longitude
   $91^0\ 55^{|}\ 15^{||}$ to $91^0\ 55^{|}\ 16^{||}$ latitude
2. Altitude from MSL : 100m to 1350m above msl
3. Boundaries of the district :
   E: Karbi Anglong W: West Khasi Hills N: Kamrup dist. & Goalpara
   S: East Khasi Hills
4. Total population : 1, 92,795 (2001 census)
5. Area of the district : 2448 sq km
6. Population density : 81 per sq km
7. Literacy percentage : 66.07
8. Status of agriculture : Rainfed/Shifting

9. Farmers :

a. Big farmers : NA
b. Small farmers : NA
c. Marginal farmers : 18,170 nos.
d. Agricultural labourers : 10,556 nos.

10. Farm labour mobility

a. Is sufficient farm labour available in the district: YES
b. If 'YES' whether they do work in near by or other districts also? NO

11. Physiography

The terrain of the Ri-Bhoi District is rugged and it has a irregular land surface, including a series of hill ranges, which gradually sloped towards the North and finally joins the Brahmaputra Valley. A large part of the area is covered with dense forests and the hill ranges are very steep and interspersed with valleys. They are also intersected by numerous rivers and streams of various dimensions. During monsoon, these rivers become very turbulent and usually difficult to negotiate. The major rivers –are Umtrew, Umsiang, Umran and Umiam.

12. Climates

a. Sub-tropical
b. Pattern of rainfall in different months

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Nil	low	low	medium	medium	high	High	medium	high	Low	low	nil

c. Special weather phenomenon in the district:

During the period of 1st to 24th June 2009, Assam and Meghalaya region received 53% less rainfall as compared to normal rainfall of 456mm to 215mm rainfall during this period. According to rainfall analysis, it was found that 26.67 % of the years were drought years, which receive rainfall less than 2049.89 mm. Ri-Bhoi districts also experienced a mild drought

like condition even though the situation was not severe. During this period, the main crops grown were rice, maize, groundnut, Turmeric. Ginger, Colocasia and cucurbitaceous crops. It was seen that this crops were not much affected as mulching, light irrigation was done and also some of the crops were in the harvesting stage.

d. Maximum and minimum temperatures recorded: Max: 28.8^0 C Min: $2.5\ ^0$C

e. Critical periods for plant growth in the district

Sl. No	Crop	Critical periods of growth	Coinciding calendar month(s)
1.	Rice	Panicle initiation	Aug-Sept
2.	Maize	Tassle formation & silking stage	June

13. Soils

a. Soil group classifications present

Alluvial soils, Sandy soils, Acid soils

b. Soil fertility status (in general) : Medium

14. Irrigation

a. Area under irrigation : 2661.21 ha

b. Source of irrigation

1. Rivers : 4 nos

15. Land use and cropping intensity

1. Gross cropped area : 21684 ha
2. Net Area sown : 19219 ha
3. Fallow lands : 16135 ha
4. Cultivable waste lands : 58446 ha
5. Forest cover : 86750 ha
6. Barren lands : 20565 ha
7. Cropping intensity : 120

16. Major Crops

1. Principal crops, area, production and productivity

Sl. No	Principal Crops	Area (in ha)	Production (in tones)	Productivity (kg/ha)
1.	Rice			
	a) Winter	10697	29630	2770
	b) Autumn	193	360	1865
	c) Spring	144	277	1924
2.	Rapeseed &Mustard	164	67	409
3.	Millets			
	a) Finger	14	12	857
	b) Foxtail	8	7	875
4.	Turmeric	78	660	8462

5.	Castor	6	6	1000
6.	Tea leaf	830	4150	5000
7.	Arecanut	131	74	564
8.	Banana	846	14851	17554
9.	Potato	27	154	5704
10	Citrus Fruits	194	1404	7237

2. Crop rotations followed :
   1. Rice-Cowpea, Sweet Potato
   2. Rice-Tomato
   3. Rice-mustard
3. Crop sequences followed :
   1. Rice
   2. Rice-Pea
   3. Rice-Vegetables
   4. Maize-mustard
   5. Rice-Mustard-Tomato
4. Inter-cropping done, if any :
   1. Maize + French bean
   2. Ginger + Beans
   3. Ginger + Black gram
   4. Maize + Soybean
5. Mixed cropping done, if any :
   1. Rice + Maize + Lentil + Beans + Leafy Vegetables + Pineapple
   2. Rice + Maize + Soybean + Chillies + Cole crops
6. Catch crops grown, if any :
   1. Ginger
   2. Potato
   3. Turmeric
   4. Paddy

17. Socio-economic Characteristics, Land Holding Pattern

1. Average size of land holdings : 1.33 ha
2. Average fragmentation intensity : 2-3 nos
3. Existing land tenure system(s) : Tenant system
4. Source(s) of finance for farming :

   Rank 1. Earning from Service, business, wage earning etc.

   Rank 2. Self Help group fund

   Rank 3. Financial institution
5. Main source of income for farmers :

   Rank 1. Agriculture

Rank 2. Business

Rank 3. Allied Occupation

6. Commercial commodities produced :

Rank 1 Processed product of fruits & vegetables like jam, Jelly, squash, pickle/bamboo crafts.

Rank 2. Local garments

18. Farm Machinery and Implements available in the district: Data Not Available

19. Livestock

1.	Cattle	:	7471 nos
2.	Buffaloes	:	604 nos
3.	Sheep and goats	:	66& 13407 nos
4.	Pigs	:	7688 nos
5.	Poultry and ducks	:	49786 & 3154 nos
6.	Production of milk	:	2141 lit
7.	Production of meat	:	3 ton
8.	Production of eggs	:	17.09 lakhs nos

20. Livestock holding patterns:

a. Livestock holding pattern for big farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Poultry	50	1st
2.	Cattle	20	2nd
3.	Pig	8	3rd
4.	Goat	5	4th

b. Livestock holding pattern for small farmers.

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Poultry	10	1st
2.	Cattle	5	2nd
3.	Pig	2	3rd
4.	Goat	1	4th

c. Livestock holding pattern for marginal farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Poultry	25	1st

2.	Cattle	10	2nd
3.	Pig	7	3rd
4.	Goat	3	4th

d. Livestock holding pattern for agricultural laborers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Poultry	8	1st
2.	Cattle	3	2nd
3.	Pig	2	3rd
4.	Goat	1	4th

e. Average yields of various animals and bird in the district.

Sl. No	Animal/bird	Average yield (Specify Units)
1.	Cattle - Crossbreed	7.492 kg/milch cow
	Indigenous	0.421 kg/milch cow
2.	Buffalo	1.054 kg/milchcow
3.	Sheep	8.88 kg body weight/animal/year
4.	Goat	8.88 kg body weight/animal/year
5.	Pig	42.45 kg body weight/animal/year
6	Poultry - Desi	108 nos. of egg/bird/year
	Improved	223 nos. of egg/bird/year
7	Duck	155 nos. of egg/bird/year

21. Research Resources

1. Number of research stations : NA
2. Number of ICAR institutes/substations : 1
3. Number of state seed farms : 4
4. Number of private seed farms : NA

22. Agricultural Marketing Status and Constraints

1. Ways of disposal of farm produce and bye-products

Sl. No	Major Farm produce	Marketing channel	Bye product (if any)	Marketing channel
1.	Ginger	Whole sale market through middle man	-	-
2.	Paddy	Weekly market	-	-
3.	Betel nut	Sale in local market and to middle man	-	-
4.	Pineapple	Local collecting booth through middle man and pineapple aggregation center set up by Deptt. Of Hort., Govt. of Meghalaya	-	-

5.	Orange	Local collecting booth through middle man	-	-
6.	Tomato	Weekly market sale and whole sale market through middle man	-	-
7.	Pig	Through middle man	-	-
8.	Poultry	Weekly and daily market	-	-

2. Whole sale and retail markets in your district

   a. Wholesale markets : 1. Bhoirymbong 2. Umsning 3. Nongpoh

   b. Retail markets : 1. Umroi 2. Umden 3. Byrnihat
   4. Lalcharai

3. Major modes of transport to market:

   1. Commercial vehicles (Jeep, taxi, bus, truck, etc.)

4. Available/commonly used conveyance facilities (roads/waterways) to market:

   1. Roadways

23. Agro-climatic Zones

a. Various zones in the state :

   1. Tropical zone (100-300 m msl)
   2. Sub-tropical zone (300-1100 m msl)
   3. Temperate zone (1100-2000 m msl)

b. Various zones in the district:

1. Sub –Tropical Hill Zone (400-1200 m msl)
2. Mid Tropical Hill Zone (200-800 m msl)

2. Agricultural Situation in West Garo Hills

West Garo Hills is one of the seven districts of Meghalaya state. It comprises of 8 blocks viz. Rongram (Rural), Dadenggre, Selsella, Zikzak, Betasing, Dalu, Tikrikilla and Gambegre. Over 80 % of the populations of the district (5, 15,813) are tribal of which Garo form the majority. The other tribals are Hajong, Koch and Rabha. Garo Hills is technologically backward and poor in the field of agriculture. Agriculture is the main source of income. Jhuming is practiced at large scale. Out of the total population of West Garo Hills 113304 nos are cultivators and 34151 nos are agricultural labourers. Over 95% of the farming population are marginal farmers.

1. Position in relation to longitude and latitude: Between 89º and 91 ºE longitude and 25º and 26º N latitude
2. Altitude from MSL : 600 m to 1000 m
3. Boundaries of the district:

E:	East Garo Hills	W:	Assam & Bangladesh
N:	Assam	S:	South Garo Hills & Bangladesh
NE:	East Garo Hills	SE:	South Garo Hills
SW:	Bangladesh	NW:	Assam

4. Total population : 5, 18,390 (2001 census)
5. Area of the district : 3, 677 Sq.Kms
6. Population density : 140 per Sq. km
7. Literacy percentage : 50.7%
8. Status of agriculture : Rainfed /Shifting

9. Farmers

a. Big farmers : 10%
b. Small farmers : 70%
c. Marginal farmers : 20%
d. Agricultural labourers: 34,151 nos

10. Farm labour mobility

a. Is sufficient farm labour available in the district: Yes
b. If YES whether they do work in near by or other district also? Yes
c. If YES to which district they go for work? East and South Garo Hills

11. Physiography

1. Highlands : NA
2. Midlands : NA
3. Lowlands : 67813 Ha
4. Hilly tract :
5. General nature of the terrain: The terrain in West Garo Hills has played an important role in determining the characteristics of the soils. Generally the soils are thin, light in colour, less clay and less fertile in hill tops and slop and are thick, mature, deep in colour and more clay and more fertile in the valley and lowlands.

12. Climates

a. Sub-tropical/ Humid
b. Pattern of rainfall (mm) in different months

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
nil	38.4	35	303	282	722.6	1407.8	67	831.6	550.4	27.2	Nil

c. Special weather phenomenon in the district

In Garo Hills rain start early of the April and it continues till 1st week of Oct with a very high speed of wind, thunder and hailstorm and cyclone resulting in crop damage on cashew and others plantation crops every year. Duration of winter is also very short. During winter the temperatures also very low.

d. Maximum and minimum temperature recorded: Max: 28.8ºC and Min: 18.4 ºC

e. Critical period for plant growth in the district

Sl No	Crop	Critical periods of growth	Coincide calendar month(s)
1	Rice	2 months	August –Sept.
2	Maize	1 months	April – May
3	Ginger	1 months	December
4	Cashewnut	4 months	Nov. to Feb.
5	Arecanut	4 months	Nov. to Feb

13. Soils

1. Soil group classifications present in the district
   1. Red soil
   2. Acid soils
   3. Alluvial soil
   4. Sandy soil
2. Black soils : Present
3. Red soils : Present
4. Alluvial soils : Present
5. Sandy soils : Present
6. Laterite soils : Present
7. Saline and alkaline soils: Present
8. Acid soils : Present
9. Soil fertility status (in general): Medium

14. Irrigation

a. Area under irrigation : 8622.43 ha

b. Irrigation potential : 5622.43 ha

c. Sources of irrigation
   1. Rivers : 6 nos
   2. Tanks : 1000 nos
   3. Open wells : 500 nos
   4. Bore wells : 2000 nos
   5. Any other sources (Stream): 4500 nos

15. Land use and cropping intensity

1. Gross cropped area : 88,086 ha
2. Net sown area : 67813 ha
3. Fallow lands : 44316 ha
4. Cultivable waste lands : 34991 ha
5. Forest cover : 164059 ha

6. Barren lands (Uncultivable) : 7415 ha
7. Cropping intensity : 120%

16. Major crops

1. Principal crops, area, production and productivity

Sl No	Principal crops	Area (in ha)	Production (in tonnes)	Productivity (Kg/ha)
1	Rice	43288	90239	2084.6
2	Maize	4319	6599	1527.90
3	Millets	1056	581	548.63
4	Turmeric (green)	358	1779	4969.27
5	Potato	452	3465	7665.93
6	Sweet potato	506	1670	3300.40
7	Arecanut (green)	2767	4992	1804.12
8	Banana	1681	20068	11938.13
9	Chillies	895	559	624.58
10	Soybean (Green)	125	91	728.00
11	Rapeseed & Mustard	535	5942	11106.54
12	Ginger	2512	11764	4683.12
13	Peas	128	1279	9992.18
14	Beans	137	1276	9313.86
15	Carrot	84	1205	14345.23
16	Cabbage	172	1565	9098.83
17	Cauliflower	188	1488	7914.89
18	Turnip	114	1595	13991.22
19	Radish	183	2258	12338.79
20	Beetroot	88	1540	17500.00
21	Brinjal	179	2900	16201.12
22	Ladies finger	133	895	6729.32
23	Bottle gourd	107	1650	15420.56
24	Pumpkin	100	1375	13750.00
25	Tomato	146	2200	15068.49
26	Knolkhol	114	1765	15482.45
27	Capsicum	74	68	918.92
28	Lettuce	34	64	1882.35
29	Cucumber	91	520	5714.28
30	Mustard (leaves)	291	1600	5498.28
31	Coriander (leaves)	204	120	588.23
32	Onion	120	1500	12500.00
33	Bitter gourd	97	850	8762.88
34	Ridge gourd	93	1100	11827.95

2. Crop rotation followed :
    1. Paddy – Maize + Black gram
    2. Paddy - Maize + Sweet potato
3. Crop sequences followed
    1. Rice - Rice
    2. Rice – Vegetables
    3. Rice – Mustard
    4. Rice - Black gram
4. Inter-cropping done, if any
    1. Maize + Arhar

2. Maize + Blackgram
3. Maize + Cotton
4. Arecanut + Black pepper
5. Arecanut + Betel vine

5. Mixed cropping done, if any
   1. Paddy + maize + Cotton + Sesamum + Millets
      Arhar + Vegetables + Colocasia (In Jhum)
6. Catch crops grown, if any
   1. Maize + cotton

17. Socio-economic characteristics, Land Holding Pattern

1.	Average size of land holdings	:	0.5 ha
2.	Average fragmentation intensity	:	NA
3.	Existing land tenure system(s)	:	Village head (Nokma) system (Private)
4.	Source(s) of finance for farming	:	

Rank 1. SBI
Rank 2. Co-Operative apex bank
Rank 3. NABARD

5. Main source of income for farmers :

Rank 1. Agriculture
Rank 2. Daily labour

6. Commercial commodities produced :

Rank 1. Arecanut
Rank 2. Cashew nut
Rank 3. Coffee
Rank 4. Tea

18. Farm Machinery Implements available in the district

1.	Number of tractors	:	101 nos
2.	Number of power tillers	:	375 nos
3.	Number of carts	:	400 nos
4.	Types of implements-		
	a. Ploughs	:	3000 nos
	b. Cultivators	:	40 nos
	c. Discs	:	35 nos
	d. Harrows	:	35 nos
5.	Pumps (Oil and electrical)	:	270 (oil) nos and 200 (Electrical) nos
6.	Harvesters and threshers	:	800 nos
7.	Sprayers and Dusters	:	4000 (Sprayers) nos 25 nos (Dusters)

19. Livestock

1	Cattle	:	2, 18,886 nos

2	Buffaloes	:	8, 223 nos
3	Sheep and goats	:	6, 228 (Sheep) & 1, 2 0,311 (goats) nos
4	Pigs	:	81, 140 nos
5	Poultry and ducks	:	6, 69, 696 (Poultry) & 38, 231 (ducks) nos

20. Livestock holding patterns

a. Livestock holding pattern for big farmers

Sl no	Animal / bird	Average nos possessed	Rank according to nos possessed
1	Cow	35	2
2	Pig	20	3
3	Goat	10	5
4	Chicken	50	1
5	Duck	15	4
6	Rabbit	7	6

b. Livestock holding pattern for small farmers

Sl no	Animal / bird	Average nos possessed	Rank according to nos possessed
1	Cow	3	4
2	Pig	5	3
3	Goat	3	4
4	Chicken	10	1
5	Duck	7	2

c. Livestock holding pattern of marginal farmers

Sl no	Animal / bird	Average nos possessed	Rank according to nos possessed
1	Cow	2	3
2	Pig	2	3
3	Goat	1	4
4	Chicken	5	1
5	Duck	3	2

d. Livestock holding pattern of agricultural farmers

Sl no	Animal / bird	Average nos possessed	Rank according to nos possessed
1	Cow	5	3
2	Pig	7	1
3	Goat	3	4
4	Chicken	6	2

e. Average yield of various animals and bird in the district

Sl no	Animal / bird	Average nos possessed	Average yield (specific units)
1	Cow	12	4 ltr / cow / day
2	Pig	9	4 piglets / litter / sow
3	Goat	5	2 kids / goat
4	Chicken	18	180 eggs / chicken / year
5	Duck	7	120 eggs / duck / year
6	Rabbit	7	-

21. Research Resources

1.	Number of research station	:	1 no
2.	Number of ICAR institute / substation	:	1 no
3.	Number of state seed farms	:	NA

4. Number of private seed farms : NA

22. Agricultural Marketing Status and constraints

1. Ways of disposal of farm produce and bye-products

Sl no	Major Farm produce	Marketing channel	By-product (if any)	Marketing channel
1	Arecanut	Middle man	-	-
2	Cashewnut	Middle man	Cashew oil	Outside the state
3	Orange	Local market	Squash	Local
4	Ginger	Middle man	Ginger powder / oil	Local + outside
5	Turmeric	Middle man	Turmeric powder	Local
6	Cotton	Middle man	Cotton seed oil	Outside the state
7	Tea	Society	Tea leave	Outside the state

2. Whole sale and retail markets in the district:

a. Wholesale markets 1. Weekly Market (25 nos)

b. Retail markets 1. 25 nos

3. Major modes of transport to market.

1. By Bus / Truck (mini) 2. Bullock card

3. Thella 4. Head Carrying

5. Auto rickshaw

4. Available / commonly use convenience facilities (Roads/Water ways) to market

1. Roads

23. Agro-climatic Zones

1. Subtropical Zone
2. Tropical Zone

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3.5 Agricultural Situation in Mizoram

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1. Agricultural Situation in Aizawl

Aizawl is the state capital of Mizoram and is situated in the North. It has the most variegated hilly terrain. The hills are steep and separated by rivers. The climate of Aizawl is pleasant and it is generally cool in summer and not very cold in winter. The area is under direct influence of monsoon. It rains heavily from May to September and the average rainfall is 208 cm. Aizawl has a great natural beauty and very rich in flora and fauna. Almost all kinds of tropical trees and plants thrive in the district.

The farming practices are Mizo practices known as Jhum Cultivation. They slash down the jungle, burn the trunks and leaves and cultivate land. All their other activities revolve around the Jhum operation and their festivals are all connected with such agricultural operations, which are known as Mim Kut (Maize festival), Chapchar Kut (Jhum operation/jungle cleaning) and Pawl Kut (Harvest festival).

About 60% of District population resides in the Aizawl city and its sub-urban areas. The rest 40% lives in rural areas who are predominantly farming families. The most common form of farming is Jhumming, which is very harmful for flora and fauna. Lack of awareness and lack of resources to adopt sustainable agriculture farming system are the main reasons why Jhumming cannot be done away totally and immediately.

The major crops grown in the District are Paddy (both WRC and Jhum), Ginger, Turmeric, Sugarcane, Maize, Mustard, Pulses like Soya bean, Rice bean, Cowpea, Banana, Citrus, Chow chow, Passion fruit, Assam lemon, Vegetables etc. The productivity of the crops is much lower than National Average. This is due to non-availability of quality of inputs in the district/Non adoption of recommended practices, lack of proper management and also because of farming area is rainfed. The Jhumming practices is the burning issue which require urgent attention, the farmer needed to be educated through training, demonstration, trials and other extension activities etc.

1. Position in relation to longtitude and latitude : 25° 25'16.04" and 23°18'17.78"N Latitude, 92°37'03.27" and 93°11'45.69" E longtitudes

2. Altitude from MSL: 1132 metres.

3. Boundaries of the district.

E:	Champhai Dist. and Manipur	W:	Mamit District and Kolasib
N:	Assam State	S:	Serchhip District
NE:	Manipur State	SE:	Serchhip District
SW:	Lunglei District	NW:	Kolasib District and Mamit District

4. Total population : 3,39,812

5. Area of district : 3576.31 sq km

6. Population density : 95/sq km

7. Literacy percentage : 96.5%

8. Status of agriculture : Rainfed

9. Farmers

a) Big farmers : N/A
b) Small farmers : 5920 nos.
c) Marginal farmers : 9178 nos.
d) Agricultural labourers : 3165 nos.

10. Farm labour mobility

a) Is sufficient farm labour available in the district: NO
b) If 'NO' from which places do they come from? Nearby districts

11. Physiology

1. Highlands : 1, 68,230 (in ha)
2. Midlands : 1, 67,371
3. Lowlands : 2,646
4. Hilly tract : 13,089
5. General nature of the terrain

Aizawl district is characterized by sharp hill ridges that are mostly running from north to south direction. The district is lacking in terrain areas. Only few areas of terrain are present in small patches in between the hills and along the riverbanks. These terrains are too small for Wet Rice cultivation and hence, WRC is not very popular in the

district. Terracing nearby the capital Aizawl and Jhum Cultivation is very common in the district.

12. Climates

a. Sub-tropical/Temperate/Humid

b. Pattern of rainfall in different months

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low	Low	Low	Low	Medium	High	High	High	Medium	Medium	Low	Low

C. Maximum and minimum temperature recorded:

i). Av. Summer temperature. Max. 32.12 & Min. 17.06,

ii). Av. Winter temp. Max. 30.20 & Min. 13.75.

d. Critical periods for plant growth in the district

Sl. No.	Crop	Critical periods of growth	Coinciding calendar month(s)
1	Paddy	120 days	June – September
2	Maize	70 days	April – June
3	Sugarcane	150 days	June – October
4	Pulses & Oilseeds	75 days	September –

13. Soils

a. Soil group classifications present in the district

1. Very deep, dark brown to yellowish red, clay loam to clay, very strongly acidic, well drained.
2. Deep, yellowish brown to brownish yellow, clay loam to sandy loam, strongly acidic, poorly drained.
3. Dark yellowish brown to yellowish brown, clay loam, strongly acidic.

14. Irrigation

a. Area under irrigation : 535 ha

b. Irrigation potential : 1204 ha

c. Source of irrigation

1) Rivers : 327 nos.

2) Tanks : 475 nos.

3) Open wells : Nil nos.

4) Bore wells : Nil nos.

5) Any other sources : Nil nos.

15. Land use and cropping intensity

1.	Gross cropped area	:	61,806 ha
2.	Net Area sown	:	9,293 ha
3.	Fallow lands	:	1,454 ha
4.	Cultivable waste lands	:	1,250 ha
5.	Barren lands	:	968 ha

16. Major Crops

1. Principal crops, area, production and productivity

Sl. No.	Principal Crops	Area(in ha)	Production (in tones) (1ton = 1000kg)	Productivity (kg/ha)
1	Paddy	9293	16,440	2,030
2	Ginger	770	9,702	12.6
3	Maize	1,476	21,387.24	14.49
4	Pulses & Oilseeds	964	9,350	9.7
5	Sugar cane	-	-	-

2. Crop rotation followed :
   1) Paddy – Mustard Oilseeds
   2) Maize - Pulses
   3) Maize - Vegetables
3. Crop sequences followed:
   1) Paddy – Vegetables - Paddy
   2) Maize – Pulses - Paddy
4. Inter-cropping done, if any:
   1) Colacosia in Paddy
   2) Maize in Paddy
   3) Chilly in Early Paddy
5. Mixed cropping done, if any:
   1) Paddy + Maize + Rice bean
   2) Paddy + Sesamum + Colacosia
   3) Paddy + Local Mustard + Maize
6. Catch crops grown, if any:
   1) Early Paddy followed by Soya bean
   2) Paddy followed by Winter Vegetable
   3) Maize followed by Cowpea or Soybean

17. Socio-economic Characteristics, Land Holding Pattern

1.	Average size of land holdings	:	2.0 ha
2.	Average fragmentation intensity	:	0.4 nos.
3.	Existing land tenure system(s)	:	N/A

4.	Source(s) of finance for farming	:	Rank 1: Occasional Bank loan
		:	Rank 2: Govt. assistances
		:	Rank 3: Own saving
5.	Main source(s) of income for farmers	:	Rank 1: Farm produces (Agril)
		:	Rank 2: Poultry farming
		:	Rank 3: Cattle farming
6.	Commercial commodities produced	:	Rank 1: Ginger
		:	Rank 2: Turmeric
		:	Rank 3: Sugarcane

18. Farm Machinery and Implements available in the district

1.	Number of tractors	:	8 nos.
2.	Number of power tillers	:	16 nos.
3.	Number of carts	:	N/A
4.	Types of implements-		
	a. Ploughs	:	8 nos
	b. Cultivators	:	8 nos.
	c. Discs	:	12 nos.
	d. Harrows	:	10 nos.
5.	Pumps (Oil and electrical)	:	Water Pumpset and 277 nos.
6.	Harvests and Threshers	:	Nil
7.	Sprayers and Dusters	:	Knapsak and 150 nos.

19. Livestock

1.	Cattle	:	7377 nos.
2.	Buffaloes	:	263 nos.
3.	Sheep and Goats	:	86 & 1576 nos.
4.	Pigs	:	74340 nos.
5.	Poultry and Ducks	:	309312 & 2122 nos.
6.	Production of milk	:	8554000 nos.
7.	Production of meat	:	6157 nos.
8.	Prodution of eggs	:	98, 00,000 nos.

20. Research Resources

1.	Number of research stations	:	NIL
2.	Number of ICAR institutes/substations	:	NIL
3.	Number of state seed farms	:	NIL
4.	Number of private seed farms	:	NIL

21. Agricultural Marketing Status and Constraints

1. Ways of disposal of farm produce and bye-products

Sl. No	Major Farm produce	Marketing channel	Bye product (if any)	Marketing channel
1	Ginger	Corporation Ltd	-	-
2	Turmeric	- do -	-	-
3	Squash	Private Enterprises	-	-

2. Whole sale and retail markets in the district

   a) Wholesale markets: 1. Sihphir 2. Sairang 3. Bara Bazar

   b) Retail markets : 1. Bara Bazar 2. Bawngkawn 3. Vaivakawn

3. Major modes of transport to market

   1. By Road

4. Available/commodity used conveyance facilities (roads/waterways) to market

   1. Buses
   2. Taxis
   3. Sumos

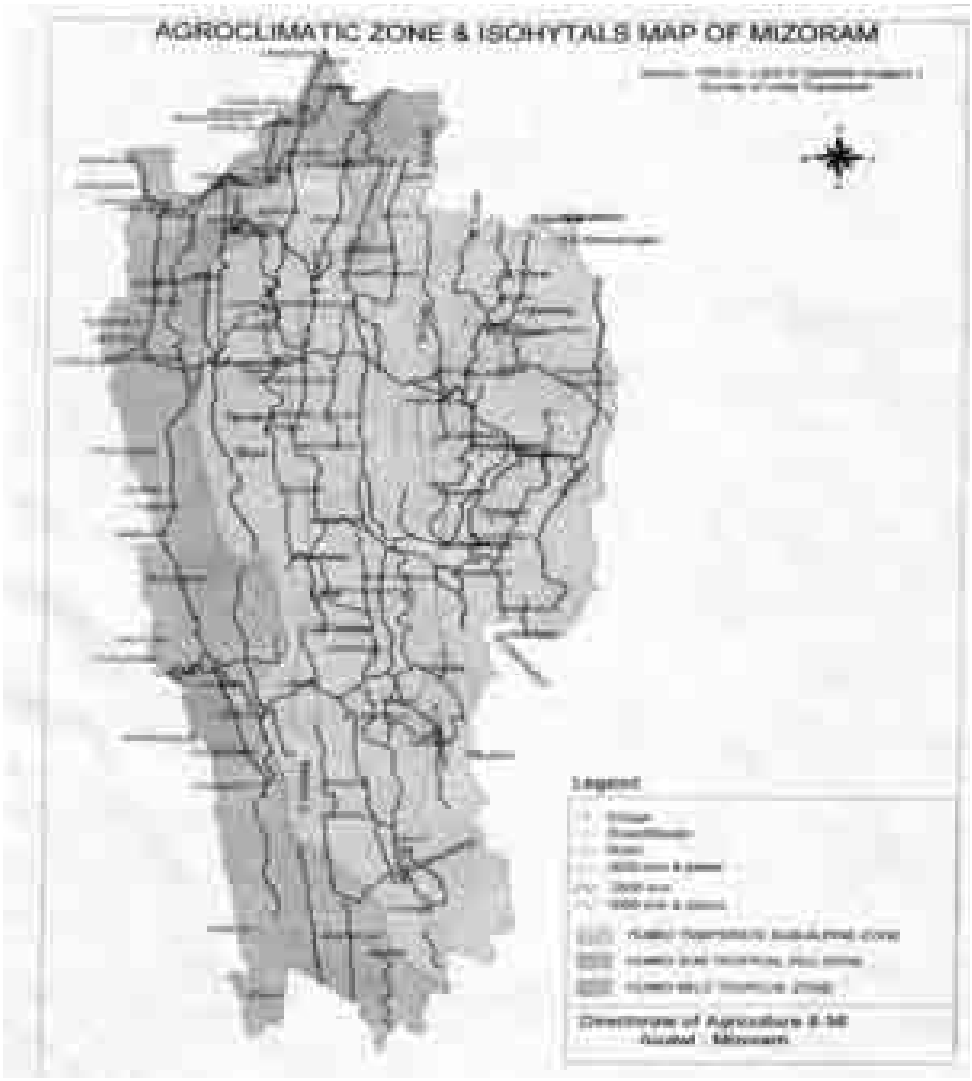
22. Agro-climate Zones

1. Various zones in the state

   1. Humid Temperate Sub-Alpine Zone
   2. Humid Sub-Tropical Hill Zone
   3. Humid Mild Tropical Hill Zone

2. List the various zones in the district:

   1. Humid Temperate Sub-Alpine zone
   2. Humid Sub-Tropical Hill Zone


AGROCLIMATIC ZONE & ISOHYTALS MAP OF MIZORAM
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2. Agricultural Situation in Kolasib

Kolasib District was created by bifurcation of erstwhile Aizawl District in 1998. It is situated in the northern most region of the state surrounded by Aizawl District in the South & East and Mamit District in the west and Assam State in the North. The geographical area of the district is 1382.51 sq. km. which is 6.56 per cent of the state area. It is situated in between 23° – 5' to 24° – 35'N .Latitude and 92° 3' to 93° E. Longitude. The district is covered By Humid Sub-Tropical Hill Zone and Humid Mild Tropical Zone.

The district consists of two R.D. blocks viz. Thingdawl R.D. block and Bilkhawthlir R.D. Blocks. There are 31 villages. The district has the only rail head in Mizoram i.e. Bairabi railway station at Bairabi Town, others by roads only. National Highway No.54 passes through the district from North to South with the length of 110 kms. and NH 154 passes through from Bilkhawthlir to Bairabi with the length of 58 kms.

The total population of the District is 64,329 in 2003 which is 6.49 per cent of the States population, with a population density of 44/ sq km. against the state's density of 42/ sq.km.Total No. of household is 12,255. Sex ratio is 983 females per 1000 males as against the state's ratio of 971.

Total number of workers in the District is 32388. Total No. of families involved in cultivation is 9578 out of which 7930 are Jhum cultivators and 1648 WRC cultivators 104. No. of families are engaged in sericulture activities.

1. Position in relation to longitude and latitude: $23^0 5'$N latitudes and $92^0 3'$ to 93^0 E longitude.
2. Altitude from MSL : 36m - 938m.
3. Boundaries of the district

   E : Aizawl district W : Tripura State N : Cachar district of Assam

   S: Aizawl district NE: Cachar district of Assam SE: Aizawl district

   SW: Mamit District NW: Hailakandi district of Assam
4. Total population : 64329
5. Area of the district : 1382.51 Sq Km.
6. Population density : 44
7. Literacy percentage : 89.51
8. Status of Agriculture : Rain fed/Irrigated/Shifting

9. Farmers

a. Big farmers : 1755 (nos)

b. Small farmers : 3553

c. Marginal farmers : 4270

10. Farm labour mobility

a. Is sufficient farm labour available in the district: NO

b. If 'NO' from which places do they come from? Hailakand & Karimganj district of Assam.

11. Physiography

1. Highlands : NIL (in ha)
2. Midlands : 058998
3. Lowlands : 44030
4. Hilly tract : 35223

12. Climates

a. Humid/ Sub-tropical

b. Pattern of rainfall in different months

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
L	L	L	M	M	H	H	H	H	M	L	L

c. Maximum and minimum temperatures recorded: Max 35^0 min 10^0

d. Critical periods for plant growth in the district

Sl.No.	Crop	Critical periods of growth	Coinciding calendar month(s)
1.	Paddy	Tillering, panick initiation	July, Sept – Oct
2.	Maize	Flower initiation	July – Aug
3.	R & Mustard	Flower initiation, early	Dec – Jan
4.	Rajma	Grand growth & Fruit initiation	Nov, Dec – Jan
5.	Soybean	Flower initiation	Aug - Sept

13. Soils

1. Which are the Soil group classifications present in the district
    1. Utisols
    2. Extisols
    3. Inseptisols
2. Black soils : Not Present
3. Red soils : Not Present
4. Alluvial soils : Not Present
5. Sandy soils : Present (400 ha)
6. Laterite soils : Not Present
7. Saline and alkaline soils : Not Present
8. Acid soils : Present (12747 ha)
9. Soil fertility status (in general) : Medium

14. Irrigation.

a. Area under irrigation : 1130 ha

b. Irrigation potential : 4500 ha

c. Source of irrigation
    1. Rivers : nos
    2. Tanks : nos
    3. Open wells : nos
    4. Bore wells : nos
    5. Any other sources : Streams lift by pump. : 21 nos 56 nos

15. Land use and cropping intensity

1. Gross Cropped area : 12747 ha
2. Net Area sown : 11250 ha
3. Fallow lands : 7950 ha
4. Cultivable waste land : 12590 ha
5. Forest cover : 103872 ha
6. Barren lands : 1092 ha
7. Cropping intensity : 113

16. Major Crops

1. Principal crops, area, production and productivity

Sl.No	Principal Crops	Area (in Ha.)	Production	Productivity (kg / Ha.)
1.	Paddy	8481	16434	1937.74
2.	Maize	731	1462	2000
3.	Soyabean	345	1242	3600
4.	R & Mustard	802	642	800
5.	Sesamum	256	141	500
6.	Rajma / F. Bean	366	1281	3500
7.	Sugar Cane	213	6777	31817

2. Crop rotations followed :
   1. Paddy + Paddy/Maize.
   2. Paddy + Pulses/Vegetables
   3. Paddy + Oilseeds/Vegetables
3. Crop sequences followed :
   1. Kharif Paddy followed by Rabi Paddy/Maize
   2. Kharif Paddy followed by Rabi Pulses/Vegetables
   3. Kharif Paddy followed by Rabi Oilseeds/Vegetables
4. Inter-Cropping done,if any :
   1. Oil palm + Banana/Pine apple
   2. Hatkora + Pine apple/Banana
5. Mixed Cropping done,if any :
   1. (In jhum) Paddy + Maize + Chillies + Vegetables + Sesamum
6. Catch Crops grown : NIL

17. Socio-economic Characteristics, Land Holding Pattern

1. Average size of land holdings : 1.08 ha
2. Average fragmentation intensity: 5 nos
3. Existing land tenure system (s) :
4. Sources (s) of finance for farming:
   Rank 1. Own money
   Rank 2. Bank loans
   Rank 3. Borrowed from friends
5. Main sources of income for farmers:
   Rank 1. Farm produce
6. Commercial commodities produced:
   Rank 1. Ginger
   Rank 2. Arecanut
   Rank 3. Hatkora

18. Farm Machinery and Implements available in the district

1. Number of tractors : 5 nos
2. Number of Power tillers : 15 nos
3. Number of Carts : NIL
4. Types of Implements-
   a. Ploughs (Deshi) : N.A
   b. Cultivators : 5 nos
   c. Discs : NA
   d. Harrows : 15 nos
5. Pumps (Oil and electrical) : 105 & NIL nos
6. Harvesters and Threshers : NA
7. Sprayers : 320 nos

19. Livestock

1.	Cattle	:	2017 nos (Cross breed + 3947 indogenous)
2.	Buffaloes	:	112 nos
3.	Sheep and Goats	:	43 & 2244 nos
4.	Pigs	:	25132 nos
5.	Poultry and Ducks	:	95924 nos &
6.	Production of milk	:	20, 12,000 ltr
7.	Production of meat	:	497 ton
8.	Production of eggs	:	24, 00,000 nos
9.	Production of wool	:	NIL
10.	Commercial commodities produced:		
	Rank 1. Ginger		
	Rank 2. Arecanut		
	Rank 3. Hatkora		

20. Livestock holding patterns

a. Livestock holding pattern for big farmers: No big farmers.

b. Livestock holding pattern for small farmers

Sl.No.	Animal/ Bird	Average nos. possessed
1.	Cattle	5-10
2.	Buffaloes	2-6
3.	Goat	2-7
4.	Pig	1-4
5.	Poultry	2-50

c. Livestock holding pattern for marginal farmers.

Sl.No.	Animal/ Bird	Average nos. possessed
1.	Cattle	2 nos
2.	Pig	1-3 nos
3.	Goat	1-3 nos
4.	Poultry	4-10 nos

d. Livestock holding pattern for agricultural labourers.

Sl.No.	Animal/ Bird	Average nos. possessed
1.	Cattle	2 nos ie. Pair for ploughing

e. Average yields of various animals and bird in the district.

SN.	Animal/ Bird	Average yield (Specify Units)
1.	Cattle	886 nos.
2..	Buffaloes	6 nos
3.	Goat	795 nos.
4.	Pig	3691 nos
5.	Poultry	22000 nos.

21. Research Resources.

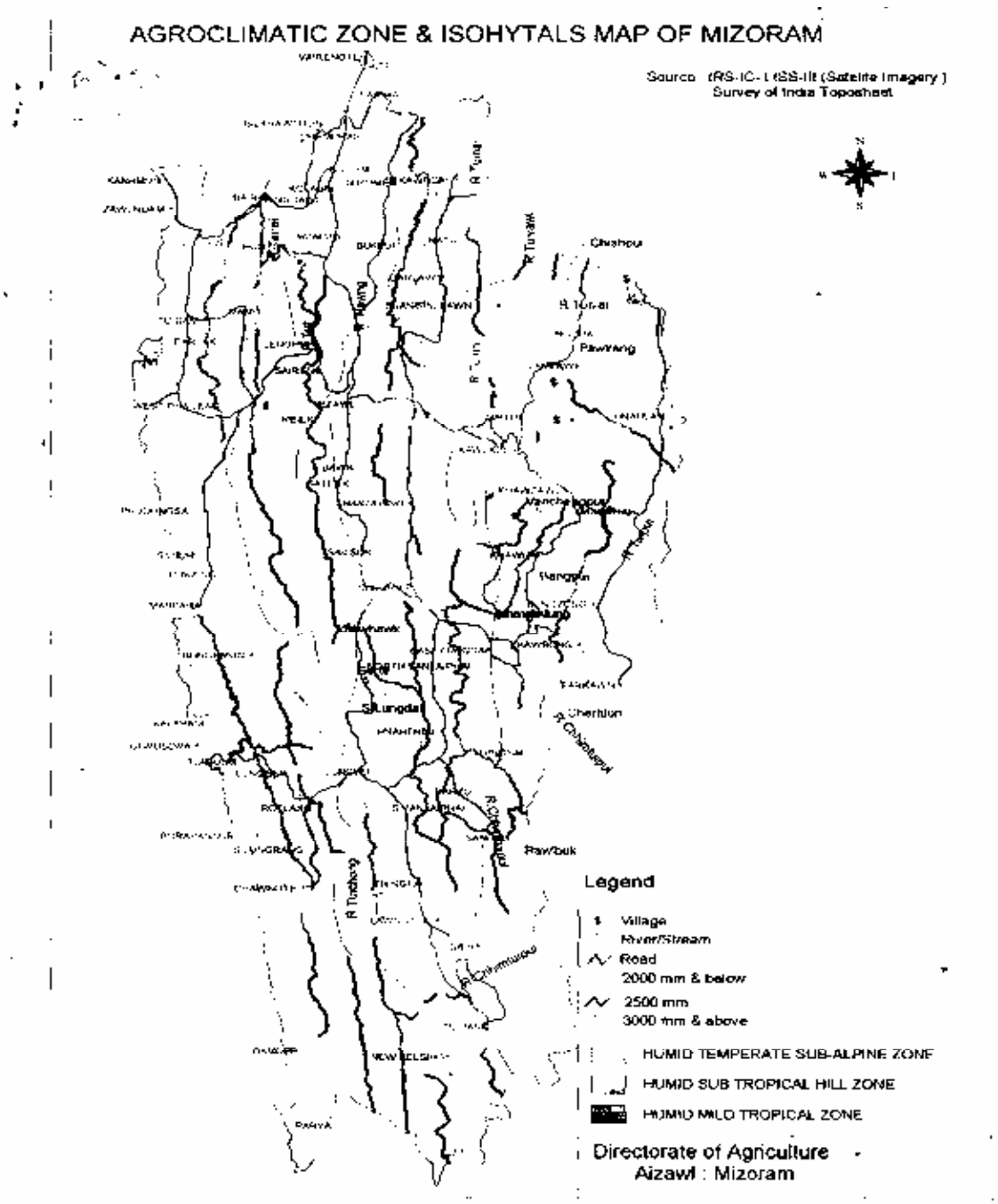
1. Number of research stations : NIL
2. Number of ICAR institutes/substations : 1 nos
3. Number of state seed farms : NIL
4. Number of private seed farms : NIL

22. Agriculture Marketing Status and Constraints.

1. Ways of disposal of farm produce and bye-products

SN. No	Major Farm produce	Marketing channel	By product (if any)	Marketing channel
1.	Ginger	Outside the state and local market	-	Through middle man
2.	Sesamum	Local market	-	Through middle man
3.	Chillies	Outside the state and local	-	Through middle man
4.	Arecanut	Local market	-	Through middle man
5.	Hatkora	Local market	-	Through middle man

2. Whole sale and retail markets in the district.
   a. Wholesale markets : 1.Veirengte 2. Bairabi
   b. Retail markets : 1. Kolasib 2. Vairengte 3. Kawnpui 4. Bilkhawthlir 5. Bairabi 6. Lungdai
3. Major modes of transport to market:
   1. By roads
   2. By headload
   3. Waterways
4. Available/commonly used conveyance facilities (roads/waterways) to market:
   1. Roads
   2. Waterways



1.

23. Agro-climatic Zones

1. Humid Sub-tropical hill zone
2. Humid Mild-tropical zone

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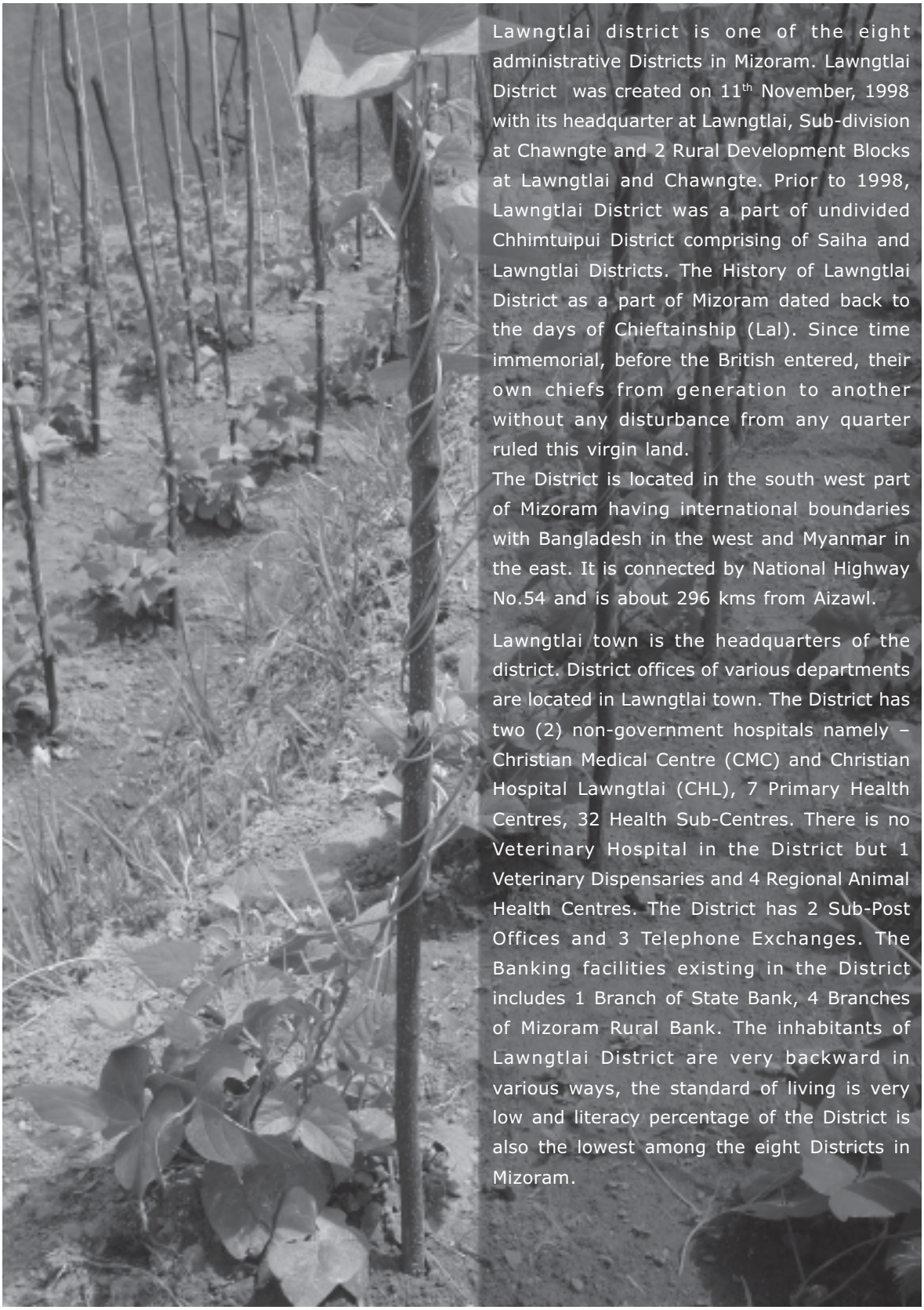
3. Agricultural Situation in Lawngtlai



Lawngtlai district is one of the eight administrative Districts in Mizoram. Lawngtlai District was created on 11th November, 1998 with its headquarter at Lawngtlai, Sub-division at Chawngte and 2 Rural Development Blocks at Lawngtlai and Chawngte. Prior to 1998, Lawngtlai District was a part of undivided Chhimtuipui District comprising of Saiha and Lawngtlai Districts. The History of Lawngtlai District as a part of Mizoram dated back to the days of Chieftainship (Lal). Since time immemorial, before the British entered, their own chiefs from generation to another without any disturbance from any quarter ruled this virgin land.

The District is located in the south west part of Mizoram having international boundaries with Bangladesh in the west and Myanmar in the east. It is connected by National Highway No.54 and is about 296 kms from Aizawl.

Lawngtlai town is the headquarters of the district. District offices of various departments are located in Lawngtlai town. The District has two (2) non-government hospitals namely – Christian Medical Centre (CMC) and Christian Hospital Lawngtlai (CHL), 7 Primary Health Centres, 32 Health Sub-Centres. There is no Veterinary Hospital in the District but 1 Veterinary Dispensaries and 4 Regional Animal Health Centres. The District has 2 Sub-Post Offices and 3 Telephone Exchanges. The Banking facilities existing in the District includes 1 Branch of State Bank, 4 Branches of Mizoram Rural Bank. The inhabitants of Lawngtlai District are very backward in various ways, the standard of living is very low and literacy percentage of the District is also the lowest among the eight Districts in Mizoram.

Agriculture is the main occupation in the District. There are 23,553 cultivators, 838 Agricultural labourers, 267 Industrial labourers and 7446 other workers. Agriculture & allied activities occupied the most important occupation accounting for 75% of population depended on it directly or indirectly for their livelihood. Service sectors offer other employment opportunities for about 20% of the population and only about 5% of the population engaged themselves in secondary sector. Apart from depending on agriculture for their livelihood, majority of the agricultural population took up other economic activities to supplement their income. These activities include piggery (the demand of pork is high), poultry and dairy.

The District is classified as 'Zero Industry Zone'. The main reason for the poor industrial development have been unfavorable topography, remoteness of the District, lack of infrastructures such as road and power, lack of manpower, high labour cost, lack of raw material and un-organized markets. Due to these constraints, only cottage, village and tiny industry have the potential for further development. The activities which are undertaken by the people are wooden furniture, vehicle repairs, electrical repairs, etc. Other economic activities include retail trade and services. Activities under trade include setting up of grocery shop, bakery stalls, and garment shops and other retail trades and business. Service activities include small hotels, various repairing shops etc. Small Road Transport Operators (SRTO) not only forms a part of the sector but it is the most popular and preferred activity. The entire state being hilly, scattered, poor transport facility offered by the State undertaking is not sufficient to meet the demand for it.

Lawngtlai District has a pleasant climate. It is generally cool in summer and not very cold in winter. Relative humidity is highest during the South-West monsoon and heavy precipitation is usually received during the months from may up to September every year. The average annual rainfall is about 2558mm. The hottest period starts from the month of March up to August every year. During the rainy season, it is usually heavily clouded. There is an increase of cloudiness from March onwards. A clear and cool weather starts appearing from the month of September up to January the next year.

1.	Position in relation to longitude and latitude:		92.30^{o} – 93^{o}E & 21.58^{o} - 22.60^{o}N
2.	Altitude from MSL	:	747.37 m
3.	Boundaries of the district	:	
	E: Saiha	W : Bangladesh	N : Lunglei S : Myanmar
	NE: Lunglei	SE: Myanmar	SW: Bangladesh NW: Bangladesh
4.	Total population	:	85,550
5.	Area of the district	:	1991 sq km
6.	Population density	:	42.97
7.	Literacy percentage	:	67.19 %

8. Status of agriculture : Rainfed & Shifting

9. Farmers :

a.	Big farmers	:	48 nos
b.	Small farmers	:	8438 nos
c.	Marginal farmers	:	14232 nos
d.	Agricultural labourers	:	835 nos

10. Farm labour mobility

a. Is sufficient farm labour available in the district: NO

b. If 'NO' from which places do they come from? Mainly from Myanmar

11. Physiography

a.	Highlands	:	88461 ha
b.	Midlands	:	16942.5 ha
c.	Lowlands	:	2467.5 ha
d.	Hilly tract	:	91248 ha

e. General nature of the terrain:

Generally, the topography of Lawngtlai District is characterized by rather hilly terrain with high and prominent rallies, several hill ridges, and all almost running parallel to one another. Most of which roughly runs from North to South. The western and south western part of the district on the other hand portrait by comparatively low and less prominent ridges with several low lying plains. Hill ridges of the western side are relatively short, linear and parallel. Several streams and rivulets made their way through hillocks. Thus forming a network of water channels. An important feature is the Chamdur valley plain which is confined around Chamdur village along Tuichhawng river stretching for a wide area costing a network of streams and rivers, and is extensively utilized for WRC. The terrain of the North Eastern of the district around Phawngpui tlang (Blue Mountain – 2157 mt.) and its surroundings is represented by steep slopes and cliffs. The eastern part of the district is represented by higher and prominent ridges. The altitude generally ranges from 1000 – 2000 mt.

12. Climates

a. Humid/Sub-Tropical

b. Pattern of rainfall in different months

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low	Low	Low	Medium	High	High	High	High	High	Medium	Medium	Low

c. Maximum and minimum temperatures recorded:

Summer - Max: 31.25oC Min: 16.2^{o}C Winter - Max: 23.52^{o}C Min: 7.52^{o}C

d. Critical periods for plant growth in the district

Sl. No	Crop	Critical periods of growth	Coinciding calendar month(s)
1.	Paddy	Maximum tillering – Max. flowreing – Grain filling	July - August
2.	Maize	Knee height - Tassel	July
3.	Passion fruit	Flowering	April – May & Oct. – Nov.
4.	Banana	Emergence	Oct - Nov
5.	Turmeric	Rhizome formation	

13. Soils

1. Soil group classifications present in the district
   1. Entisols
   2. Inceptisols
   3. Ultisols

2.	Black soils	:	Not Present
3.	Red soils	:	2712.5 ha
4.	Alluvial soils	:	8640 ha
5.	Sandy soils	:	2630 ha
6.	Laterite soils	:	110604 ha
7.	Saline and alkaline soils	:	Not Present
8.	Acid soils	:	77162.5 ha
9.	Soil fertility status (in general)	:	Medium

14. Irrigation

a.	Area under irrigation	:	837 ha
b.	Irrigation potential	:	2135 ha
c.	Source of irrigation		
	1. Rivers	:	37 nos
	2. Tanks	:	40 nos
	3. Open wells	:	10 nos
	4. Bore wells	:	NIL

15. Land use and cropping intensity

1.	Gross cropped area	:	15385 ha
2.	Net Area sown	:	14295 ha
3.	Fallow lands	:	76750.5 ha
4.	Cultivable waste lands	:	963 ha
5.	Forest cover	:	102147.5 ha
6.	Barren lands	:	1290.5 ha
7.	Cropping intensity	:	107%

16. Major Crops

1. Principal crops, area, production and productivity

Sl. No	Principal Crops	Area (in ha)	Production (in tones) (1ton=1000kg)	Productivity (kg/ha)
1.	Rice – (a) Jhum (b) WRC	18452 712	2767.8 356	150 500
2.	Maize	715	47	65.73
3.	Rice Bean	40	20	500
4.	Cowpea	30	1082	36066.67
5.	Soyabean	281	53	188.61
6.	Sugarcane	20	5.92	296
7.	Potato	41	60.6	1478.05

2. Crop rotations followed : Paddy – Mustard - Paddy
   Paddy – Cabbage - Paddy
3. Crop sequences followed : Paddy – Cabbage - Onion
   Paddy – Maize - Potato
4. Inter-cropping done, if any : NIL
5. Mixed cropping done, if any : 1. Paddy with Sesamum/ Birds Eye Chilli
   2. Banana with Pineapple/ Sugarcane
   3. Mustard with Cowpea/ Soyabean
6. Catch crops grown, if any : NIL

17. Socio-economic Characteristics, Land Holding Pattern

1. Average size of land holdings : 0.8 ha
2. Average fragmentation intensity : NA
3. Existing land tenure system(s) : Land is owned by the VC and leased out to farmers.
4. Source(s) of finance for farming : NA
5. Main source of income for farmers :
   Rank 1. Agriculture
   Rank 2. Horticulture
   Rank 3. Animal Husbandry (Piggery, Poultry & Dairy)
6. Commercial commodities produced :
   Rank 1. Horticultural crops (Cabbage, Mustard)

18. Farm Machinery and Implements available in the district

1. Number of tractors : 3 no.
2. Number of power tillers : 2 no.
3. Pumps (Oil and electrical) : 16
4. Sprayers and Dusters : 79

19. Livestock

1.	Cattle	:	2183 nos
2.	Buffaloes	:	300 nos
3.	Sheep and goats	:	117 & 2575 nos
4.	Pigs	:	10,110 nos
5.	Poultry and ducks	:	1, 99,299
6.	Production of milk	:	70-100 ltrs/ day
7.	Production of meat	:	589 ton
8.	Production of eggs	:	60, 00,000 nos
9.	Production of wool	:	NIL

20. Research Resources

1.	Number of research stations	:	1 no.
2.	Number of ICAR institutes/substations	:	NIL
3.	Number of state seed farms	:	NIL
4.	Number of private seed farms	:	NIL

21. Agricultural Marketing Status and Constraints

1. Ways of disposal of farm produce and bye-products

Sl. No	Major Farm produce	Marketing channel	Bye product (if any)	Marketing channel
1.	Rice	Producer → Consumer	-	-
2.	Maize	Producer → Consumer	-	-
3.	Cowpea	Producer → Consumer	-	-
4.	Banana	Producer → Consumer	-	-
5.	Citrus	Producer → Consumer	-	-

2. Whole sale and retail markets in the district
   a. Wholesale markets : NIL
   b. Retail markets : NIL
3. Major modes of transport to market:
   1. Head load
   2. Vehicle (Mahindra pik-up, etc.)
4. Available/commonly used conveyance facilities (roads/waterways) to market :
   1. Roads
   2. Waterways (Boats)

22. Agro-climatic Zones

1. Humid Temperate Sub Alpine Zone
2. Humid Sub-Tropical Hill Zone
3. Humid Mild-Tropical Zone

4. Agricultural Situation in Lunglei

Lunglei District is one of the eight Administrative Districts of Mizoram with its headquarters at Lunglei. It is located in the southern part of the state. The total geographical area of the district is 4538 sq km with a total population of 137223 and 27889 households. There are four Rural Development Blocks within the district viz. Lunglei, Hnahthial, Lungsen and Bunghmun. Except a few, the whole population belongs to Scheduled Tribe. The climate is suitable for cultivation of almost all crops. Similarly it is also suitable for animal husbandry, fishery, sericulture etc. The district has a pleasant climate, which is generally cool in summer and not very cold in winter. In winter the temperature varies from 8^0C to 24^0C while in summer it is between 18^0C to 32^0C. There is no snowfall in the district, though frost is often experienced in the eastern parts. The western part of the district is lower in elevation compared to the eastern part and hence it experiences a little warmer climate than the eastern part. The district receives an adequate amount of rainfall which is under the direct influence of the south west Monsoon.It rains heavily from the month of May to September and maximum rainfall is received during the month of July. In face 80% of the total rainfall occurs between May and September and only remaining 20% during the other seven months The district is drained by several important rivers like Khawthlangtuipui, Tuichawng, Tlawng, Mat, Tuichang and Tuipui rivers. River Tlawng is the longest river in Mizoram originating from Zopui hill, some 8 kilometres east of Lunglei town at the height of about 1395 metres. The rocks of these area are generally sandstone and shale, the derived soils are mostly red and yellow loamy. The soil is acidic in nature due to heavy rainfall. It contains a high amount of organic carbon and are therefore high in available Nitrogen, low in Phosphorus and Potash content. Wetland rice cultivation is practiced in the flood plains of some rivers viz De, Phairuang, Kau, Khawthlangtuipui rivers and ares of South Vanlaiphai. Rice is the only crop cultivated during Kharif season. During Rabi season vegetables like Mustard, Cauliflower etc are cultivated in small patches of valley fields in a scattered manner. In general double cropping is not practiced due to lack of facility and sufficient water during the dry season. Orange, Banana and Pineapple are some of the main fruits grown in the district. Other crops cultivated are Maize, Ginger, Cowpea, Brinjal etc.

1. Position in relation to longitude and latitude: Lunglei District is situated in the eastern part of Mizoram and located between 92^0 19 '47" to 93^0 11' 34"E longitude and 23^0 23' 59" to 22^0 29' 46" N latitudes.

2. Altitude from MSL : 35m – 1758 m

3. Boundaries of the district :

E: Myanmar	W: Bangladesh	N: Mamit & Serchhip
S: Saiha & Lawngtlai	NE: Serchhip	SE: Saiha
SW: Lawngtlai	NW: Mamit	

4. Total population : 137223

5. Area of the district : 4538 sq km

6. Population density : 30.23 per square km.

7. Literacy percentage : 84.2 %

8. Status of agriculture : Shifting Cultivation is being practiced under Rainfed condition. Irrigation is done only in small pockets.

9. Farmers :

a.	Big farmers	:	21 nos
b.	Small farmers	:	5010 nos
c.	Marginal farmers	:	11880 nos
d.	Agricultural labourers	:	25817 nos

10. Farm labour mobility

a. Is sufficient farm labour available in the district: Yes

c. If 'YES' whether they do work in near by or other districts also? No

11. Physiography

a.	Highlands	:	437406.48 ha
b.	Midlands	:	11657.52 ha
c.	Lowlands/ Flatlands	:	4263.84 ha
d.	Hilly tract	:	272.16 ha

e. General nature of the terrain: The area is characterized by the hilly rugged terrain. The parallel structural hill ranges run north to South direction tapering at both ends with alternating narrow valleys. The ridges show serrated tops which are highly dissected and separated by intervening 'V' shaped valleys. Besides these hill ranges, there are

small and limited hill ranges and numerous dissected low hills in the western part of the area. Hill side slopes are steep to very steep and escarpments are common. The altitude of hills gradually increases towards the east. The highest peak is Puruntlang with a height of 1758 metres above mean sea level and is located in the eastern part. Other peaks are Khawthlirtlang, Pukpuitlang, Lungchentlang, Lunglentlang, Darzotlang, Chaltlang, Saireptlang, Mamtetlang etc.

12. Climates

a. Humid/Sub-tropical

b. Pattern of rainfall in different months

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low	Low	Medium	Medium	High	High	High	High	High	Medium	Low	Low

c. Special weather phenomenon in the district

Lunglei District may be divided into two broad rainfall areas wherein it is bisected in a north-south fashion, dividing it into western and eastern areas. The eastern mountainous areas receive more rainfall than the much lower western regions. No much research activities have been done in this respect, but it can be assumed due to the entrapment of clouds in the higher mountainous areas which results in higher precipitation.

d. Maximum and minimum temperatures recorded: Max: 32.4^0 C Min: 7.23^0 C

e. Critical periods for plant growth in the district

Sl. No	Crop	Critical periods of growth	Coinciding calendar month(s)
1.	Paddy	Panicle Initiation, Tillering, Flowering	May-June, June - July , August
2.	Maize	Flowering, Seed formation	June , July
3.	Sugarcane	Germination, Tillering	April, May
4.	Turmeric	Sprouting	April
5.	Ginger	Sprouting, Rhizome elongation	April, May
6.	Soyabean	Flowering, Pod formation	August, October
7.	Sesamum	Flowering	June-July
8.	Cow Pea	Pre blooming, Pod Formation	July, August-September
9.	Orange	Flowering, Fruit maturity	March, October-November
10.	Banana	Planting, Shooting	June, July

13. Soils

1. Soil group classifications present in the district:
   1. Entisols
   2. Inceptisols
   3. Ultisols

2. Black soils : Not Present

3.	Red soils	:	Present (99792 ha)
4.	Alluvial soils	:	Present (45360 ha)
5.	Sandy soils	:	Present (90720 ha)
6.	Laterite soils	:	Not Present
7.	Saline and alkaline soils	:	Not Present
8.	Acid soils	:	Present (217728 ha)
9.	Soil fertility status (in general)	:	High

14. Irrigation

1.	Area under irrigation	:	2185 ha (Cultivable Command Area)
2.	Irrigation potential	:	4886 ha (Irrigation Potential Created)
3.	Source of irrigation		
	1. Rivers/ Stream	:	9 nos
	2. Tanks	:	Nil
	3. Open wells	:	Nil
	4. Bore wells	:	Nil
	5. Any other sources	:	Rain water Harvesting earthen dam : 20 nos

15. Land use and cropping intensity

1.	Gross cropped area	:	449648 ha
2.	Net Area sown	:	21021 ha
3.	Fallow lands	:	645 ha
4.	Cultivable waste lands	:	428627 ha
5.	Forest cover	:	1290 ha
6.	Barren lands	:	2862ha
7.	Cropping intensity	:	100%

16. Major Crops

1. Principal crops, area, production and productivity

Sl. No	Principal Crops	Area (in ha)	Production (in tones) (1ton=1000kg)	Productivity (kg/ha)
1.	Paddy	7856	13572	1.73
2.	Maize	1304	3755	2.88
3.	Sesamum	815	1271.4	1.56
4.	Ginger	598	5262	8.80
5.	Soyabean	231	748.44	3.24
6.	Sugarcane	173	498	2.88
7.	Mandarin Orange	561	3029	5.40

2. Crop rotations followed :
   1. Paddy - Oilseeds
   2. Paddy – Vegetables

3. Maize - Pulses

3. Crop sequences followed:
   1. Paddy / Cowpea
   2. Paddy/ Maize / Vegetables
   3. Maize / Oilseeds
4. Inter-cropping done, if any:
   1. Paddy – Cucurbits
   2. Oil Palm – Paddy/ Maize/ Soyabean
5. Mixed cropping done, if any:
   1. Banana and Cowpea/Ginger
   2. Upland Paddy and Sesamum
6. Catch crops grown, if any:
   1. Vegetables
   2. Ginger
   3. Chillies

17. Socio-economic Characteristics, Land Holding Pattern

1.	Average size of land holdings :	Marginal= 0-1 ha, Small=1-2ha ,Large=5-10ha
2.	Average fragmentation intensity:	Negligible, as majority of the land is owned by Village Council.
3.	Existing land tenure system(s):	Village Council land is being used for cultivation by most of the farmers.

4. Source(s) of finance for farming:
   Rank 1. Self
   Rank 2. Govt. subsidies
5. Main source of income for farmers:
   Rank 1. Farm Produce
6. Commercial commodities produced:
   Rank 1. Ginger Rank 2. Turmeric Rank 3. Vegetables

18. Farm Machinery and Implements available in the district

1.	Number of tractors	:	9 nos
2.	Number of power tillers	:	20 nos
3.	Number of carts	:	Nil
4.	Pumps (Oil and electrical)	:	180 & 20 nos
5.	Harvesters and Threshers	:	Nil
6.	Sprayers and Dusters	:	80

19. Livestock

1.	Cattle	:	3239 nos
2.	Buffaloes	:	109 nos

3.	Sheep and goats	:	Nil & 2807 nos
4.	Pigs	:	31068 nos
5.	Poultry and ducks	:	169752 nos & Nil
6.	Production of milk	:	2.5 ltr / day/cattle
7.	Production of meat	:	16-20 ton/ day
8.	Production of eggs	:	2048 nos/day
9.	Production of wool	:	Nil

20. Livestock holding patterns

a. Livestock holding pattern for big farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Poultry	100-120	I
2.	Cattle	15-20	II
3.	Piggery	8-10	III

b. Livestock holding pattern for small farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Poultry	50-70	I
2.	Cattle	5-6	II
3.	Piggery	4-5	III

c. Livestock holding pattern for marginal farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Poultry	20-30	I
2.	Cattle	0-1	II
3.	Piggery	0-1	III

d. Livestock holding pattern for agricultural labourers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Poultry	5-10	I
2.	Cattle	0-1	II
3.	Piggery	0-1	II

E. Average yields of various animals and bird in the district.

Sl. No	Animal/bird	Average yield (Specify Units)
1.	Cattle	2.5lit/day
2.	Poultry	3-4 Kg/bird
3.	Poultry	1 egg/ day
4.	Piggery	60-80 Kg/ pig

21. Research Resources

1. Number of research stations : Nil
2. Number of ICAR institutes/substations : Nil
3. Number of state seed farms : Nil
4. Number of private seed farms : Nil

22. Agricultural Marketing Status and Constraints

1. Ways of disposal of farm produce and bye-products

Sl. No	Major Farm produce	Marketing channel	Bye product (if any)	Marketing channel
1.	Paddy	Local market	Rice	Within the state
2.	Oilseed	Local market	Oil	Within the state
3.	Fruits	Local market	Fruit juice	Within the state
4.	Vegetables	Local market	Processed vegetables	Within the state
5.	Turmeric	Local market	Powder form	Within the state

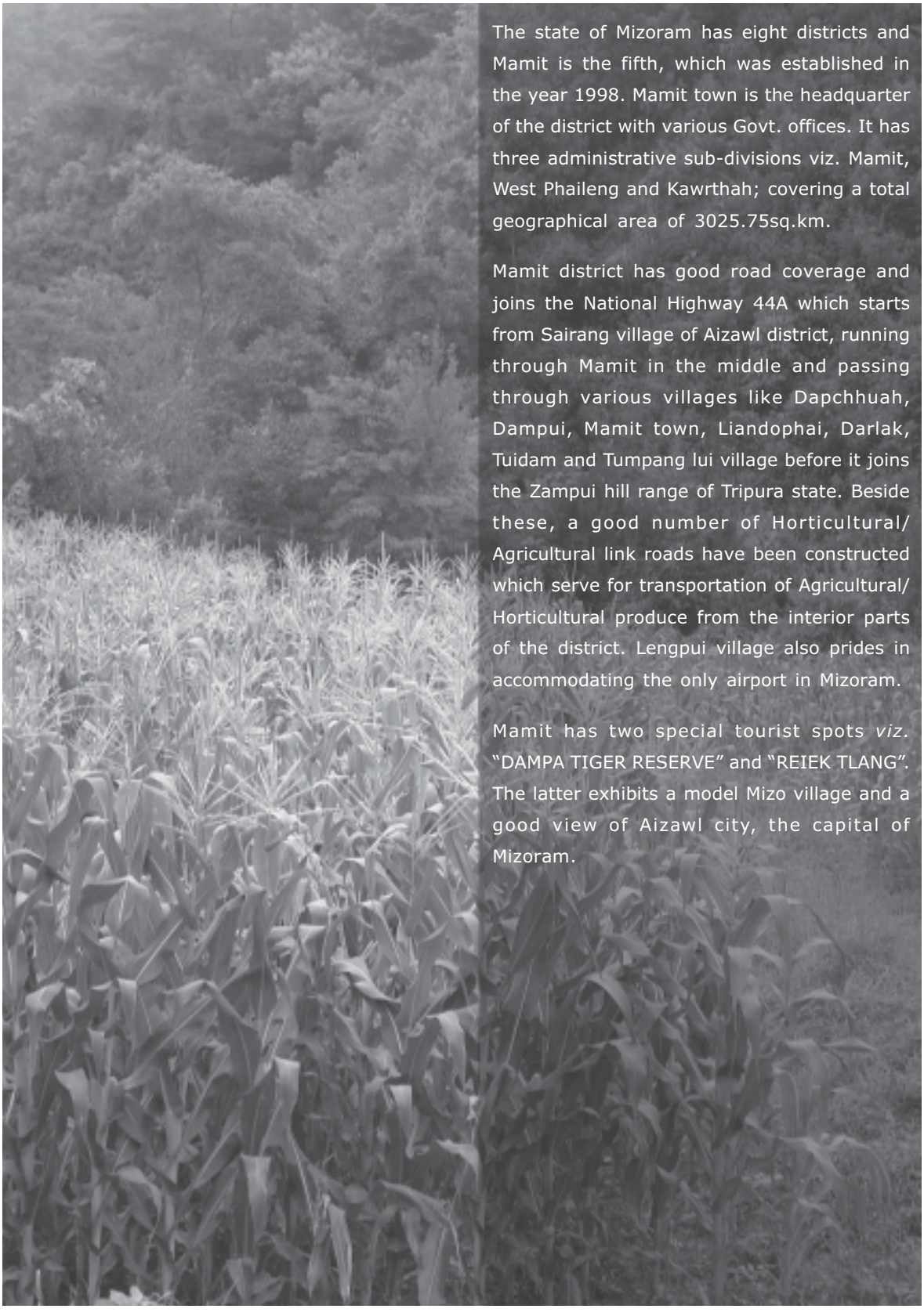
2. Whole sale and retail markets in the district
   a. Wholesale markets : 1. Nil
   b. Retail markets : 1. 12 (MAMCO) 2. 25 (Trade & Commerce)
3. Major modes of transport to market:
   1. Head Load
   2. Carts
   3. Hired Vehicles
4. Available/commonly used conveyance facilities (roads/waterways) to market :
   1. Roads
   2. Bridle path

23. Agro-climatic Zones

1. Humid Temperate Sub Alpine Zone
2. Humid Sub Tropical Hill Zone
3. Humid Mild Tropical Zone

Blank

5. Agricultural Situation in Mamit



The state of Mizoram has eight districts and Mamit is the fifth, which was established in the year 1998. Mamit town is the headquarter of the district with various Govt. offices. It has three administrative sub-divisions viz. Mamit, West Phaileng and Kawrthah; covering a total geographical area of 3025.75sq.km.

Mamit district has good road coverage and joins the National Highway 44A which starts from Sairang village of Aizawl district, running through Mamit in the middle and passing through various villages like Dapchhuah, Dampui, Mamit town, Liandophai, Darlak, Tuidam and Tumpang lui village before it joins the Zampui hill range of Tripura state. Beside these, a good number of Horticultural/ Agricultural link roads have been constructed which serve for transportation of Agricultural/ Horticultural produce from the interior parts of the district. Lengpui village also prides in accommodating the only airport in Mizoram.

Mamit has two special tourist spots *viz.* "DAMPA TIGER RESERVE" and "REIEK TLANG". The latter exhibits a model Mizo village and a good view of Aizawl city, the capital of Mizoram.

1.	Position in relation to longitude and latitude	:	23° 15'21.25" and 24°15'16.80"N 92° 15'44.54" and 92° 40'39.63"E
2.	Altitude from MSL	:	40m – 1485m
3.	Boundaries of the district	:	

E: Aizawl District W: Bangladesh N: Assam
S: Lunglei District NE: Kolasib District SE: Serchhip District
SW: Bangladesh NW: Tripura

4.	Total population	:	62,785
5.	Area of the district	:	3025.75 sq km
6.	Population density	:	21 per sq km
7.	Literacy percentage	:	79.10 %
8.	Status of agriculture	:	About 70% of the total population depends on farming.

9. Farmers:

a.	Big farmers	:	NIL
b.	Small farmers	:	7614
c.	Marginal farmers	:	429
d.	Agricultural labourers	:	1020

10. Farm labour mobility

a. Is sufficient farm labour available in the district: NO

b. If 'NO' from which places do they come from: Tripura and Assam

11. Physiography

1.	Highlands	:	557.00 ha
2.	Midlands	:	269898.00ha
3.	Lowlands	:	7980.00ha
4.	Hilly tract	:	24140.00ha

5. General nature of the terrain

Mamit district is dissected by few mountain ranges which run parallel to each other in a north-south fashion. The area is characterized mainly by three main ridgelines and intervening valleys and less prominent ridges. In between these many ridges there are plenty of small and short parallel ridges and are classified as linear ridges with places

along the main rivers as subdued hillocks. The drainage system of Mamit as a whole is dendritic in nature and the streams are young with deep courses. The topography is young and its soils do not show much diversity and are highly erosive in character.

12. Climates

a. Humid/Sub-tropical

b. Pattern of rainfall in different months

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low	Low	Low	Med	High	High	High	High	High	Med	Low	Low

c. Special weather phenomenon in the district

Mamit experiences intensive rainfall in certain pockets within its district. These areas are Hmunpui, Saitlaw etc to name a few. Although scientific approaches have not been made in this context, it is observed to receive high precipitation than the rest. Often hailstorms occur during the months of April and May and are responsible for crop damages.

Mamit experiences pre and post monsoon cyclones which can be accounted as special climatic phenomena which occur rarely in other districts of Mizoram.

d. Maximum and minimum temperatures recorded: Max: 35°C Min: 5.3°C

e. Critical periods for plant growth in the district

Sl. No	Crop	Critical periods of growth	Coinciding calendar month(s)
1.	Paddy	Germination, Tillering, knee-high stage, Grain filling	April, July, August, October
2.	Maize	Tillering- Grain filling	August-September
3.	Cowpea	Pre blooming- Pod formation	July-September
4.	Soyabean	Flowering- Pod Formation	August-October
5.	Sesamum	Flowering- Pod formation	June-August
6.	Cotton	Flowering- Ball formation	July-November
7.	Sugarcane	Arrowing	March -April
8.	Potato	Planting- Tuber formation	October- November to January – February
9.	Khasi mandarin	Flowering- Fruit maturity	March-November
10.	Banana	Planting- Shooting	July-June

11.	Hatkora	Flowering- Fruiting maturity	March-September
12.	French Bean	Pre blooming - Pod formation	July-August
13.	Chinese mustard	First forty days	November- December
14.	Cabbage	Transplanting- Head Formation	November-January
15.	Cauliflower	Transplanting- Curd Formation	November-January
16.	Tomato	Flowering- Fruiting maturity	December-January
17.	Brinjal	Flowering- Fruiting maturity	November-December
18.	Ginger	Rhizome elongation, pre flowering stage	May, October-November
19.	Turmeric	Rhizome elongation, pre flowering stage	May –October-November

13. Soils

1. Soil group classifications present in the district
   1. Entisols
   2. Inceptisols
   3. Ultisols
2. Alluvial soils : 32159 ha
3. Sandy soils : 47706 ha
4. Laterite soils : 179606 ha
5. Acid soils : 38146 ha
6. Soil fertility status (in general) : High

14. Irrigation

a. Area under irrigation : 719.25 ha

b. Irrigation potential : 390427 ha

c. Source of irrigation
   1. Rivers : 4 nos
   2. Tanks : 72 nos
   3. Open wells : N/A
   4. Bore wells : 32 nos
   5. Any other sources : Perennial streams: 132 nos
      Springs (Tuikhur) : 162 nos
      Farm ponds : 167 nos

15. Land use and cropping intensity

1. Gross cropped area : 27127 ha
2. Net Area sown : 18731 ha
3. Fallow lands : 8396 ha

4. Cultivable waste lands : 43409 ha
5. Forest cover : 236461 ha
6. Barren lands : 1354 ha
7. Cropping intensity : 69.04%

16. Major Crops

1. Principal crops, area, production and productivity

Sl no	Principal Crops	Area (in ha)	Production (In Tones) (1ton =1000kg)	Productivity (kg/ha)
1.	Rice	4845	1930.48	398.45
2.	Maize	1526	2688	1761.47
3.	Pulses (cow pea)	107	82.3	769.16
4.	Oil Seeds (Soyabean/ sesamum)	655 / 64.4	113 / 464	203.05 / 7193.80
5.	Cotton	17	43	2529.41
6.	Sugarcane	22	86.5	3931.82
7.	Potato	20	40	2000.00
8.	Citrus(Khasi mandarin & Hatkora)	228	N/A	N/A
9.	Banana	46	N/A	N/A

2. Crop rotations followed : Farmers mostly followed mono cropping. Only some progressive farmers only follow crop rotation
   1. Rice - Potato
   2. Rice - Cole crops
   3. Maize - Soyabean
3. Crop sequences followed :
   1. Rice/Maize/cowpea/cotton
   2. Potato/Cole crops
   3. Rice/Maize/cowpea/cotton
4. Inter-cropping done, if any : Oil Palm with Paddy/Maize/Soybean
5. Mixed cropping done, if any : Native crops with rice (Farmers grow all kharif season crops on their jhum)
6. Catch crops grown, if any : N/A

17. Socio-economic Characteristics, Land Holding Pattern

1.	Average size of land holdings	:	0.75 ha
2.	Average fragmentation intensity	:	Negligible fragmentation since majority of the land is governed by the village council
3.	Existing land tenure system(s)	:	N/A
4.	Source(s) of finance for farming Rank 1. Self Rank 2. Govt. subsidies Rank 3. NGO's	:	
5.	Main source of income for farmers	:	Farm produces
6.	Commercial commodities produced	:	Subsistence farming.

18. Farm Machinery and Implements available in the district

1.	Number of tractors	:	15 nos
2.	Number of power tillers	:	18 nos
3.	Number of carts	:	NIL
4.	Types of implements-		
	a. Ploughs	:	332 nos
	b. Cultivators	:	8 nos
	c. Discs	:	15 nos
	d. Harrows	:	15 nos
	e. Others (trailers, rotovator)	:	5 nos
5.	Pumps (Oil and electrical)	:	413 & 160 nos
6.	Harvesters and Threshers	:	NIL
7.	Sprayers and Dusters	:	280 & NIL

19. Livestock

1.	Cattle	:	2107 nos
2.	Buffaloes	:	208 nos
3.	Sheep and goats	:	77 & 1780 nos
4.	Pigs	:	23351 nos
5.	Poultry and ducks	:	109823 & 499 nos
6.	Production of milk	:	387000 ltr
7.	Production of meat	:	295 ton
8.	Production of eggs	:	52 lakh
9.	Production of wool	:	NIL

20. Livestock holding patterns

a. Livestock holding pattern for big farmers

Sl. No	Animal/Bird	Average nos possessed	Rank according to nos possessed
1.	Cattle	NIL	NIL
2.	Buffalo		
3.	Pig		
4.	Poultry		
5.	Goat		

b. Livestock holding pattern for small farmers

Sl. No	Animal/Bird	Average nos possessed	Rank according to nos possessed
1.	Cattle	2	4
2.	Buffalo	1	5
3.	Pig	3	2
4.	Poultry	25	1
5.	Goat	2	3

c. Livestock holding pattern for marginal farmers

Sl. No	Animal/Bird	Average nos possessed	Rank according to nos possessed
1.	Cattle	0	-
2.	Buffalo	0	-
3.	Pig	2	2
4.	Poultry	25	1
5.	Goat	0	-

d. Livestock holding pattern for agricultural labourers

Sl. No	Animal/Bird	Average nos possessed	Rank according to nos possessed
1.	Cattle	0	-
2.	Buffalo	0	-
3.	Pig	1	2
4.	Poultry	25	1
5.	Goat	0	-

e. Average yields of various animals and bird in the district.

Sl. No	Animal/Bird	Milk	Meat	Eggs	Ranking
1.	Cattle	7.815 lt (CB), 1.292 lt (Indg)	113.87 Kg	-	3
2.	Buffalo	1.011 lt	130.26 Kg	-	5
3.	Pig	-	92.14 Kg	-	1
4.	Poultry	-	2.143 Kg	78 (D), 203 (Imp)	2
5.	Goat	N/A	8.651 Kg	-	4

Abbreviation used: CB=Crossbred, Indg=Indigenous, D=Desi, Imp=Improved.

21. Research Resources

1. Number of research stations : NIL
2. Number of ICAR institutes/substations : NIL
3. Number of state seed farms : NIL
4. Number of private seed farms : NIL

22. Agricultural Marketing Status and Constraints

1. Ways of disposal of farm produce and bye-products

Sl.No	Major Farm produce	Marketing channel	Bye product(if any)	Marketing channel
1.	Rice	Within village	NIL	NIL
2.	Maize	Within village, Govt. deptt.	NIL	NIL
3.	Pulses	Within village	NIL	NIL
4.	Oilseeds	Within village	NIL	NIL

2. Whole sale and retail markets in the district:
   a. Wholesale markets : NIL
   b. Retail markets : Retailing is usually done by hawkers.
3. Major modes of transport to market:
   1. Head load
   2. Locally made carts
   3 Hired Private Transport vehicles
4. Available/commonly used conveyance facilities (roads/waterways) to market:
   1. Road

23. Agro-climatic Zones

1. Humid sub-tropical hill zone
2. Humid mild tropical zone

6. Agricultural Situation in Saiha

Saiha District is located to the South eastern part of Mizoram between 22° 38′ 01. 19′′ and 21° 56′ 22.20′′ N Latitude and 92° 49′ 21.37′′ and 93° 12′ 10.55′′ E Latitude. It is bounded to the North and west by Lawngtlai District and on the South and East by Myanmar. The total geographical area of Saiha District is 1399.90 sq. km, which accounts for 6.64% the total geographical area of the state.

According to 2001 census, the total population of Saiha District is 47,084 out of which 24, 141 are male and 22,943 are female. The literacy percentage in the district is 82.90. The literacy percent of male is 87.12 whereas that of female is 74.46.

Saiha town is the headquarter of the district. District offices of various departments are located in Saiha town. Saiha District has two sub-divisions viz. Saiha and Tuipang. Agriculture is the main occupation in the District. There are 9,220 cultivators, 870 Agricultural labourers,158 Industrial labourers and 5204 other workers.

The N.H-54 after passing through Lawngtlai district enters Saiha from Kawlchaw 'E' village and then upto Tuipang village after passing through villages like Zero Point, Maubawk, Theiva, Theiri etc., from Zero Point village. The N.H-54 B runs towards north upto Siha town. From Kawlchaw 'E' village, the village road runs along the western ridges upto the southernmost village ie., Khakhi village after passing through villages like New Serkawr, Maila, Phura, etc. From Tuipang village, the district road runs toward south and from Saiha town, it runs along the western ridges of the district.

Chhimtuipui river which flows through Saiha district is not only the biggest in the study area, but also for the whole state of Mizoram by volume. It originates from the western part of Myanmar at an altitude of 2325 metres and flows in south direction. It enters Mizoram near Chapui village from which it takes the north direction marking the International boundary between India and Myanmar and meets Tiau river which flows in the opposite direction. This meeting point gives quite an interesting scene especially during rainy period as the two current encountered with an opposite forces. From this point, the flow direction is changed towards north-west and eventually southwards till it returns to the Myanmar Republic. With a little developmental efforts, this Chhimtuipui river can be utilized for trade route, as for water navigation, between Mizoram and Arakan (Myanmar) people. It is not worthy to mention the Palak river, a tributary of Chhimtuipui and Sala river. Since these two small rivers created vast fluvial flood plains along their forces. Like Egypt is the gift of the river Nile, the study area can become the gift of these two rivers.

Besides this, Saiha district is blessed with the fresh water lake ie., Palak lake which is the largest fresh water lake in Mizoram. It covers an area of about 17.50 Ha. The drainage patterns found in Saiha area dendritic to sub-dendritic patterns. The area has a good potential for development of animal husbandary. Piggery, poultry and dairy development are the major activities proposed to be taken up by the Government of Mizoram.

1.	Position in relation to longitude and latitude:		Latitudes - 21.58° to 23.35° N Longitudes - 92.15° to 93.29°E
2.	Altitude from MSL	:	1278 Metres
3.	Boundaries of the district	:	
	E: Myanmar	W: Lawngtlai District	N : Lunglei District
	S: Myanmar	NE: Myanmar	SE: Myanmar
	SW: Lawngtlai District	NW: Lawngtlai & Lunglei District	
4.	Total population	:	61,056
5.	Area of the district	:	1399.90 Sq Km
6.	Population density	:	44
7.	Literacy percentage	:	82.20 % (Male – 87.12 % & Female – 74.46 %)
8.	Status of agriculture	:	7120 Ha (Rainfed & Shifting)
9.	**Farmers**	:	
	a. Big farmers	:	NIL
	b. Small farmers	:	1627 nos
	c. Marginal farmers	:	3827 nos
	d. Agricultural labourers	:	870 nos

10. Farm labour mobility

a. Is sufficient farm labour available in the district: NO

b. If 'NO' from which places do they come from? Mainly from Myanmar

11. Physiography

a.	Highlands	: 3,23,400 ha
b.	Midlands	: 4,50,000 ha
c.	Lowlands	: 76,525 ha
d.	Hilly tract	: 5,49,975 ha

e. General nature of the terrain:

The topographical condition of the whole of Mizoram is a hilly terrain. The terrain around Phawngpui tlang (Blue Mountain–2157 mt.) and its surroundings is represented by steep slopes and cliffs. Phawngpui Tlang (The Blue Mountain) is the highest mountain in Mizoram. Saiha District shows rock and immature topography with

prominent relief. The physiographic expression of the area is imparted by approximately N-S trend hill ranges and villages. The altitude of the hill increases towards the east and in general, the western flanks of the ridges are steep compared to the eastern flanks. The highly dissected ridges with the formation of gorges and spurs are due to intensive erosion. Escarpments are common in the higher ridges, and ravines are few.

The structural hill are classified as high, medium and low classes according to corresponding height above 1200 metres, between 800 to 1200 metres and below 800 metres above the mean sea level respectively. The area under record comprises of the monotonous sequence of sedimentary rocks such as sandstone, shale, silts stone and various intermixtures of these rocks, which have been regarded as part of the 'Surma' group of rocks from adjacent region. The permeability in these rock types is low and the water holding capacity of the soil is also low, which resulted in acute water scarcity on hill tops on which most of the villages rests.

12. Climates

a. Humid/Sub-tropical

b. Pattern of rainfall in different months

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low	Low	Low	Medium	High	High	High	High	High	Medium	Low	Low

c. Special weather phenomenon in the district

The district of Saiha area receives an adequate amount of rainfall which is under the direct influence of southwest monsoon. The climate is Humid-tropical, characterized by short winter, long summer with heavy rainfall. It rains heavily from the month of May to September, and maximum rainfall is received during the month of July. Infact, 80% of the total rainfall occurs between May and September and only remaining 20% during the other seven months period. The average annual rainfall for Saiha district for the last 20 years, since 1986 – 2005 is 2634 mm. Hence, there is a great scope for the development of water resources. On the other hand supplement irrigation is essential for survival of agricultural and horticultural crops since the area is having unpredictable and erratic rainfall.

d. Maximum and minimum temperatures recorded:

Max: 32^{o}C Min: 7.52^{o}C

e. Critical periods for plant growth in the district

Sl. No	Crop	Critical periods of growth	Coinciding calendar month(s)
1.	Paddy	Panicle initiation	July - August
2.	Maize	Flowering stage - Tassling	June
3.	Turmeric	Sprouting	April – May

13. Soils

1. Soil group classifications present in the district
   1. Udorthents
   2. Dystrochrepts
   3. Hapludults
2. Soil fertility status (in general) : Medium

14. Irrigation

a. Area under irrigation : 118 ha

b. Irrigation potential *(created)* : 294 ha

c. Source of irrigation
   1. Rivers : 14 nos
   2. Tanks : 17 nos
   3. Open wells : NIL
   4. Bore wells : 50

15. Land use and cropping intensity

1. Gross cropped area : 8,397 ha
2. Net Area sown : 8,100 ha
3. Fallow lands : 7,054 ha
4. Cultivable waste lands : 332 ha
5. Forest cover : 1, 05,821 ha
6. Barren lands : 572 ha
7. Cropping intensity : 107.63%

16. Major Crops

1. Principal crops, area, production and productivity

Sl. No	Principal Crops	Area (in ha)	Production (in tones) (1ton=1000kg)	Productivity (kg/ha)
1.	Paddy - a) Jhum b) WRC	4567 519	1893 257	414 250
2.	Maize	935	1558	1666
3.	Pulses	335	272	812
4.	Oilseeds	4075	3755	921
5.	Sugarcane	35	41	1781
6.	Potato	358	714	1994

2. Crop rotations followed :
   1. Paddy – Oilseeds
   2. Paddy – Vegetables
3. Crop sequences followed:
   1. Paddy – Cabbage - Onion
   2. Paddy – Maize – Potato

4. Inter-cropping done, if any:
    1. Banana + Pineapple
    2. Mandarin Orange + Pineapple
    3. Mandarin Orange + Turmeric
5. Mixed cropping done, if any:
    1. Paddy with Maize & other Vegetables
    2. Paddy with ginger & Bird eye chilli
    3. Mustard with Cowpea/Soyabean
6. Catch crops grown, if any: NIL

17. Socio-economic Characteristics, Land Holding Pattern

1	Average size of land holdings	:	2 ha
2.	Average fragmentation intensity	:	NA
3.	Existing land tenure system(s)	:	Temporary Pass from Village Council.
4.	Source(s) of finance for farming	:	
	Rank 1. Owned source		
	Rank 2. NIL		
5.	Main source of income for farmers	:	
	Rank 1. Agriculture		
	Rank 2. Horticulture		
	Rank 3. Animal Husbandry (Piggery, Poultry & Dairy)		
6.	Commercial commodities produced	:	
	Rank 1. Ginger		
	Rank 2. Mandarin Orange		
	Rank 3. Turmeric		

18. Farm Machinery and Implements available in the district

1.	Number of tractors		:	2 no.
2.	Number of power tillers		:	2 no.
3.	Number of carts		:	NIL
4.	Types of implements-			
	a.	Ploughs	:	2
	b.	Cultivators	:	3
	c.	Discs	:	2
	d.	Harrows	:	2
	e.	Others	:	20 nos
5.	Pumps (Oil and electrical)		:	16 &NIL nos
6.	Harvesters and Threshers		:	NIL
7.	Sprayers and Dusters		:	50 &10 nos

19. Livestock

1.	Cattle	:	3934 nos
2.	Buffaloes	:	822 nos
3.	Sheep and goats	:	44 & 803 nos
4.	Pigs	:	21,856 nos
5.	Poultry and ducks	:	1, 03,979 & 128 nos
6.	Production of milk	:	786 ltrs/ day
7.	Production of meat	:	597 ton
8.	Production of eggs	:	29 lakhs
9.	Production of wool	:	NIL

20. Livestock holding patterns

a. Livestock holding pattern for big farmers: NA

b. Livestock holding pattern for small farmers.

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Cattle	1.5	3rd
2.	Buffaloes	0.50	4th
3.	Sheep & Goats	0.50	4th
4.	Pigs	5	2nd
5.	Poultry & ducks	30	1st

c. Livestock holding pattern for marginal farmers.

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Cattle	1	3rd
2.	Buffaloes	0.40	4th
3.	Sheep & Goats	0.41	4th
4.	Pigs	5	2nd
5.	Poultry & ducks	27	1st

d. Livestock holding pattern for agricultural labourers.

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Cattle	0.25	4th
2.	Buffaloes	NIL	5th
3.	Sheep & Goats	0.50	3rd
4.	Pigs	1	2nd
5.	Poultry & ducks	10	1st

d. Average yields of various animals and bird in the district.

Sl. No	Animal/bird	Average yield (Specify Units)
1.	Cattle	673 litres / day
2.	Buffaloes	89 litres / day
3.	Sheep & Goats	8 tonnes meat / year
4.	Pigs	380 tonnes meat / year
5.	Poultry & ducks	25 lakh eggs / year

21. Research Resources

1. Number of research stations : NIL
2. Number of ICAR institutes/substations : NIL
3. Number of state seed farms : NIL
4. Number of private seed farms : NIL

22. Agricultural Marketing Status and Constraints

1. Ways of disposal of farm produce and bye-products

Sl. No	Major Farm produce	Marketing channel	Bye product (if any)	Marketing channel
1.	Paddy	Producer → Consumer	-	-
2.	Turmeric	Thro' Mizoram Organic Producer Compamy	-	-
3.	Ginger	Producer → Consumer	-	-
4.	Bird eye Chilli	Producer → Consumer	-	-
5.	Citrus	Producer → Consumer	-	-

2. Whole sale and retail markets in the district:
   a. Wholesale markets : NIL
   b. Retail markets : NIL
3. Major modes of transport to market:
   1. Head load
   2. Vehicle (Mahindra pik-up, etc.)
   3. Local-made Cart
4. Available/commonly used conveyance facilities (roads/waterways) to market :
   1. Roadways
   2. Waterways (Small boats)

23. Agro-climatic Zones

1. Humid Sub-Tropical Hill Zone
2. Humid Mild-Tropical Zone

Blank

7. Agricultural Situation in Serchhip

Serchhip district is situated in the centre of Mizoram between 23°592 072 2† N & 23°362 382 2†S latitudes and 93°112 092 2†E & 92°402 302 2†W longitudes. It is bounded on the East by Champhai district and Myanmar, on the North West by Aizawl district, South West by Lunglei district, on the North by Aizawl district and on the South by Lunglei district. The total geographical area is 1,421.6 sq.km and accounts for 6.74 % of the total geographical area of the state.

The population of Serchhip district is 53,861of which 30% (i.e., 16158.30) resides in the Serchhip town. The rest 70% (i.e., 37702.70) lives in rural areas who are predominantly farming families.

The most common practice of farming is jhumming. About 11,400 ha of land are cut down every year for jhum. Although this kind of farming practice is very harmful for flora & fauna, it cannot be done away totally and immediately due to lack of awareness and resources to adopt sustainable agriculture farming system. There is a gradual decrease of jhum areas by about 1000-1500 ha/year.

Major crops grown are rice (both WRC and Jhum), Ginger, Sugarcane, Mustard Oilseeds, Pulses like Soyabean, Rice bean and Cowpea, Banana, Citrus, Passion fruit, vegetables etc. However, other crops like sesamum, turmeric and Assam lemon are also taken up on a smaller scale which makes a gradual progress in terms of area and production.

The productivity of the crops are much lower than national average mainly due to non-adoption of recommended practices like IPM, INM, HYV seeds, proper management and jhuming still in practice. Sincere effort to wean away the people from jhumming practices is the burning issue which requires urgent attention. The farmer needed to be educated through trainings, demonstrations, trials and other extension practices.

1.	Position in relation to longitude and latitude:		23°59'07"N & 23°36'38"S latitudes and 93°11'09"E & 92°40'30"W longitudes.
2.	Altitude from MSL	:	500 – 1300 mt.
3.	Boundaries of the district		
	E: Champhai dist. & Myanmar	W: Lunglei dist.	N: Aizawl dist.
	S: Lunglei dist	NE: Champhai dist.	
	SE: Champhai dist. & Myanmar	SW: Lunglei dist.	NW: Aizawl dist.
4.	Total population	:	53861
5.	Area of the district	:	4538 sq km
6.	Population density	:	11.87 persons / Sq Km
7.	Literacy percentage	:	95.10%
8.	Status of agriculture	:	Rain fed
9.	**Farmers**	:	
	a. Big farmers	:	Nil (nos.)
	b. Small farmers	:	1412 nos.
	c. Marginal farmers	:	5646 nos.
	d. Agricultural labourers	:	Data not available

10. Farm labour mobility

a. Is sufficient farm labour available in the district: NO

b. If 'NO' from which places do they come from?

c. Most of the farm works are done by family members themselves and few other hired labours come from Myanmar and some locals on daily wage basis.

11. Physiography

Serchhip district is naturally a diversified place in terms of climate and physiography. There is a drastic variation in altitude ranging from 500 – 1300mt above MSL. Most of the district comprises of hilly tracts having steep slopes. The hill ranges mostly run in North-South direction and small river, streams and rivulets are found at the hill bases and in between hills. There are few areas of plains and valleys that can be utilized for Wet Rice Cultivation and for growing field crops. Major parts of the district are suitable for growing horticultural crops. Since the temperature ranges from Humid Mild Tropical to Humid Temperate sub-alpine zone, almost all kinds of Agricultural and Horticultural crops can be grown successfully.

12. Climates

a. Humid/Sub-Temperate/Sub-Tropical

b. Pattern of rainfall in different months

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low (negligible)	Low	Low	Medium	Medium to High	High	High	High	Medium to High	Medium	Low	Low (negligible)

c. Maximum and minimum temperature recorded: Max: 34^{0}C Min: 4^{0}C

d. Critical periods for plant growth in the district

Sl. No	Crop	Critical periods of growth	Coinciding calendar month(s)
1	Rice (Jhum/ WRC)	Planting time Tillering and Panicle initiation stage	June - July July – September/ August – October
2	Potato: Summer	Stolonization/Tuberization/ Ttuber bulking	April/May-June/June-August
3	Potato: Spring	Stolonization/Tuberization/ Ttuber bulking	January/March-April/April-June
4	Citrus/ Orange	Flowering to fruit set/ fruit development stage	November – April/ May - August
5	Sugarcane	Emergence/ stem elongation	February-March/ May-July
6	Banana	Planting/ Flowering	July-August/ October-November
7	Cabbage	Transplanting/ Head formation	November/ December – January
8	Maize	Flowering and grain filling stage	July-August
9	Bird's eye chilli	Transplanting	January - February

13. Soils

1. Soil group classifications present in the district
    1. Alluvial soils
    2. Sandy soils
    3. Laterite soils
    4. Sandy loam, Sandy clay loam
2. Soil fertility status (in general) : Medium

14. Irrigation

1. Area under irrigation : 9529 ha
2. Irrigation potential : 28587ha
3. Source of Irrigation
    1. Rivers : 3 nos.
    2. Any other sources : Small streams & Rivulets: 8 (approx.)

15. Land use and cropping intensity

1. Gross cropped area : 196041.60 ha (Forest + Net area sown)
2. Net Area sown : 127971.60 ha
3. Fallow lands : N/A

4. Cultivable waste lands : N/A
5. Forest cover : 68070ha
6. Barren lands : N/A
7. Cropping intensity : 125%

16. Major crops

1. Principal crops, area, production and productivity

Sl. No	Principal Crops	Area (in ha)	Production (in tones) (1ton=1000kg)	Productivity (kg/ha)
1.	Paddy (WRC)	1275.00	3187.50	2500.00
2	Rice (Jhum)	2257.00	4062.60	1800.00
3.	Maize	2234.00	4914.80	2200.00
4.	Ginger	1600.00	14448.00	90030.00
5.	Sugarcane	1300.00	54600.00	42000.00
6.	Orange	885.00	2389.50	2700.00
7.	Banana (Local)	720.00	7200.00	10000.00
8.	Banana (Cavendish)	624.00	13665.60	21900.00
9.	Cabbage	210.00	798.00	3800.00
10.	Soyabean	151.00	166.10	1100.00
11.	Bird's eye chilli	49.00	102.90	2100.00
12.	Rapeseed & Mustard	25.00	45.00	1800.00

2. Crop rotations followed :
   1. Not available
3. Crop sequences followed:
   1. Paddy – Cabbage - Potato
4. Inter-cropping done, if any:
   1. Rice & chilli, Maize & chilli, Rice & Maize
   2. Cabbage & Mustard, Potato & French Bean
5. Mixed cropping done, if any:
   1. Rice, Maize, Chilli, Pumpkin, Cucumber, Water Melon, Brinjal, Cowpea, Ginger (Jhuming system)
   2. Potato, French bean, Mustard, Cabbage, Broccoli
6. Catch crops grown, if any: NA

17. Socio-economic Characteristics, Land Holding Pattern

1. Average size of land holdings : 0.80 ha
2. Average fragmentation intensity : N/A nos.
3. Existing land tenure system(s) : Not available

4. Source(s) of finance for farming:
   Rank 1. Mostly self financed
   Rank 2. Financial institutions like SBI, MRB etc.
   Rank 3. Assistance from State Agril. Deptt.
5. Main source of income for farmers:
   Rank 1.Farm Produce
   Rank 2. Other works (like small business, carpentry, daily labour etc.)
6. Commercial commodities produced:
   Rank 1. Ginger
   Rank 2. Citrus
   Rank 3. Banana and vegetables especially Cabbage

18. Farm Machinery and Implements available in the district

1.	Number of tractors		:	15 nos.
2.	Number of power tillers		:	17 nos.
3.	Number of carts		:	Nil nos.
4.	Types of implements-			
	a.	Ploughs	:	5540 nos.
	b.	Cultivators	:	12 nos.
	c.	Discs	:	5 nos.
	d.	Harrows	:	N/A
	e.	Others	:	Puddler : 3 nos.
5.	Pumps (Oil and electrical)		:	30 & nil nos.
6.	Harvesters and Threshers		:	Nil & 1 no.
7.	Sprayers and Dusters		:	105 & Nil nos.

19. Livestock

1.	Cattle	:	1465 nos.
2.	Buffaloes	:	701 nos.
3.	Sheep and goats	:	Nil &464 nos.
4.	Pigs	:	9159 nos.
5.	Poultry and ducks	:	80331 & 30 nos.
6.	Production of milk	:	53730 ltr. / Month
7.	Production of meat	:	60.44 tons / Month
8.	Production of eggs	:	135780 nos. / Month
9.	Production of wool	:	Nil

20. Livestock holding patterns

a. Livestock holding pattern for big farmers – No big farmers

b. Livestock holding pattern for small farmers

Sl. No	Animal/bird	Average nos. possessed	Rank according to nos. possessed
1.	Poultry	100	1
2.	Pig	8	2
3.	Cattle	6	3
4.	Goat	5	4
5.	Buffalo	2	5

c. Livestock holding pattern for marginal farmers

Sl. No	Animal/bird	Average nos. possessed	Rank according to nos. possessed
1.	Poultry	20	1
2.	Pig	5	2
3.	Cattle	2	3
4.	Goat	2	4
5.	Buffalo	1	5

d. Livestock holding pattern for agricultural labourers

Sl. No	Animal/bird	Average nos. possessed	Rank according to nos. possessed
1.	Poultry	5	1
2.	Pig	2	2

e. Average yield of various animals and bird in the district

Sl. No	Animal/bird	Average yield (Specify Units)
1.	Poultry	Meat – 6.62 tons./ month Eggs - 135780 nos./month
2.	Pig	Meat - 37.14 tons/month
3.	Cattle	Meat-15.90 tons/month Milk – 53730 ltr./month
4.	Goat	Meat - 0.58 ton/month Milk - Negligible
5.	Buffalo	Meat – 0.2ton/month

21. Research Resources

1. Number of research stations : 1 no. (KVK, N. Serchhip)
2. Number of ICAR Institutes/substations : Nil.
3. Number of state seed farms : Nil.
4. Number of private seed farms : Nil.

22. Agricultural Marketing Status and Constraints

1. Ways of disposal of farm produce and bye-products

Sl. No	Major Farm produce	Marketing channel	Bye product (if any)	Marketing channel
1.	Citrus / M. Orange	Exported outside the state & locally consumed through middle man	Juice & Squash	Roadside market, MIFCO
2.	Ginger	Exported outside the state & locally	Ginger candy, ginger nectar,	Roadside Market

		consumed through middle man	ginger ale	
3.	Cabbage	Local market & other dists. of Mizoram	Nil	
4.	Banana	Local market	Chips	Rural & Urban market
5.	Bird's eye chilli	Whole dried chilli exported outside the state	Nil	
6.	Rice(WRC & Jhum)	Cultivated mainly for domestic consumption & partly for sale in local markets	Nil	
7.	Maize	Local markets	Nil	
8.	Sugarcane	Local markets	Jaggery	Local markets
9.	Soyabean	Local markets	Fermented soyabean	Local markets
10.	Rapeseed & Mustard	Local markets	Nil	

2. Market types – whole sale and retail markets in the district

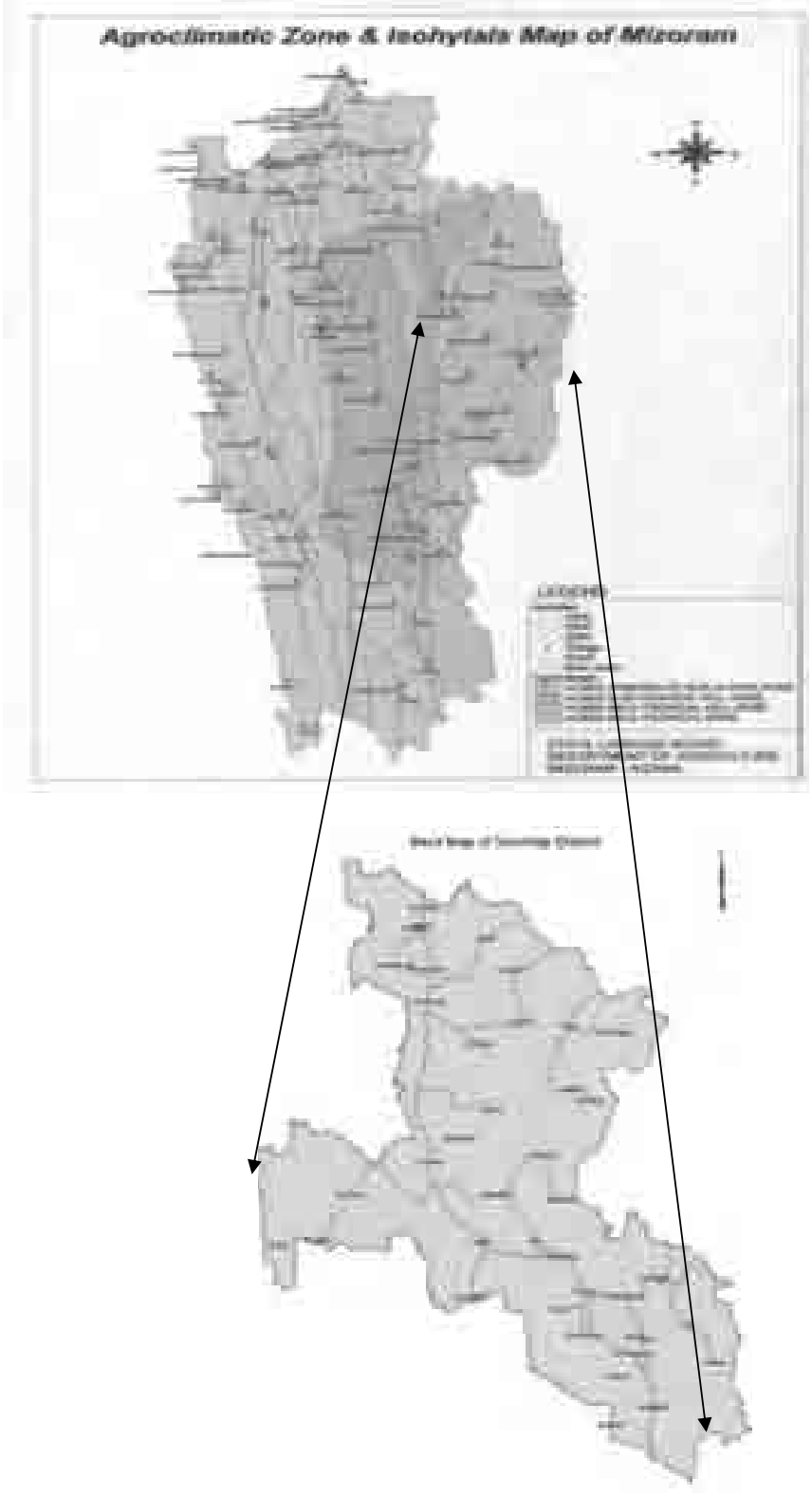
   There is no organized wholesale or retail market, wholesale and retailing is done in markets and any other convenient places.

3. Major modes of transport to market:
   1. Manual (head load) up to market/ main road
   2. Tawlailir (local made Cart used for transport to a small distance)
   3. Hired and owned Goods vehicles
4. Available/commonly used conveyance facilities (roads/waterways) to market:
   1. by Road
   2. Agriculture & Horticulture link roads
   3. Manual (Head load) up to main roads

23. Agro-climatic Zones

1 Humid temperate sub-alpine zone

2. Humid sub-tropical Hill zone
3. Humid mild-tropical Hill zone


Agroclimatic Zone & Isohytals Map of Mizoram

3.6 Agricultural Situation in Nagaland

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1. Agricultural Situation in Dimapur

Dimapur is the 8th district of Nagaland established in December 1997 and lies between 25^{0}48' and 26^{0}00'North latitude and 93^{0}30' and 93^{0}54' East longitude.

The district comprises of 4 (four) blocks and 11 agricultural circles with an area of 927 Square kilometers. Medziphema block has a total area 345 sq. Km. with 67 revenue villages. Likewise, Dhansiripar block is spread over 130 sq.Km area with 28 revenue villages, Nieuland block has a total area 305 sq. Km approximately 59 revenue villages whereas Kuhuboto block has a total area of 147 sq. Km.with 38 revenue villages. Of the four blocks Niuland sub-division is managed by an Additional Deputy Commissioner and rest of blocks are manned by SDO (Civil).

Dimapur the eight district of Nagaland, was formed out of the Dimapur sub-division and Niuland sub-division of the then undivided Kohima district in December 1997. At present, the district is bounded by Kohima in East, Peren in South, Karbi Anlong district of Assam in the West and Golaghat district of Assam in the North.

The district has a heterogeneous population with majority comprising of Naga tribes from all over the Nagaland. There is sizable population of non-tribal living in the town areas. Although notified town of Dimapur district has remained the same, the neighboring villages /settlement have expanded considerably over the years merging with town boundary to form a length of more than 13 kms. In addition, there is sizeable rural population in the Sub-division of Niuland, Kuhuboto, Dhansiripar and Medziphema blocks. The total population of the district as per 2001 census is 3, 08,382. The main factor contributing to large increase in population of the district is migration from other parts of state. There is also considerable migration from Assam.

Dimapur town is the commercial hub of the state and is the magnet around which the the economic and developmental activities of the district are centred; it is one of the fastest developing township of the North East. The business of the town can trace their history to British times. The town is also a gateway to Nagaland and Manipur state. It is important rail head and also has airport. The National Highway 39 that connects Kohima, Imphal and Myanmar border of Moreh runs through Dimapur district.

The agriculture in the district is TRC, rainfed and tradional. By and large mono cropping for paddy is practiced in the district. Besides the second important crop in the district is Maize. Maize is generally grown as a inter crop with jhum paddy. Winter maize is also grown in certain blocks of the district.

1. Position in relation to longitude and latitude : $25^0$48' and $26^0$00'North latitude and $93^0$30' and $93^0$54' East longitude

2. Altitude from MSL : 160-350 meters from MSL

3. Boundaries of the district:

E:	Kohima	W:	Karbi Anlong district of Assam
N:	Golaghat district of Assam	S:	Peren
NE:	Assam	SE:	Kohima and Peren;
SW:	Peren and Assam	NW:	Assam

4. Total population : 3, 08,382

5. Area of the district : 927 sq km

6. Population density : 332 per sq Km

7. Literacy percentage : 78.15%: Male, 82.16%: Female

8. Status of Agriculture : Rainfed

9. Farmers

a.	Big farmers	:	3281
b.	Small farmers	:	8967
c.	Marginal farmers	:	8767
d.	Agricultural labourers	:	102660

10. Farm labour mobility

a. Is sufficient farm labour available in the district : No

b. If 'No' from which places do they come from ? Assam, Bangladesh, Manipur, Nepal

11. Physiography

1. High lands – Nil
2. Midlands – Nil
3. Low lands – 58,200 ha (valley /plain Dhansiripar, Niuland, Kuhuboto blocks)
4. Hilly tract – Medziphema block 30,500 ha (few villages 350m MSL)
5. General nature of the terrain:

   The altitude of district ranges from 160-350 meters above the mean sea level. The district of Dimapur falls under humid Subtropical Agro climate Zone (ACZ) and receives south west monsoon rain during summer and northeast monsoon during winter. The

average rainfall is about 1000mm-1500mm and annual maximum temperature is 26^0C and minimum temperature is 21^0C.

Agriculture is an important economic sector of the district. Niuland, Khuboto, Dhansiripar, and the plain area of Medziphema Sub-division provide vast opportunities for modern farming technology. Jhum cultivation continues to be practice in the hilly terrains of district. Allied activities in the form of fisheries and piggery are also very important economic activities in the rural areas. The climate of the district is also suitable for all kinds of horticulture plantations.

The district being in the assured high rainfall zone, the lands are sufficiently irrigated through natural precipitation and perennial streams. Dhansiri and Diphu are two major rivers flowing through district. A number of other rivers like Langlong, Amaluma flow down from Jalukie hills in the Dhansiripar/ Chumukedima plains. However, none of them are navigable. The district is blessed with numerous perennial sources consisting the tributary network of Chathe River, Zubza River, Diphu and Dhansiri River. These sources could also be harnessed for irrigation purpose.

The soils of district are characterised as sandy loam and sandy clay loam with the pH ranging from 4.5-6.0. The organic carbon content is low-medium. Available potassium is also low-medium whereas magnesium is high. Likewise, calcium is low, nitrate nitrogen is medium-high, sulphur is low-medium and ammonium nitrogen is low.

The district is endowed with a sizable reserve of natural mineral oil, pending exploitation. The District is rich in clay, coal, petroleum oils, Dimensional stones (building stones, gravel, sand, and sand stones). The district being dominantly of fertile plains is the forerunner of all agriculture relative activities and has sufficient potential for expansion and development.

12. Climate

a. Humid/Sub-Tropical

b. Pattern of rainfall in different months

Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
2.6	78.9	29.1	120.2	143.7	355.6	322.7	500.3	214.0	198.9	76.0	14.5

The rains start from April and continue upto Oct. The maximum rainfall is observed in the month of August and minimum in January.

c. Maximum and minimum temperature recorded: Max. 40^o C, Min 10^o C

d. Critical periods of plant growth in the district

Sl no.	Crop	Critical periods of growth	Coinciding calendar month(s)
1.	Paddy TRC	Tillering, flowering and grain filling stages	June, Aug, Oct to Nov.
2	Jhum paddy	Tillering, flowering and grain filling stages	May, Aug, Sept.

3.	Maize Kharif	Knee high, tassling, cob setting and grain filling	May, June, July, August
4	Maize Rabi	Knee high, tassling, cob setting and grain filling	October, Nov, Dec, February
5	Soybean	Vegetative stage, flowering, seed setting and grain filling	May, July, August, September, October
6.	Ginger	Emergence of sprout, vegetative stage, rhizome setting, maturity and harvesting	May , August, Nov, January
7.	Arhar	Vegetative stage, flowering, pod setting and grain filling	June, August, September, November
8.	Moong /green gram	Vegetative stage, flowering, pod setting and grain filling	July, August, September, October
9.	Long beans	Vegetative stage, flowering, pod filling and harvesting	June, August, Oct, November
10.	Peas	Vegetative stage, flowering, pod filling and harvesting	September , Oct, Nov, Dec, Jan, February
11.	Lentil	Vegetative stage, flowering, pod filling and harvesting	Oct, Nov, Dec, Jan, February
12	Gram	Vegetative stage, flowering, pod filling and harvesting	Oct, Nov, Dec, Jan, February
13.	Cucurbits	Vegetative stage, flowering, fruit setting and harvesting	Round the year mainly bottle gourd others in autumn summer (Feb to April) and Rainy season (May to September).
14	Okra	Vegetative stage, flowering, fruit setting and harvesting	Autumn summer (Feb to April) and Rainy season (May to September
15	Cabbage	Nursery, vegetative stage, head formation, harvesting	Sept, Oct, Dec, Jan, Feb
16	Cauliflower	Nursery, vegetative stage, curd formation, harvesting	Sept, Oct, Dec, Jan, Feb
17	Tomato	Nursery, Vegetative stage, flowering, fruit setting and harvesting	Sept, Oct, Dec, Jan, Feb
18	Brinjal	Nursery, Vegetative stage, flowering, fruit setting and harvesting	Sept, Oct, Dec, Jan, Feb, March,
19	Chilli	Nursery, Vegetative stage, flowering, fruit setting and harvesting	Sept, Oct, Dec, Jan, Feb, March

13. Soils

1. Soil group classifications present in the district
   1. Loamy Sand
   2. Sandy clay loam
2. Acid Soils : 92700 ha
3. Soil fertility status : medium

14. Irrigation

1. Area under irrigation : 32960 ha (Net irrigated area due to assured rain)
2. Irrigation potential : Not Available
3. Source of irrigation
   1. Rivers : 3 no
   2. Tanks/ponds : 230
   3. Open wells : used for drinking water not for irrigation
   4. Bore wells : nil
   5. Any other source : Micro irrigation system through micro canals from perennial Streams: 6425 ha area covered under command area project

15. Land use and cropping intensity

1. Gross cropped area : 61197 ha
2. Net area sown : 53710 ha
3. Fallow lands : 6369 ha
4. Cultivable waste : 266 ha
5. Forest cover : 27800 ha
6. Barren lands : 281 ha
7. Cropping intensity : 49.8% say 50%

16. Major crops

1. Principal crops, area production and productivity

Sl no.	Crops	Area ha	Production tonnes	Productivity Kg/ha
	Cereals			
1	Jhum paddy	9960	14580	1463
2	TRC paddy (kharif)	25560	48750	1907
3	TRC paddy (Rabi)	1030	1730	1679
4	Maize	10410	18710	1797
5	Jowar	220	260	1181
6	Small millet	3760	2530	672
7	Jobs tear	100	110	1100
8	Wheat	410	400	975
	Total cereals	52710	89200	1692

	Pulses			
1	Tur/Arhar	3320	3820	1150
2	Urd/Moong	390	550	1410
3	Nagadal	570	700	1228
4	Rajma Kholar	140	160	1142
5	Beans	350	380	1085
6	Other kharif	550	610	1109
7	Pea	1230	1350	1097
8	Lentil	680	800	1176
9	Gram	80	120	1500
10	Rajmash	90	90	1000
11	Black gram	380	390	1026
12	Other Rabi pulses	1260	1530	1214
	Total pulses	3720	4280	
	Oil seeds			
1	Groundnut	160	190	1187
2	Soybean	6950	7330	1054
3	Sesame	1000	610	610
4	Sunflower	870	850	977
5	Rape seed /Mustard	14500	11670	804
6	Linseed	2700	18500	685
	Total oil seed	26180	2250	
	Commercial crops			
1	Sugar cane	2420	136490	56400
2	Cotton	180	40	222
3	Jute	1490	5150	3456
4	Potato	600	6610	11016
5	Tea (green)	350	1910	5457
6	Ginger	970	5150	5309
	Total commercial crops	6010	155350	

2. Crop rotations followed
   1. Paddy- Mustard
   2. Paddy- maize
   3. Paddy- linseed
   4. Maize – Black gram
   5. Soybean –fallow
   6. Paddy-cabbage
   7. Maize- winter vegetables
   8. Cucurbits – winter vegetables

9. Paddy –fallow
10. Maize –fallow
11 Ginger –fallow

3. Crop sequences followed
   1. Paddy followed by Mustard
   2. Paddy followed by maize
   3. Paddy followed by linseed
   4. Maize followed by Black gram
   5. Soybean followed by fallow
   6. Paddy followed by cabbage
   7. Maize followed by winter vegetables
   8. Cucurbits followed by winter vegetables
   9. Paddy mono crop
   10. Maize mono crop
   11 Ginger mono crops
4. Inter cropping done, if any: 1. Jhum paddy maize, colocasia, soybean, cucurbits
5. Mixed cropping, if any: 1. Jhum paddy maize, colocasia, soybean, cucurbits
6. Cash crops grown if any: 1. Cotton Sugarcane, Jute, Tea, Coriander

17. Socio-economic characteristics, land holding pattern

1.	Average size of land holdings :	5-10 ha
2.	Average fragmentation intensity:	2.096 ha /capita
3.	Existing land tenure system (s):	land is owned by village council and is being Cultivated by farmers on rent basis for 6-7 years
4.	Source(s) of finance for farming:	Rank 1. Farmers own budget Rank 2. Barrowed from money lender Rank 3. Loan from banks
5.	Main source of income for farmers:	Rank 1. Handicrafts Rank 2. Weaving Rank 3. Blacksmith
6.	Commercial commodities produced:	Rank 1 Pineapple Rank 2 Ginger Rank 3 Cabbage and bottle gourd

18. Farm Machinery and Implements available in the district

1.	Number of tractors	: 11 no.
2.	Number of power tillers	: 36 no.
3.	Number of carts	: NA
4.	Type of implements	

a. Others: 17940 (include Spade, Dao, Sickle, winnower & wooden plough)

5. Pump sets (oil and electrical) : 45 no.
6. Harvesters and threshers : NA
7. Sprayers and Dusters : 172 & NA

19. Livestock

1. Cattle : 90650
2. Buffaloes : 9686
3. Sheep and goats : 168 & 23230
4. Pigs : 97821
5. Poultry and ducks : 133180 & 34899
6. Production of milk : 34716.00 MT
7. Production of meat : 11500.00MT
8. Production of eggs : 456.32 lakh no.
9. Production of wool : NA

20. Livestock Holding Pattern

a. Livestock holding pattern for big farmers

Sl no.	Animal /bird	Average no. possessed	Rank according to no possessed
1	Cattle	4	I
2	Pig	5	II
3	Poultry	20	III
4	Goat	Nil	-
5	Duck	5	IV

b. Livestock holding pattern for small farmers

Sl no.	Animal /bird	Average no. possessed	Rank according to no possessed
1	Cattle	2	I
2	Pig	3	II
3	Poultry	10	IV
4	Goat	1	III
5	Duck	3	V

c. Livestock holding pattern for marginal farmers

Sl no.	Animal /bird	Average no. possessed	Rank according to no possessed
1	Cattle	-	-
2	Pig	2	I
3	Poultry	10	II

4	Goat	-	
5	Duck	-	

d. Livestock holding pattern for agricultural labourers

Sl no.	Animal /bird	Average no. possessed	Rank according to no possessed
1	Cattle	-	
2	Pig	1	I
3	Poultry	5	II
4	Goat	-	
5	Duck	2	

e. Average yields of various animals and birds in the district

Sl no.	Animal / bird	Av. Yield
1.	Crossbred cattle (milk)	3.780 litres/day
2	Indigenous	0.950 litres/day
3	Buffalo	0.925 litres/day
4	Goat	0.140 litres/day
5	Cattle (meat)	130 kg /animal
6	Pig	6 piglet/delivery
7	Pig (meat)	75 kg/animal
8	Poultry	109-200 eggs /year
9	Poultry (broiler)	1.8-2.0 kg/bird
10	Goat	1 kidling/year
11	Duck	80 eggs/year

21. Research Resources

1. Number of research stations : 4 no
2. Number of ICAR institutes/ substations : 2 no
3. Number of state seed farms : 1 no.
4. Number of private seed farms : NA

22. Agricultural Marketing Status and constraints

1. Ways of disposal of farm produce and bye- products

Sl no.	Major farm produce	Marketing Channel	Bye products (if any)	Marketing Channel
1	Pineapple	Weekly market	Squash and Jam	Weekly market and road side counters
2	Banana (table banana)	Weekly market	-	-

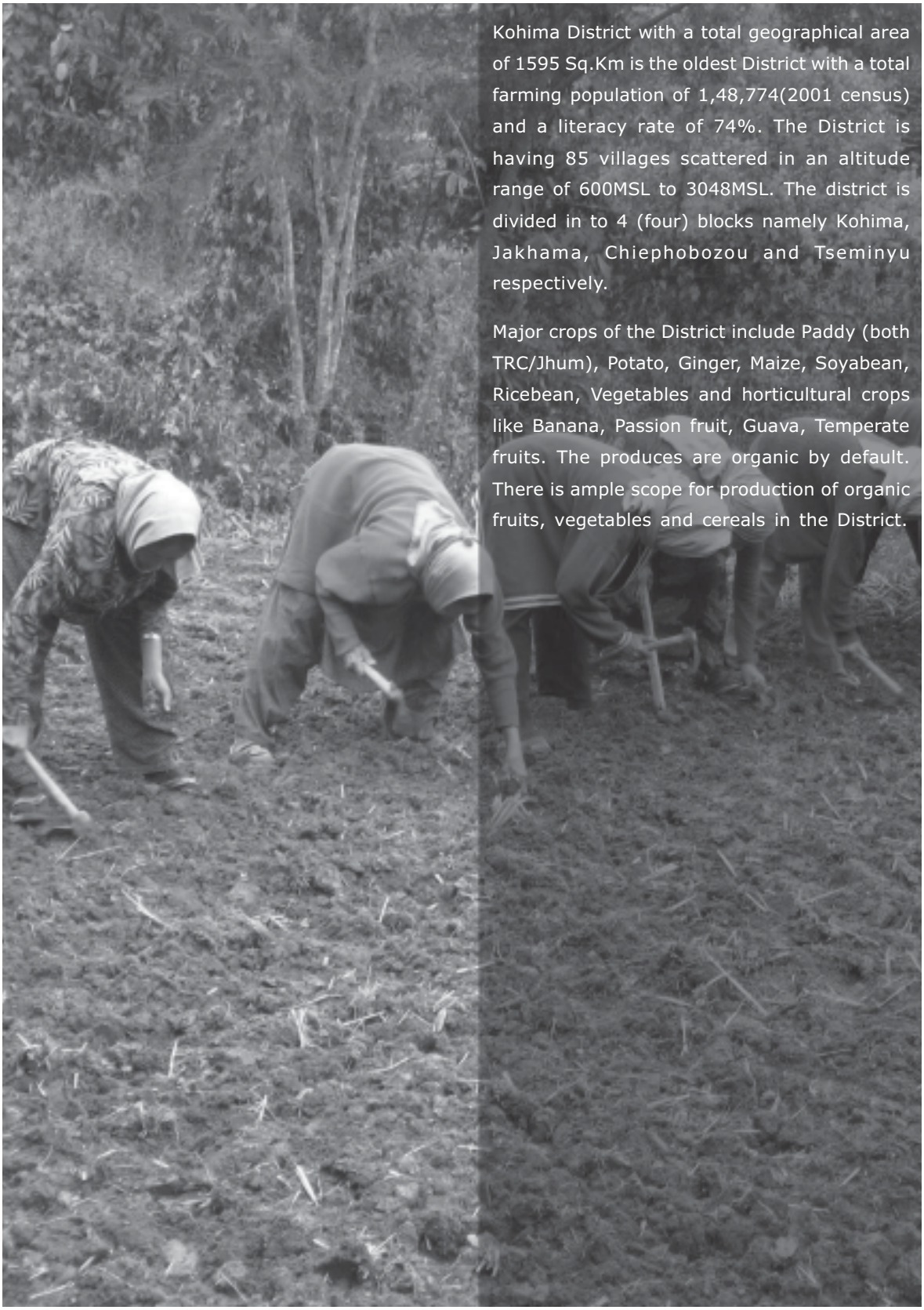
3	Paddy, maize	Weekly market	Paddy straw and broken rice	Weekly market
4	Mustard , soybean	Weekly market	Oil	Weekly market
5	Vegetables and fruits (fresh)	Weekly market	-	-

2. Whole sale and retail markets in the district :
   a. whole sale markets : 1. Dimapur 2. Chumukdima
   b. Retail markets : weekly markets at different places on week days
   1. Purana Bazar 2. Medziphema 3. 3rd Mile Dimapur
   4. Fourth Mile Dimapur 5. Sixth Mile Dimapur 6. Pherima
3. Major modes of transport to market
   1. Trucks and mini trucks
   2. Auto carrier
   3. TATA Mobile
   4. Buses
4. Available /commonly used conveyance facilities (roads/ water ways) to markets:
   1. Roads

23. Agro-climatic Zones

1. Various zones in the state
   1. Temperate
   2. Subtropical
2. Various zones in the district
   1. Subtropical

2. Agricultural Situation in Kohima



Kohima District with a total geographical area of 1595 Sq.Km is the oldest District with a total farming population of 1,48,774(2001 census) and a literacy rate of 74%. The District is having 85 villages scattered in an altitude range of 600MSL to 3048MSL. The district is divided in to 4 (four) blocks namely Kohima, Jakhama, Chiephobozou and Tseminyu respectively.

Major crops of the District include Paddy (both TRC/Jhum), Potato, Ginger, Maize, Soyabean, Ricebean, Vegetables and horticultural crops like Banana, Passion fruit, Guava, Temperate fruits. The produces are organic by default. There is ample scope for production of organic fruits, vegetables and cereals in the District.

1.	Altitude from MSL	:	600-3048MSL
2.	Boundaries of the district	:	
	E: Dimapur W: Phek		N: Wokha S: Manipur
3.	Total population	:	1, 48,774
4.	Area of the district	:	1595 sq. km
5.	Population density	:	100
6.	Literacy percentage	:	74%
7.	Status of agriculture	:	Rainfed and irrigated
8.	**Farmers**	:	
	a. Big farmers	:	7%
	b. Small farmers	:	29%
	c. Marginal farmers	:	47%
	d. Medium farmers	:	17%

9. Farm labour mobility

a. Is sufficient farm labour available in the district : Yes

10. Physiography

a. Highlands : 49208 (in ha)
b. Midlands : 58427
c. Lowlands : 7040
d. Hilly tract : 94033
e. General nature of the terrain

The terrain of Kohima and Jakhama Blocks ranges from highland to mid land were the altitude ranges from 1500-3048MSL and the ava\erage annual rainfall is above 1000mm.

The terrain under Chiephobozou Block has mid land to hilly tract while Tseminyu Block comes under hilly tract to low lands. Both these block has a altitude ranging from 600-1500MSL.

11. Climates

a. Humid/Sub-Tropical

b. Pattern of rainfall in different months

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low	Low	Low	Medium	High	High	High	High	High	Medium	Medium	Low

c. Maximum and minimum temperatures recorded: Max: 23.27 Min: 15.16

d. Critical periods for plant growth in the district

Sl. No	Crop	Critical periods of growth	Coinciding calendar month(s)
1.	Paddy (TRC)	Panicle initiation flowering	Aug - Sep
2.	Maize	Silking tasseling	May
3.	Potato	Tuber initiation	March

12. Soils

1. Soil group classifications present in the district
   1. Fine loamy to fine
2. Soil fertility status (in general) : Medium

13. Irrigation

a. Area under irrigation : 6126 ha

b. Irrigation potential : 15000ha

14. Land use and cropping intensity

1. Gross cropped area : 22143.78 ha
2. Net Area sown : 15739.80ha
3. Fallow lands : 6403.98 ha
4. Cultivable waste lands : 30649.95 ha
5. Forest cover : 40084.98 ha
6. Barren lands : 800 ha
7. Cropping intensity : 140.68%

15. Major Crops

1. Principal crops, area, production and productivity

Sl. No	Principal Crops	Area (in ha)	Production (in tones)	Productivity(kg/ha)
1.	Paddy (TRC & Jhum)	150	3124	20826.66
2.	Maize	43.7	89.44	2046.68
3.	Potato	45.3	476	10507.72
4.	Ginger	38.5	368	9558.44
5.	Passion fruits	07.00	77	11000.0
6.	Chilly (Local)	18.2	137	7527.47

2. Crop rotations followed : NA
3. Crop sequences followed : 1. Paddy (TRC) - Potato
   2. Paddy - Vegetable
   3. Potato - Potato

4.	Inter-cropping done, if any	:	NA
5.	Mixed cropping done, if any	:	1. Paddy + Maize + Colocassia
			2. Paddy + Vegetables
6.	Catch crops grown, if any	:	NA

16. Socio-economic Characteristics, Land Holding Pattern

1.	Average size of land holdings	:	0.1-2ha
2.	Average fragmentation intensity	:	NA
3.	Existing land tenure system(s)	:	Individual local holdings
4.	Source(s) of finance for farming	:	Rank 1. Bank loan
			Rank 2. Assistance from Government
			Rank 3. Self
5.	Main source of income for farmers	:	Rank 1. Agriculture practice
			Rank 2. Livestock rearing
			Rank 3. Horticultural fruits
6.	Commercial commodities produced	:	Rank 1. Potato
			Rank 2. Maize
			Rank 3. Passion fruits

17. Farm Machinery and Implements available in the district

1.	Number of tractors		:	3 nos
2.	Number of power tillers		:	179 nos
3.	Number of carts		:	NA
4.	Types of implements-			
	a.	Ploughs(Wooden)	:	14557nos
	b.	Pumps (Oil and electrical)	:	23 nos
	c.	Harvesters and Threshers	:	13225 nos
	d.	Sprayers and Dusters	:	800 nos

18. Livestock

1.	Cattle	:	34940 nos
2.	Buffaloes	:	1492 nos
3.	Sheep and goats	:	558 &6766 nos
4.	Pigs	:	33844nos
5.	Poultry and ducks	:	224123 &11475 nos
6.	Production of milk	:	5.98 tonnes
7.	Production of meat	:	9.78 ton
8.	Production of eggs	:	67.22 lakhs
9.	Production of wool	:	NA

19. Livestock holding patterns

a. Livestock holding pattern for big farmers: NA

b. Livestock holding pattern for small farmers: NA

c. Livestock holding pattern for marginal farmers: NA

d. Livestock holding pattern for agricultural labourers: NA

e. Average yields of various animals and bird in the district.

Sl. No	Animal/bird	Average yield (Specify Units)
1.	C/B Cattle	4.592 kg
2.	Indigenous cattle	1.5 kg
3.	Bulffalo	1.420kg
4.	Goat	0.360 kg
5.	Poultry	206/annum

20. Research Resources

1. Number of research stations : Data not available
2. Number of ICAR institutes/substations : Data not available
3. Number of state seed farms : Data not available
3. Number of private seed farms : Data not available

21. Agricultural Marketing Status and Constraints

1. Ways of disposal of farm produce and bye-products

Sl. No	Major Farm produce	Marketing channel	Bye product (if any)	Marketing channel
1.	Potato	Farmer - Whole seller - Retailer	NA	NA
2.	Paddy	Farmer - Whole seller - Retailer	NA	NA
3.	Maize	Farmer - Whole seller - Retailer	NA	NA
4.	Ginger	Farmer - Whole seller	NA	NA
5.	Passion fruits	Farmer - Middlemen -Whole seller	NA	NA
6.	Chillies	Farmer - Middlemen -Whole seller	NA	NA

2. Whole sale and retail markets in the district :

a. Wholesale markets : 1. Kohima

b. Retail markets : 1. Kohima
2. Jakhama
3. Tseminyu
4. Chiephobozou

3. Major modes of transport to market:
    1. Road transport
    2. By foot
4. Available/commonly used conveyance facilities (roads/waterways) to market :
    1. Pickup truck
    2. Sumo
    3. Bus
    4. Private vehicles etc.

22. Agro-climatic Zones

1. AES-I &AES-II (Mild tropical hill zone)

3. Agricultural Situation in Mokokchung

Mokokchung is mainly inhabited by the Ao-Naga. It is bounded by the state of Asom on the north, Tuensang district on the east, Zunheboto on the south and Wokha district and the state of Asom on the west. The 79 villages/compounds are mostly spread over six hill ranges (Ongpangkong, Langpangkong, Asetkong, Changkikong,Japukong and Tsurangkong). Between the ranges there are glens and gorges through which flow the hill streams. There are only three valleys worth mentioning such as Tsurang, Changki and Tuli which are on the western side of the district adjoining the plains of Asom. Out of the total population of 2, 27,230 about 86% are rural population who are mostly engaged in agricultural activities. About 70.8% of the total area under agricultural activities is under Jhum cultivation, which can produce only for their subsistence. The agro-climatic condition and the soil are suitable for Tapioca, Ginger, Chilly and Passion fruit cultivation with assured market outside the State and therefore the farmers of the District has opted Tapioca, Ginger, Chilly and Passion fruit for commercial production. However, the area under Jhum cultivation requires land shaping like bench terracing, bunding, etc. for permanent cultivation and farm mechanisation. The other commercially cultivated crop includes Potato, Cucumber, Mustard etc.

Mokokchung district, though endowed with many streams has very few important rivers. Notable rivers are Tsurang, Milak, Dikhu, Tsumok and Menung. Besides, there are riverlets like Ailang, Alachila, Alushi, Tsurong, Tsuong, Tsupen, Tsutsung, etc which drains the district. Terrace and fruit cultivation on the basins of the river Tsurang, Tsuong and Tsutsung are quite promising. Efforts are being made to utilize the fertile land available on the slopes and near the river beds. Two important remarkable natural lakes of this region are Omoklushi, situated on the out skirt of Chuchuyimpang village and Yimyu Awatsung of Mopungchuket village. Both these lakes are situated at an altitude of about 1300 metres above mean sea level with sparingly aquatic vegetation.

The average annual rainfall of the district is 2500 mm and the average altitude is 1200m above mean sea level. The temperature remains cool throughout the year making it rather colder in winter.

At this climate since the evapo-transpiration is low, the amount of rainfall should have been sufficient for keeping the vegetation green forever. However, it is not so because of poor water retention capacity of soil on hilly condition and the plants cannot stand the cold. As a result, all the undergrowth, grasses and shrubs dry up in winter. By February, it looks dry land and from March onwards it becomes green again. Under these circumstances Mokokchung consists of both deciduous and evergreen forests. The vast forest covers and jungles are the habit of birds, animals and reptiles.

Mokokchung district enjoys monsoon climate with a difference. Hence, the winter is cold and summer is mild. In winter on certain days, the night temperature comes down to 4 ^{o} C during January & February which are the coldest months of the year. In summer it is not at all hot and rather it is cool. The temperature does not rise beyond 36^{o} C (96.8^{o}F) and the average summer temperature is 27^{o} C (80.6^{o}F). The average annual rainfall is about 2500 mm and it falls for nine months of the year with greatest concentration in July and August.

During the rainy season the relative humidity is around 80% but at times it goes upto 95% as such it is very damp. October is pleasant but winter sets in November which is mild. December is cold and January-February is coldest. Cold wind blows during winter from North-East under the influence of North-East Monsoon. March is also cold. Sometimes storms occur during the onset of South-West monsoon in March-April and again during the onset of North-East monsoon in September-October. Frost falls only in Longkhum Village which is colder than others. The mirth of spring can be felt to some extend only in April and May.

1.	Position in relation to longitude and latitude		:	93^{o}53' and 94^{o}53' East, 25^{o}56' And 27^{o}40' North.
2.	Altitude from MSL		:	150-1650 msl
3.	Boundaries of the district		:	
	E: Tuensang	W : Assam	N: Assam	S: Wokha, Zunheboto
	NE: Longleng & Mon	SE: Zunheboto	SW: Wokha	NW: Assam
4.	Total population		:	2, 27,230
5.	Area of the district		:	1,615 sq/ km
6.	Population density		:	141/sq km
7.	Literacy percentage		:	84.27%
8.	Status of agriculture		:	Rainfed & Shifting
9.	**Farmers**			
	a.	Big farmers	:	17,632
	b.	Small farmers	:	42,901
	c.	Marginal farmers	:	58,852
	d.	Agricultural labourers	:	13,635

10. Farm labour mobility

a. Is sufficient farm labour available in the district: NO

b. If 'NO' from which places do they come from? : Assam

11. Physiography

a. Highlands : 80,750 (in ha)

b. Midlands : 8, 88,250

c. Lowlands : 2, 42,250

d. Hilly tract : 4, 03,750

e. General nature of the terrain

The district has varied altitude ranging from 150 – 1650 MSL which is further classified into four AES. AES –I falls under 0 – 500MSL which consist of plain area and valley, AES – II & III covers undulating and gentle slope and AES – IV consist of gentle to steep slope, rocky and hilly area.

12. Climates

a. Sub tropical/ Temperate and Sub-temperate / Humid

b. Pattern of rainfall in different months

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
L	L	L	L	H	H	H	H	H	M	L	L

c. Maximum and minimum temperatures recorded:

Max: 4^{o}C Min: 38^{o}C

d. Critical periods for plant growth in the district

Sl. No	Crop	Critical periods of growth	Coinciding calendar month(s)
1.	WRC Paddy	Panicle initiation/ grain filling	Aug/ Sept-Oct
2.	Jhum, Paddy	Panicle initiation / grain filling	May/ July - August
3.	Maize	Tasselling	July
4.	Potato	Tuber formation	April and Nov.
5.	Millets	Panicle initiation / grain filling	April, July/Aug
6.	Chillies	Transplanting/flowering	May/June to Oct
7.	Tapioca	Tuber formation	Aug - Oct

13. Soils

1. Soil group classifications present in the district

   1. Red Sandy loam
   2. Red Sandy clay loam

2. Black soils : Not Present

3. Red soils : 12,92,000 ha

4. Alluvial soils : 2,42,250 ha

5. Sandy soils : 80,750 ha

6.	Laterite soils	:	Not Present
7.	Saline and alkaline soils	:	Not Present
8.	Acid soils	:	Not Present
9.	Soil fertility status (in general)	:	Medium

14. Irrigation

a.	Area under irrigation	:	2159 ha.
b.	Irrigation potential	:	303144 ha
c.	Source of irrigation		
	1. Rivers	:	12 nos

15. Land use and cropping intensity

1.	Gross cropped area	:	1, 10,482 ha
2.	Net Area sown	:	18765 ha
3.	Fallow lands	:	93645ha
4.	Cultivable waste lands	:	482 ha
5.	Forest cover	:	14250 ha
6.	Barren lands	:	NA
7.	Cropping intensity	:	175%

16. Major Crops

1. Principal crops, area, production and productivity

Sl. No	Principal Crops	Area (in ha)	Production (in tones) (1ton=1000kg)	Productivity (kg/ha)
1.	Jhum Paddy	12,045	23527.6	1950
2.	TRC Paddy	4696	12430.7	2650
3.	Maize	1028	1621.9	1590
4.	Rice bean	93.34	160.23	1720
5.	Soybean	161	247	1530
6.	Mustard	795	500	630
7.	Tapioca	1050	30886	29420
8.	Potato	125	870	6960

2. Crop rotations followed : 1. Jhum paddy – Rice bean/pea
   2. Jhum paddy – Mustard - Paddy
   3. WRC – Winter Vegetable
3. Crop sequences followed : 1. Paddy – Mustard - Paddy
   2. Maize – Mustard – French Bean
   3. Paddy – Fallow – Paddy

4.	Inter-cropping done, if any	:	1. Passion fruit + Ginger 2. Ginger + Arhar 3. Banana + Tomato
5.	Mixed cropping done, if any	:	1. Paddy + Maize + millets + Pulses + Oilseeds + Kharif + cucurbits + tuber crops 2. Orange + Lichi + Turmeric + Ginger + Passion fruits
6.	Catch crops grown, if any	:	NA

17. Socio-economic Characteristics, Land Holding Pattern

1.	Average size of land holdings	:	2-5 ha
2.	Average fragmentation intensity	:	2-3 nos
3.	Existing land tenure system(s)	:	Individual and Clan
4.	Source(s) of finance for farming	:	Rank 1. Owned source of Income Rank 2. Loan
5.	Main source of income for farmers	:	Rank 1. Sale of farm produce Rank 2. Wage labour
6.	Commercial commodities produced	:	Rank 1. Ginger Rank 2. Passion fruit Rank 3. Orange / Pineapple/banana

18. Farm Machinery and Implements available in the district

1.	Number of tractors		:	5 nos
2.	Number of power tillers		:	12 nos
3.	Number of carts		:	12 nos
4.	Types of implements-			
	a. Ploughs	:	150 nos (Bullock driven)	
	b. Cultivators	:	4 nos	
	c. Discs	:	5 nos	
	d. Harrows	:	5 nos	
5.	Pumps (Oil and electrical)		:	15& 5 nos
6.	Harvesters and Threshers		:	Nil
7.	Sprayers and Dusters		:	800 & 10 nos

19. Livestock

1.	Cattle	:	1831 nos
2.	Buffaloes	:	NA
3.	Sheep and goats	:	Nil. & 1666 nos
4.	Pigs	:	42,144 nos
5.	Poultry and ducks	:	1, 61,390 & 291 nos

6. Production of milk : 6.17 tons
7. Production of meat : 3.17 tons
8. Production of eggs : 62.17 lakhs
9. Production of wool : nil

20. Livestock holding patterns

a. Livestock holding pattern for big farmers: NA

b. Livestock holding pattern for small farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Poultry	10-15	1
2.	Pig	3	2
3.	Cattle	2	3

c. Livestock holding pattern for marginal farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Poultry	5-10	1
2.	Pig	2	2
3.	Cattle	1	3

d. Livestock holding pattern for agricultural labourers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Poultry	8	1
2.	Pig	2	2

e. Average yields of various animals and bird in the district.

Sl. No	Animal/bird	Average yield (Specify Units)
1.	Cattle (milch)	5 ltrs/day
2.	Pig	80 kg/10 months
3.	Egg	60 eggs/ annum
4.	Poultry (meat)- Local - Kroiler	1-1.5 kg/year 2 kg/3 months

21. Research Resources

1. Number of research stations : 1 no
2. Number of ICAR institutes/substations : 1 no
3. Number of state seed farms : nil
4. Number of private seed farms : nil

22. Agricultural Marketing Status and Constraints

1. Ways of disposal of farm produce and bye-products

Sl. No	Major Farm produce	Marketing channel	By product(if any)	Marketing channel
1.	Ginger	APMC	-	-
2.	Passion fruit	MDPGA	-	-
3.	Chillies	MDCC & I	-	-
4.	Tomato	Do -	-	-

2. Whole sale and retail markets in the district

   a. Wholesale markets : 1. APMC Mokokchung

   b. Retail markets : 1. Daily Market

3. Major modes of transport to market:

   1. Truck 2. Mini truck 3. Bus

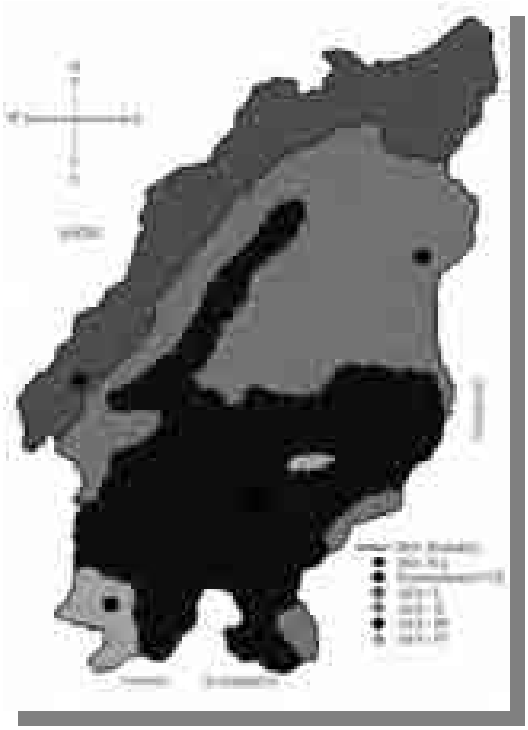
4. Available/commonly used conveyance facilities (roads/waterways) to market :

   1. Road

23. Agro-climatic Zones

1. Sub-Tropical Zone
2. Sub- Montane Hill Zone

DISTRICT MAP OF MOKOKCHUNG



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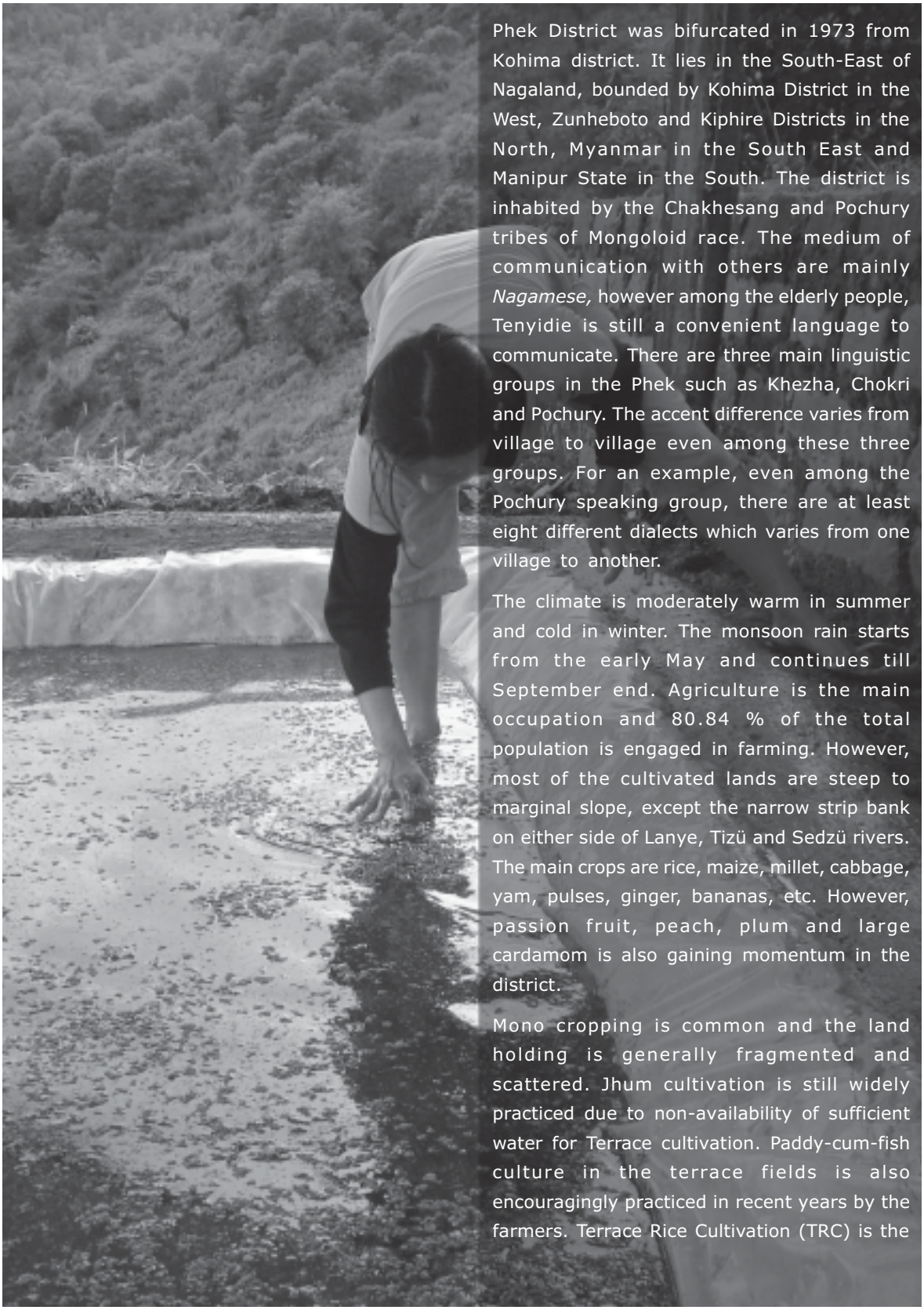
4. Agricultural Situation in Phek



Phek District was bifurcated in 1973 from Kohima district. It lies in the South-East of Nagaland, bounded by Kohima District in the West, Zunheboto and Kiphire Districts in the North, Myanmar in the South East and Manipur State in the South. The district is inhabited by the Chakhesang and Pochury tribes of Mongoloid race. The medium of communication with others are mainly *Nagamese,* however among the elderly people, Tenyidie is still a convenient language to communicate. There are three main linguistic groups in the Phek such as Khezha, Chokri and Pochury. The accent difference varies from village to village even among these three groups. For an example, even among the Pochury speaking group, there are at least eight different dialects which varies from one village to another.

The climate is moderately warm in summer and cold in winter. The monsoon rain starts from the early May and continues till September end. Agriculture is the main occupation and 80.84 % of the total population is engaged in farming. However, most of the cultivated lands are steep to marginal slope, except the narrow strip bank on either side of Lanye, Tizü and Sedzü rivers. The main crops are rice, maize, millet, cabbage, yam, pulses, ginger, bananas, etc. However, passion fruit, peach, plum and large cardamom is also gaining momentum in the district.

Mono cropping is common and the land holding is generally fragmented and scattered. Jhum cultivation is still widely practiced due to non-availability of sufficient water for Terrace cultivation. Paddy-cum-fish culture in the terrace fields is also encouragingly practiced in recent years by the farmers. Terrace Rice Cultivation (TRC) is the

common practice except certain villages under Meluri Sub-Division where primitive method of jhum cultivation is still in practice leading to wastage of time, energy and environmental degradation. However, with exposure to new technologies people of this area have also started TRC. Use of power tillers is becoming popular now days in the district.

The entire area of Phek District is classified as rural except Pfutsero and the District Headquarters, Phek which is recognized as Urban, and the majority of the people are living in villages. Recently the Government of Nagaland has, declared all the three other Sub-Divisions, namely Chizami, Chozuba Meluri and the Mini Cement Plant of Weziho as full-fledged townships. The National Highway No.150 crosses certain part of the District from Kohima to Jessami(under Manipur, on the way to Meluri) and N.H.155 from Jessami to Tuensang via Meluri, Akhegwo and Kiphire. Few villages are yet to be provided with electricity. The only Cement factory in the State, i.e. Weziho Cement Factory, which can produce 150 TPD, is in Meluri Sub-Division. Decorative Stone Factory is now in function at Weziho. Most of the village are linked with electricity.

Natural flowing Brine water is available in about 7 villages of the district. The locally baked salt; as per medical experts is goiter-free and is good for health. Even Brine can be kept in stock in quantity for sale in the market. There are other small-scale industries, like basket making and different weaving centers which can bring sustainable development to small entrepreneurs of the district. These small-scale industries need to be modernized with modern scientific machineries to make it recurrent income generating industries. Phek District is regarded as the richest areas of mineral deposits such as limestone, Decorative marbles, Crystallized, etc.

1.	Position in relation to longitude and latitude:		Longitude: 94^0- 35'- 18" to 94^0- 38'-09" E (L) Latitude : 25^0 -37'-37" to 25^0-39'-47" N (LT)
2.	Altitude from MSL	:	Highest-2133 m MSL (Pfutsero) Lowest-520 m MSL (Lanyie)
3.	Boundaries of the district	:	
	E: Kiphre/Myanmar W: Kohima N: Zunheboto/Kiphre S: Manipur NE: Kiphre SE: Manipur SW: Manipur NW: Zunheboto & Myanmar		
4.	Total population	:	1, 48,246
5.	Area of the district	:	2026 sq.km
6.	Population density	:	73 person/sqkm
7.	Literacy percentage	:	71.35%
8.	Status of agriculture	:	Rain fed and shifting

9. Farmers

a)	Big farmers	:	40315
b)	Small	:	10419
c)	Marginal farmers	:	NA
d)	Agricultural laborers	:	1361

10. Farm Labour mobility

a. Is sufficient farm Labour available in the district : Yes

11. Physiography

The terrain of the Phek district is very severely undulating, full of high hills and deep gorges. Most of the high hills are steep. It lies between 25^0 -37'-37" to 25^0-39'-47" N latitude and 94^0-35'- 18" to 94^0- 38'-09" E longitude. The slope of high hills is more than 100% and full with forest trees. Mid hills having the slope 50-100% are suitable for orchards and plantation crops. Jhuming is also practice in midhills however low lands having the slope of 20-50% are best suited for paddy cultivation. In foot hills paddy is predominantly being taken, however nowadays area under paddy cum fish culture is also increasing.

12. Climates

a. Sub-Humid/Temperate/Sub-Tropical

b. Pattern of rainfall in different months

Jan.	Feb.	Mar.	April.	May.	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
low	low	low	medium	High	High	High	High	High	medium	low	low

c. Special weather phenomenon in the district

There is a special weather phenomenon in the district. There is heavy rainfall from April to October resulting in land slides all over the area causing heavy soil erosion. Crops suffer to a great extent due to insect pest and diseases during this season. During winter season there is low rainfall from November to February causing hindrance for cultivation of rabi crops as irrigation sources dries up. In high hills temperature reaches to the freezing point resulting in frosting and deposition of snow on the hill top.

d. Maximum and Minimum temperatures recorded: Max: 27.72°C; Min (-) 2°C

e. Critical periods for plant growth in the district

Sl.No	Crop	Critical period of growth	Coinciding Calendar month (s)
1	Paddy	Tillering and Panicle stage	Aug-Sept
2	Maize	Tasselling stage	May- June
3	Soyabean	Flowering stage	Aug-sept
4	Naga dal	Flowering stage	April-May
5	Cow pea	Flowering stage	April-May

6	Kholar bean	Flowering stage	April-May
7	Passion fruit	Flowering stage	April-may, November-Dec
8	Pear	Flowering stage	April-May
9	Peach	Flowering stage	Feb-March
10	Banana	Initiation of bunch	Nov-Dec
11	Guava	Flowering stage	Mar-April, Sept-Oct
12	Plum	Flowering stage	Feb-March
13	Cabbage	Head formation	May-July, Nov-Jan
14	Local garlic	Bulb formation	Oct-Nov
15	Ginger	Rhizome formation	Oct-Nov

13. Soils

1. Soil groups present in the district Phek:
    1. Black soil
    2. Red soil
    3. Alluvial soil
    4. Sandy soils
    5. Red laterite soil

2.	Black Soils	:	Present (36468ha)
3.	Red Soils	:	Present (24312 ha)
4.	Alluvial Soils	:	Present (18234ha)
5.	Sandy Soils	:	Present (6078ha)
6.	Red late rite Soils	:	Present (117508 ha)
7.	Saline and alkaline Soils	:	Not Present
8.	Acid Soils	:	Present
9.	Soil fertility status (in general)	:	Medium

14. Irrigation

1.	Area under Irrigation	:	15450 ha
2.	Irrigation potential	:	20000 ha
3.	Source of Irrigation		
	1. Rivers	:	5 nos.
	2. Tanks	:	96 nos.
	3. Open wells	:	Nil
	4. Bore wells	:	Nil
	5. Any other Sources (Lake)	:	3 nos

15. Land use and cropping intensity

1.	Gross cropped area	:	44870 ha
2.	Net Area sown	:	42950 ha
3.	Fallow lands	:	NA

4.	Cultivable waste lands	:	38630 ha
5.	Forest cover	:	56589 ha
6.	Barren Land	:	NA
7.	Cropping intensity	:	120%

16. Major Crops

Sl.No	Principal Crops	Area(in ha)	Production tones (MT)	Productivity (Kg/ha)
1. A	**CEREALS :**			
1	Jhum Paddy	794	1342	1690.10
2	TRC Paddy	1305	2120	1624.4
3	Maize	955	1599	1674.3
4	Wheat	150	130	866.6
5	Small Millet	326	228	699.38
6	Jowar	120	90	750.00
	Total Cereals :	**34070**	**53110**	**1558.84**
II.B	**PULSES:-**			
1	Arahar	520	610	1173.07
2	Nagadal	470	570	1212.76
3	Kholar	110	140	1272.72
4	Black Gram	40	50	1250.00
5	Moong	90	110	1222.20
6	Gram	70	90	1285.71
7	Pea	1220	1470	1204.91
8	lentil	390	470	1205.12
9	Beans	220	280	1272.72
10	Other rabi pulses	640	780	1218.75
11	Other kharif	370	460	1243.24
	Total Pulses :	**4140**	**5030**	**1214.97**
III.C	**OILSEEDS :**			
1	Soybean	2120	2560	1207.54
2	Sesamum	640	420	656.25
3	Groundnut	160	170	1062.50
4	Mustard	2030	1440	709.35
5	Sunflower	250	170	680.00
6	Linseed	950	600	631.57
	Total Oilseeds	**6150**	**5360**	**871.54**
Commercial crops				
1	Potato	460	4090	8891.30
2	Ginger	440	3930	8931.81

3	Cotton	20	10	500.00
4	Tea	60	40	666.66
5	Large Cardamom	160	260	1625.00
	Total	**1140**	**8330**	**7350.87**

1. Principal crops, area, production and productivity
2. Area and production of major vegetables & plantation crops in Phek district

Sl. No.	Vegetables	Area (ha)	Production(MT)	Productivity(Kg/ha)
1	Sweet potato	5	12	2400.00
2	Cabbage	20	41	2050.00
3	Cauliflower	10	15	1500.00
4	Brinjal	10	15	1500.00
5	Chillies	110	180	1636.36
6	Peas	10	70	7000.00
7	Beans	50	65	1300.00
8	Tomato	60	70	1166.66
9	Ginger	260	600	2307.69
10	Garlic	20	28	1400.00
11	Radish	20	15	750.00
12	Colocasia	180	1000	5555.55
13	Tapioca	100	1000	10000.00
14	Chow chow	105	1040	9904.76
15	Tree tomato	20	158	7900.00
16	Large cardamom	150	15	100.00

3. Area and production of major fruit crops in Phek district

SI No	Fruits	Area(ha)	Production(MT)	Productivity (Kg/ha)
1	Apple	30	10	333.33
2	Pear	30	55	1833.33
3	Plum	26	40	1538.46
4	Peach	40	18	450.00
5	Orange	327	160	489.29
6	Lemon	51	--	--
7	Papaya	100	120	1200.00
8	Banana	128	500	3906.25
9	Guava	40	290	7250.00
10	Mango	40	20	500.00
11	Pineapple	150	350	2333.33
12	Passion fruit	50	10	200.00

4.	Crop rotations followed	:	Maize+Cabbage-Pea, Maize-pea, Maize+Beans+Naga dal+Cowpea Paddy- pea
5.	Crop sequences followed	:	Maize-Beans-pea (Jhum area)
6.	Inter- cropping done	:	No intercropping followed
7.	Mixed cropping done	:	Mixed cropping of various Agricultural and horticultural crops viz: Maize +Beans +Cabbage +Tree tomato+ Cowpea
8.	Catch crops grown	:	Maize followed by pea

17. Socio-economic Characteristics, Land holding Pattern

1.	Average size of land holdings	:	3.88 ha
2.	Average fragmentation intensity	:	2-3 nos
3.	Existing land tenure for farming	:	3-6 yrs
4.	Source(s) of finance for farming	:	Rank.1 SBI-5nos Rank.2 State Cooperative Bank-3 nos Rank.3 Nagaland Rural- 2 nos
5.	Main source of income for farmers	:	Rank.1 Agriculture Rank.2 Livestock
6.	Commercial commodities produced	:	Rank.1 Ginger Rank.2 Large cardamom Rank 3. Cabbage Rank 4. Passion fruit Rank 5. Plum

18. Farm Machinery and implements available in the district

1.	Number of tractors		:	8 nos
2.	Number of Power Tillers		:	95 nos
3.	Number of Carts		:	nil
4.	Types of implements-			
	a.	ploughs	:	240 nos
	b.	Cultivators	:	103 nos
	c.	Discs	:	28 nos
	d.	Harrows	:	8 nos
	e.	Others	:	nil nos
5.	Pumps (oil and electrical)		:	nil
6.	Harvesters and Threshers		:	Thresher- 1892
7.	Sprayers and Dusters		:	520 nos

19. Livestock

1.	Cattle	:	13577 nos.
2.	Buffaloes	:	3104 nos
3.	Sheep and Goats	:	6448 nos
4.	Pigs	:	61261 nos
5.	Mithun	:	4416 nos
6.	Poultry and Ducks	:	370031 nos
7.	Production of milk	:	3328000 lts
8.	Production of meat	:	304000 ton.
9.	Production of eggs	:	28.62 Lakh.
10.	Production of Wool	:	1.6 qtl.

20. Livestock holding patterns

a. Livestock holding pattern for big farmers:

Sl.No	Animal/Bird	Average nos possessed	Rank according to nos possessed
1.	Cattle(cross breed)	2	4
2.	Cattle(desi)	Community rearing (100-150 nos/village)	7
3.	Buffalo	1	6
4.	Mithun	Community rearing (100-200/village)	5
5.	Goat	2	4
6.	Pig	4	3
7.	Dog	1	5
8.	Duck	6	2
9.	Fowl	20	1

b. Livestock holding pattern for small farmers:

Sl.No	Animal/Bird	Average nos possessed	Rank according to nos possessed
1.	Cattle(cross breed)	Nil	
2.	Cattle(desi)	Community rearing (100-150 nos/village)	6
3.	Buffalo	Nil	
4.	Mithun	Community rearing (100-200 nos/village)	5
5.	Goat	1	4
6.	Pig	2	3
7.	Dog	1	4
8.	Duck	4	2
9.	Fowl	10	1

c. Livestock holding for marginal farmers:

Sl.No	Animal/Bird	Average nos possessed	Rank according to nos possessed
1.	Cattle(cross breed)	2	3
2.	Cattle(desi)	Community rearing (100-150 nos/village)	6
3.	Buffalo	Nil	
4.	Mithun	Community rearing (100-200 nos/village)	5
5.	Goat	2	3
6.	Pig	2	3
7.	Dog	1	4
8.	Duck	5	2
9.	Fowl	15	1

d. Livestock holding pattern for agricultural labourers:

Sl.No	Animal/Bird	Average nos possessed	Rank according to nos. possessed
1.	Cattle (cross breed)	Nil	
2.	Cattle(desi)	Community rearing (100-150 nos/village)	5
3.	Buffalo	Nil	
4.	Mithun	Community rearing (100-200 nos/village)	4
5.	Goat	1	3
6.	Pig	Nil	
7.	Dog	1	3
8.	Duck	4	2
9.	Fowl	10	1

e. Livestock yields of various animals and bird in Phek district

Sl.No	Animal/Bird	Average yield (Specify Units)
1.	Cattle	Milk-1.33 lt/day(Desi) Milk- 4.6 lt/day(cross breed) Meat-145 kg/day
2.	Mithun	Meat-152kg/day
3.	Buffalo	Meat-165kg/day
4.	Pig	Meat-75kg/day
5.	Fowl	Meat-2.3kg/day Egg-205/day
6.	Duck	Meat-2.7kg/day Egg-80/day
7.	Goat	Meat-22kg/day
8.	Dog	Meat-12kg/day

21. Research Resources : 1nos

1. Number of research stations : 1nos
2. Number of ICAR institute/ Substations : 1nos
3. Number of states seed farms : 2nos
4. Number of private seed farms : Nil

22. Agricultural Marketing Status and Constraints:

Marketing of agriculture produce of some of the village is done by APMC. But due to remoteness and poor connectivity of roads to urban areas the department is unable to market the produce of majority of the villages. Marketing of village produce is mostly done by the farmers themselves.

1. Ways of disposal of farm produce and bye-products:

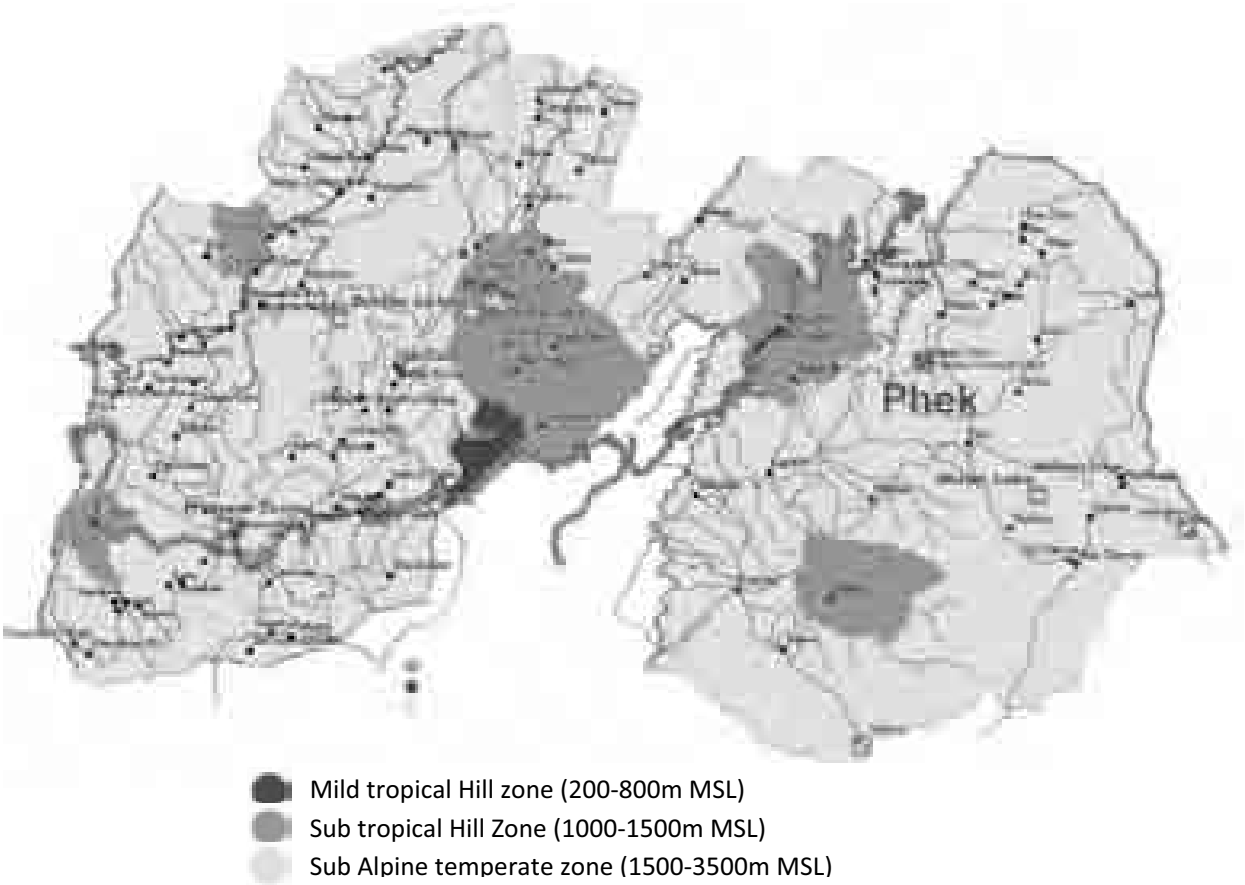
Sl.No	Major Farm produce	Marketing channel	Bye Product (if any)	Marketing channel
1	Paddy	Not Marketed	Rice police & broken rice	Use as Pig feed
2	Maize	Self marketing	No	NA
3	Cabbage	Self marketing	No	NA
4	Large cardamom	APMC	No	NA
5	Ginger	APMC	No	NA
6	Passion fruit	APMC	No	NA
7	Plum	Self marketing	No	NA
8	Peach	Self marketing	No	NA
9	Pear	Self marketing	No	NA
10	Apple	Self marketing	No	NA

2. Whole sale and retail markets in the district :
   A. Wholesale Markets : 2 Nos in Phek
   B. Retail Markets : 5 nos in five sub division.
3. Major modes of transport to market. :
   1. Hired LMVs
   2. State transport
4. Available/ Commonly used conveyance facilities (roads/ waterways) to market:
   1. Road

23. Agro-climatic Zones

1. Sub tropical Hill Zone (1000-1500m MSL)
2. Sub Alpine temperate zone (1500-3500m MSL)
3. Mild tropical Hill zone (200-800m MSL)

Agro-climatic Zones of Phek District



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5. Agricultural Situation in Tuensang

Tuensang district is located in the eastern part of Nagaland. It is bounded by Mon and Longleng districts in the North and North East respectively, Mokokchung in the North West, Zunheboto in the South West, Kiphire in the South and Mayanmar in the East. The topography of the district is characterized by high hills, deep gorges and narrow valleys comprising the *Helipong Range*, *Yakur Range*, *Longtokur Range* and *Takhaya Range*. Some rivers meandering through this rugged terrain are *Tizu, Zunki, Dikhu* and *Chite*. The climate varies from sub-tropical to Sub-temperate with annual rainfall of 2000 mm and the temperature range of 5° C to 30° C.

Tuensang is a multi-tribal district inhibated by the *Changs, Yimchungers, Khiamungans* and the *Sangtams* and a sub-tribe *Tikhirs* under the nomenculture of *Yimchunger*. There are 104 recognized villages in the district, 8 Blocks and 9 Administrative headquarters. The district is connected to other districts by roadways only. The people preserve rich cultural heritage and are famous for handicraft and handloom. The district is still economically and educationally backward with about 60% of the rural population living below poverty line. The literacy rate is 51.35 % (2001 Census). 90% of the total population are engaged with Agriculture & allied activities for their livelihood. Jhum cultivation is practiced by the farmer where as cereals, pulses and vegetables are grown mixed. Rearing of livestock and maintaining an orchard on the backyard is predominant in the villages. Deposits of coal, marble, limestone and some other minerals need to be tapped.

1. Position in relation to longitude and latitude : Tuensang district lies between 25º 6'and 27º 4' Latitude North and longitudinal lines of 93º 20' and 95º 15'east.

2. Altitude from MSL : 1,000 to 3500 metres

3. Boundaries of the district :

E: Mayanmar	W: Zunheboto	N: Mon	S: Kiphire
NE: Longleng	SE: Kiphire	SW: Zunheboto	NW: Mokokchung

4. Total population : 1, 85,036

5. Area of the district : 2446 sq km.

6. Population density : 75.6 persons/sq km.

7. Literacy percentage of the district: 51.30 %

8. Status of Agriculture : Rainfed/shifting.

9. Farm labors mobility:

a. Is sufficient farm labours available in the district: NO.

b. If 'NO' from which place do they come from? Nearby districts

10. Climates

a. Sub-Tropical/Sub-Humid/Temperate

b. Pattern of rainfall in different months

Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
13.0	18.1	4.0	47.4	54.6	104.3	96.4	77.7	52.3	34.7	234.0	-

c. Maximum and Minimum temperature recorded:

Temp.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
Max.	15.5	14.92	19.6	21.66	23.87	24.22	23.1	23.4	23.59	22.12	20.9	17.53
Min.	6.6	8.16	11.6	14.35	17.09	17.94	17.27	18.5	17.36	15.41	12.46	08.83

d. Critical periods for the plant growth in the district

Sl.no	Crop	Critical periods of growth	Coinciding calendar months.
1	Jhum Paddy	Booting stage, panicle formation	July

2	TRC	Panicle initiation	Late July-Early August
3	Maize	Tassling stage	Early July
4	Kholar	Flowing stage, pod formation stage	Mid October
5	Potato	Stolon formation stage	Late March
6	Cabbage	Head formation	Late March
7	Colocassia	Corn formation stage	June
8	Ginger	Rhizome formation	Early May
9	Soyabean	Flowering stage, pod formation stage	August

11. Soils

1. Soil group classifications present in the district
    1. Typic/Umbric Dystrochrepts.
    2. Pachic Haplumbrepts.
    3. Typic paleudults/Haplohumults.

    The Soils of Tuensang are moderately deep to deep, Loamy -skeletal, fine loamy to fine in texture and moderately to severely eroded. The soils are moderately to strongly Acidic, high in organic matter and low in exchangeable bases.
2. Information on soil in different Blocks of Tuensang District

Sl . No.	Block	Soil Type		Soil Reaction
		Red Clay Sandy Loam (%)	Black Loam (%)	
1.	**CHARE**	75	25	Acidic
2.	**LONGKHIM**	65	35	Acidic
3.	**NOKSEN**	70	30	Acidic
4.	**SANGSANGYU**	65	55	Acidic
5.	**NOKLAK**	60	40	Acidic
6.	**SHAMATOR**	35	65	Acidic
7.	**THONOKNYU**	45	55	Acidic
8.	**CHESSORE**	45	55	Acidic

**Source: Statistical Handbook of Nagaland 2004, Directorate of Economics & Statistics, Government of Nagaland*

3. Soil fertility status : Medium

12. Irrigation

a. Area under irrigation : 4229 ha.

b. Irrigation potential : 7729 ha.

c. Source of Irrigation

1. Rivers. : Source of Irrigation is mainly Rivers.

13. Land use and cropping intensity:

1. Gross cropped area : 23334 ha.

2. Net Area sown : 17448 ha.
3. Fallow lands : 5886 ha.
4. Cultivable Lands : 2176921 ha.
5. Forest cover : 77468 ha.
6. Barren lands : NA
7. Cropping intensity : 100% (for 60% of the farmers) and 200% (for 40% of the farmers) mainly form shamator Block.

14. Major Crops:

1. Principal crops, area, production and productivity

Sl.no	Principal crops	Area (in ha.)	Production (in tones)	Productivity (Kg/ha)
1	Jhum Paddy	12020	13500	1123
2	TRC Paddy	4900	7800	1592
3	Maize	5360	10030	1872
4	Millets	1130	2320	2053
5	Rice Bean (Naga Dal)	280	360	1286
6	French Bean (Kolar)	660	620	940
7	Soyabean	2250	3700	1644
8	Potato	570	6100	10701
9	Tapioca	162	1956	12074
10	Colocassia	374	3927	10500

**Source: Statistical Handbook of Nagaland 2004, Directorate of Economics & Statistics, Government of Nagaland*

2. Crop rotations followed:
   1. Jhum Paddy / Rajmah (in Jhum field).
   2. Maize + Beans / Rajmah.
   3. TRC / Mustard or Pea.
   4. Cereals / Soyabean.
   5. Potato / Maize+Rajmah.
   6. Cabbage / Millets.
   7. Cereals / Garlic.

   (Apart from this most of the fields are kept fallow in both Jhum & TRC).
3. Crop sequences followed:
   1. Cereals / Beans
   2. Cereals / Mustard or Pea.
   3. Cabbage / Cearels (Millets).
4. Inter-cropping done, if any:
   1. Maize + Rajmah (Kholar).
   2. Maize + Soyabean.

5. Mixed cropping done, if any:
   1. Jhum Paddy + Maize + Vegetables + Beans + Colocassia + Tapioca Etc. (In Jhum field almost all crops that are used in the district are grown mixed in the same piece of land in the same year).
6. Catch crops grown, if any:
   1. Nil

15. Socio-economic Characteristics, Land holding Pattern

1. Average size of land holdings: 10 ha
2. Average fragmentation intensity: 20nos
3. Existing land tenure system(s):
   Land holding system either for settlement or for cultivation purposes is same to all the tribes of Nagaland. With respect to cultivation, clans will have distinct community land holdings which will be shared among families within their respective clans. Landless families will be leased with certain area in the *Jhum* cycle by the villagers. An average of 8-9 yrs *Jhum* cycle is being followed in Tuensang district. However, this *Jhum* cycle is being gradually reduced due to increase in land to population ratio. During each Jhum cycle the entire land is divided as per community land holdings and different Agricultural cultivation are carried out for 1-2 yrs and it is left fallow till next *Jhum* cycle.
4. Source(s) of finance for farming:
   Rank 1. State Bank of India.
   Rank 2.Co-operative Bank
5. Main source of income for farmers:
   Rank 1. Agriculture
   Rank 2. Horticulture
   Rank 3. Livestock.
6. Commercial commodities produced:
   Rank 1. Rajmah/Kholar.
   Rank 2. Cabbage
   Rank 3. Potato

16. Livestock

1.	Cattle	:	23090 nos	
2.	Buffaloes	:	1442 nos.	Mithun : 10706 nos.
3.	Sheep and goats	:	0 & 23777 nos	
4.	Pigs	:	77540 nos	
5.	Poultry and ducks	:	244284 nos	

17. Livestock holding patterns

a. Livestock holding pattern for big farmers

Sl.No.	Animal/Bird	Average nos possessed	Rank according to nos possessed
1	Cattle	8nos.	1
2	Buffaloes	3nos.	1
3	goats	-	-
4	Poultry and ducks	20nos	1
5	Pigs	3nos	1
6	Mithun	4nos	1

b. Livestock holding pattern for small farmers

Sl.No.	Animal/Bird	Average nos possessed	Rank according to nos possessed
1	Cattle	6nos	2
2	Buffaloes	1nos	2
3	goats	5nos	1
4	Poultry and ducks	10nos	3
5	Pigs	1nos	3
6	Mithun	-	-

c. Livestock holding pattern for marginal farmers

Sl.No.	Animal/Bird	Average nos possessed	Rank according to nos possessed
1	Cattle	2nos	3
2	Buffaloes	-	-
3	Goats	2nos	2
4	Poultry and ducks	15nos	2
5	Pigs	2nos	2
6	Mithun	-	-

d. Livestock holding pattern for agricultural labourers

Sl.No.	Animal/Bird	Average nos possessed	Rank according to nos possessed
1	Cattle	1nos	4
2	Buffaloes	-	-
3	Goats	-	-
4	Poultry and ducks	8nos	4
5	Pigs	-	-
6.	Mithun	-	-

18. Research Resources

1. Number of research stations: Nil.
2. Number of ICAR institutes/ substations: Nil

3. Number of state seed farms: 1 (Potato Seed Farm, Helipong)
4. Number of private seed farms: Nil

19. Agricultural Marketing Status and Constraints.

1. Ways of disposal of farm produce and bye-products

Sl.No.	Major Farm produce	Marketing channel	Bye product (If any)	Marketing channel
1	Cereals	(self consumption)	–	–
2	Kholar (Rajmah)	APMC	–	–
3	Potato.	Local market	–	–
4	Vegetables	APMC/Local market	–	–

2. Whole sale and retail markets in the district :
   a. Wholesale markets: 1. Nil
   b. Retail markets: 1. Tuensang daily market.
3. Major modes of transport to market
   1. Buses
   2. Mini Truck
4. Available/commonly used conveyance facilities (roads/waterways) to market:
   1. Roads

20. Agro-climatic Zones

1. Sub-Tropical hill zone.
2. Sub-alpine temperate zone.

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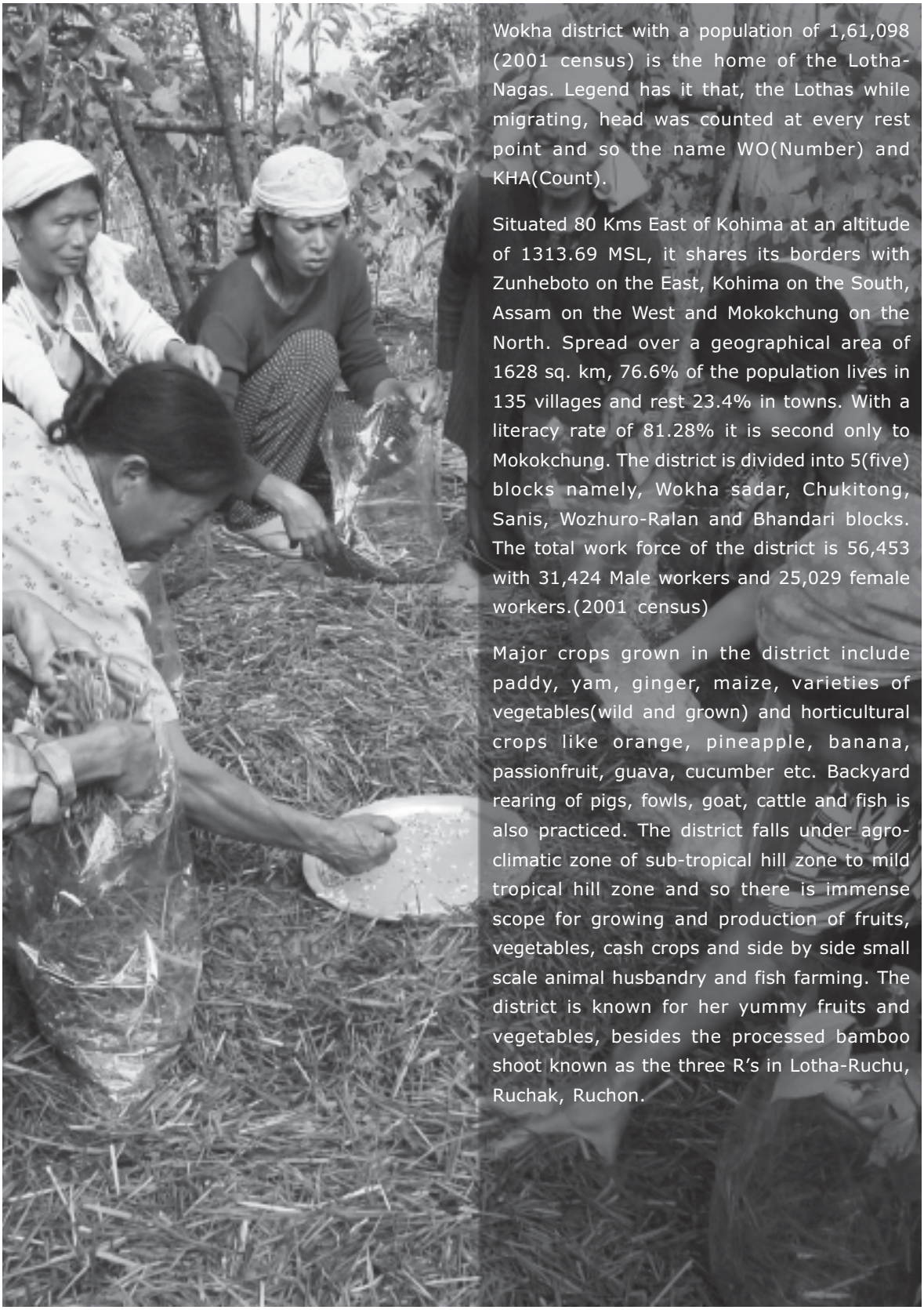
6. Agricultural Situation in Wokha



Wokha district with a population of 1,61,098 (2001 census) is the home of the Lotha-Nagas. Legend has it that, the Lothas while migrating, head was counted at every rest point and so the name WO(Number) and KHA(Count).

Situated 80 Kms East of Kohima at an altitude of 1313.69 MSL, it shares its borders with Zunheboto on the East, Kohima on the South, Assam on the West and Mokokchung on the North. Spread over a geographical area of 1628 sq. km, 76.6% of the population lives in 135 villages and rest 23.4% in towns. With a literacy rate of 81.28% it is second only to Mokokchung. The district is divided into 5(five) blocks namely, Wokha sadar, Chukitong, Sanis, Wozhuro-Ralan and Bhandari blocks. The total work force of the district is 56,453 with 31,424 Male workers and 25,029 female workers.(2001 census)

Major crops grown in the district include paddy, yam, ginger, maize, varieties of vegetables(wild and grown) and horticultural crops like orange, pineapple, banana, passionfruit, guava, cucumber etc. Backyard rearing of pigs, fowls, goat, cattle and fish is also practiced. The district falls under agro-climatic zone of sub-tropical hill zone to mild tropical hill zone and so there is immense scope for growing and production of fruits, vegetables, cash crops and side by side small scale animal husbandry and fish farming. The district is known for her yummy fruits and vegetables, besides the processed bamboo shoot known as the three R's in Lotha-Ruchu, Ruchak, Ruchon.

1.	Position in relation to longitude and latitude	:	The Wokha district is situated at latitude of 26º North and a Longitude of 94º 18' east.
2.	Altitude from MSL	:	1313.69
3.	Boundaries of the district	:	
	E: Zunheboto W: Assam		N: Mokokchung S: Kohima
4.	Total population	:	1, 61,098
5.	Area of the district	:	1628sq km
6.	Population density	:	99
7.	Literacy percentage	:	81.28%
8.	Status of agriculture	:	Shifting & Irrigated
9.	**Farmers**	:	
	a. Big farmers	:	09% (nos)
	b. Small farmers	:	30%
	c. Marginal farmers	:	5,839 Nos
	d. Agricultural labourers	:	56,453 with 31,424 Male workers and 25,029 female workers

10. Farm labour mobility

a. Is sufficient farm labour available in the district: YES (Family labour)

b. If 'YES' whether they do work in near by or other districts also? NO Works within the village

11. Physiography

The topography of the district is more or less similar with that of other district in the State, having hill ranges and ridges di-sected by seasonal streams. The altitude ranges from 303.3 Mts too 1313.67 Mtrs. The climate is warm in the lower plain areas, moderately warm in the upper region during summer but cold in winter. The monsoon season starts from May and continues till October. The annual rainfall varies from 200 cms to 250 cms.

The district is divided into three ranges, which are as follows :-

a) Wokha Range or Upper Range , which falls in the upper north eastern parts of the district.

b) Sanis Range or Middle Range , which covers the middle part of the district

c) Bhandari Range or Lower Range . It is the outer most part of the district which extends from the Japukong range of Mokokchung district and gradually slopes down to the Assam plains in the north western side. Two of the most fertile valleys are in this range and they are the Baghty and Tchiying valleys.

The highest mountain peak is the Tiyi Enung, with an altitude of 1970 mtrs. Important rivers which flow through the district are Doyang, Chubi, Nzhu and Nruk. The districts lie in a seismically active earthquake zone.

12. Climates

a. Semi-arid/Tropical/Temperate/Sub-Humid

b. Pattern of rainfall in different months

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Nil	**85**	**158**	**150**	**230**	**357**	**380**	**341**	**150**	**83**	**61**	**11**

c. Maximum and minimum temperatures recorded: Max: 32^{o}C Min: 2-5^{o}C

d. Critical periods for plant growth in the district

Sl. No	Crop	Critical periods of growth	Coinciding calendar month(s)
1.	Rice	Seedling, tillering & PI stage	April to June- July
2.	Maize	Silking and tasseling	June to July
3.	Sugarcane	Formative stage	October
4.	Citrus	Fruit setting and enlargement	April-May to September-October
5.	Tomato	Commencement of fruit setting	April-May

13. Soils

1. Soil group classifications present in the district
   1. Alluvial Soil
   2. Residual soil
   3. Red loamy & brown forest soil or sub montane soil
2. Black soils : Nil
3. Red soils : 68,767ha
4. Alluvial soils : 25,267 ha
5. Sandy soils : Nil
6. Laterite soils : 68,767ha
7. Saline and alkaline soils : Nil
8. Acid soils : Present
9. Soil fertility status (in general) : Medium

14. Irrigation

a. Area under irrigation : 11,050 ha

b. Irrigation potential : No record available

c. Sources if Irrigation : Others : Diversion Dams through Streams: 9 nos

15. Land use and cropping intensity

1. Gross cropped area : 25174 ha
2. Net Area sown : 21,132 ha
3. Fallow lands : 12,788 ha
4. Cultivable waste lands : 30,674 ha
5. Forest cover : 25,372 ha
6. Barren lands : 688 ha
7. Cropping intensity : 100%

Source: Statistical handbook of Nagaland, 2004

16. Major Crops

1. Principal crops, area, production and productivity

Sl. No	Principle Crop	Area (ha)	Production (tones)	Productivity (kg /ha)
1	Jhum paddy	13,382	16058.40	1200
2	TRC/WRC	5847	11694.00	2000
3	Maize	410	738.00	1800

4	Nagadal	185	166.50	900
5	Beans	141	564.00	4000
6	Peas	32	38.40	1200
7	Rajmash	22	22.00	1000
8	Groundnut	30	18.00	600(grains)
9	Soyabean	132	118.80	900
10	Sesamum	298	149.00	500
11	Rapeseed Mustard	550	440.00	800
12	Linseed	34	27.20	800
13	Sugarcane	129	10320.00	80000
14	Potato	79	474.00	6000
15	Tea	116	348.00	3000
16	Cardamum	42	8.40	200
17	Ginger	324	2268.00	7000

2. Crop rotations followed : Data not available
3. Crop sequences followed : Data not available
4. Inter-cropping done, if any : Data not available
5. Mixed cropping done, if any :
   1. Rice + Maize
   2. Rice +Legumes
   3. Rice + Vegetables
   4. Rice + Passion fruit
6. Catch crops grown, if any : No

17. Socio-economic Characteristics, Land Holding Pattern

1. Average size of land holdings : 2-4 ha
2. Average fragmentation intensity : Upto 5
3. Existing land tenure system(s) : Clan land / Community land tenure system
4. Source(s) of finance for farming : Rank 1. Regional Rural Bank
   Rank 2. State Bank of India
   Rank 3. Bank of Baroda
5. Main source of income for farmers : Rank 1. Horticulture
   Rank 2. Agriculture
   Rank 3. Animal husbandry & Fishery
6. Commercial commodities produced : Rank 1. Passion fruit
   Rank 2. Orange
   Rank 3. Ginger

18. Farm Machinery and Implements available in the district

1.	Number of tractors	:	4 nos
2.	Number of power tillers	:	23 nos
3.	Number of carts	:	Nil nos
4.	Types of implements	:	Data not available
5.	Pumps (Oil and electrical)	:	7 & nil nos
6.	Harvesters and Threshers	:	1200 & nil nos
7.	Sprayers and Dusters	:	12 & nil nos

19. Livestock

1.	Cattle	:	33523 nos
2.	Buffaloes	:	629 nos
3.	Sheep and goats	:	Nil & 29623 nos
4.	Pigs	:	80441 nos
5.	Poultry and ducks	:	239038 & 10166 nos
6.	Production of milk	:	12000 ltr/year
7.	Production of meat	:	No record
8.	Production of eggs	:	No record
9.	Production of wool	:	Nil

20. Livestock holding patterns

a. Livestock holding pattern for big farmers: Nil

b. Livestock holding pattern for small farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Pig	2-4	Poultry
2.	Poultry	5-10	Pig
3.	Cow	2	Cow
4.	Goat	2	Goat

c. Livestock holding pattern for marginal farmers:

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Pig	2-4	Poultry
2.	Poultry	5-10	Pig
3.	Cow	2	Cow
4.	Goat	2	Goat

d. Livestock holding pattern for agricultural labourers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.	Pig	1-2	Poultry
2.	Poultry	2-5	Pig
3.	Cow	Nil	-
4.	Goat	Nil	-

e. Average yields of various animals and bird in the district.

Sl. No	Animal/bird	Average yield (Specify Units)
1.	Pig	80 kgs (Local)/Pig/year
2.	Poultry	1.5-2 kgs (Local)/bird in two months
3.	Cow	100-150 kgs(Local)/Cow/year
4.	Goat	20-30 kgs(Assam Local)/Goat/year

21. Research Resources

1. Number of research stations : 1 (SARS, Mokokchung) no.
2. Number of ICAR institutes/substations : 1 no.
3. Number of state seed farms : 1 no.
4. Number of private seed farms : Nil

22. Agricultural Marketing Status and Constraints

1. Ways of disposal of farm produce and bye-products

Sl. No	Major Farm produce	Marketing channel	Bye product (if any)	Marketing channel
1.	Passion fruit	APMC& Local Market	Nil	Nil
2.	Orange	APMC &Local Market	Nil	Nil
3.	Ginger	APMC& Local Market	Nil	Nil
4.	Pineapple	APMC& Local Market	Nil	Nil

2. Whole sale and retail markets in the district :

   a. Wholesale markets : 1. Merapani Market 2. Nil 3. Nil

   b. Retail markets : 1. Wokha town Bazar 2.Tsumang Bazar
   3. Zero point market, Sanis

3. Major modes of transport to market:

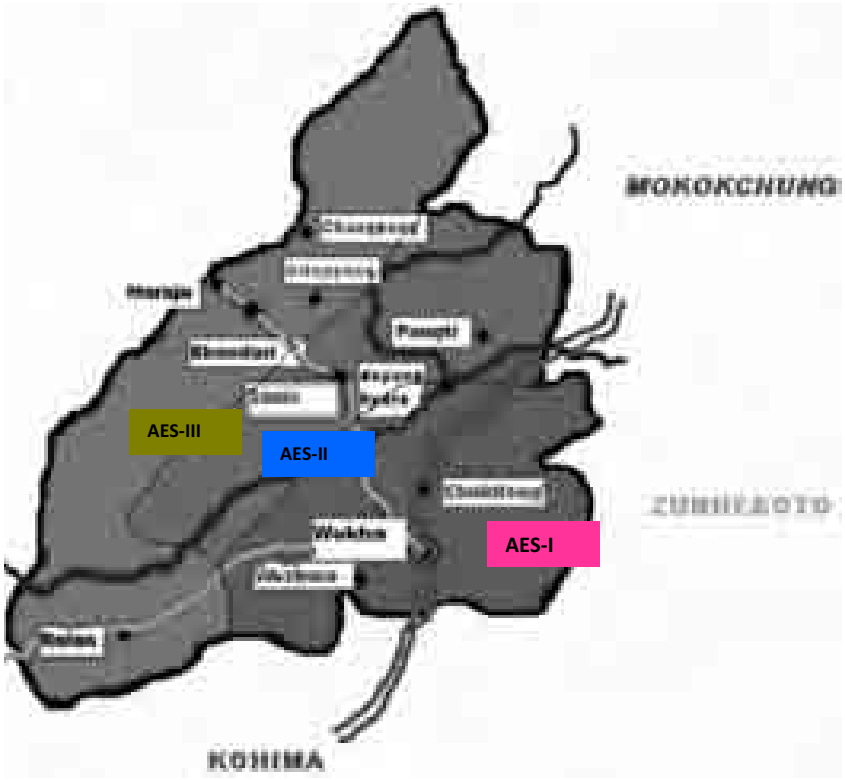
   1. Bus
   2. Truck
   3. Taxi
   4. Head load

4. Available/commonly used conveyance facilities (roads/waterways) to market:

   1. Road

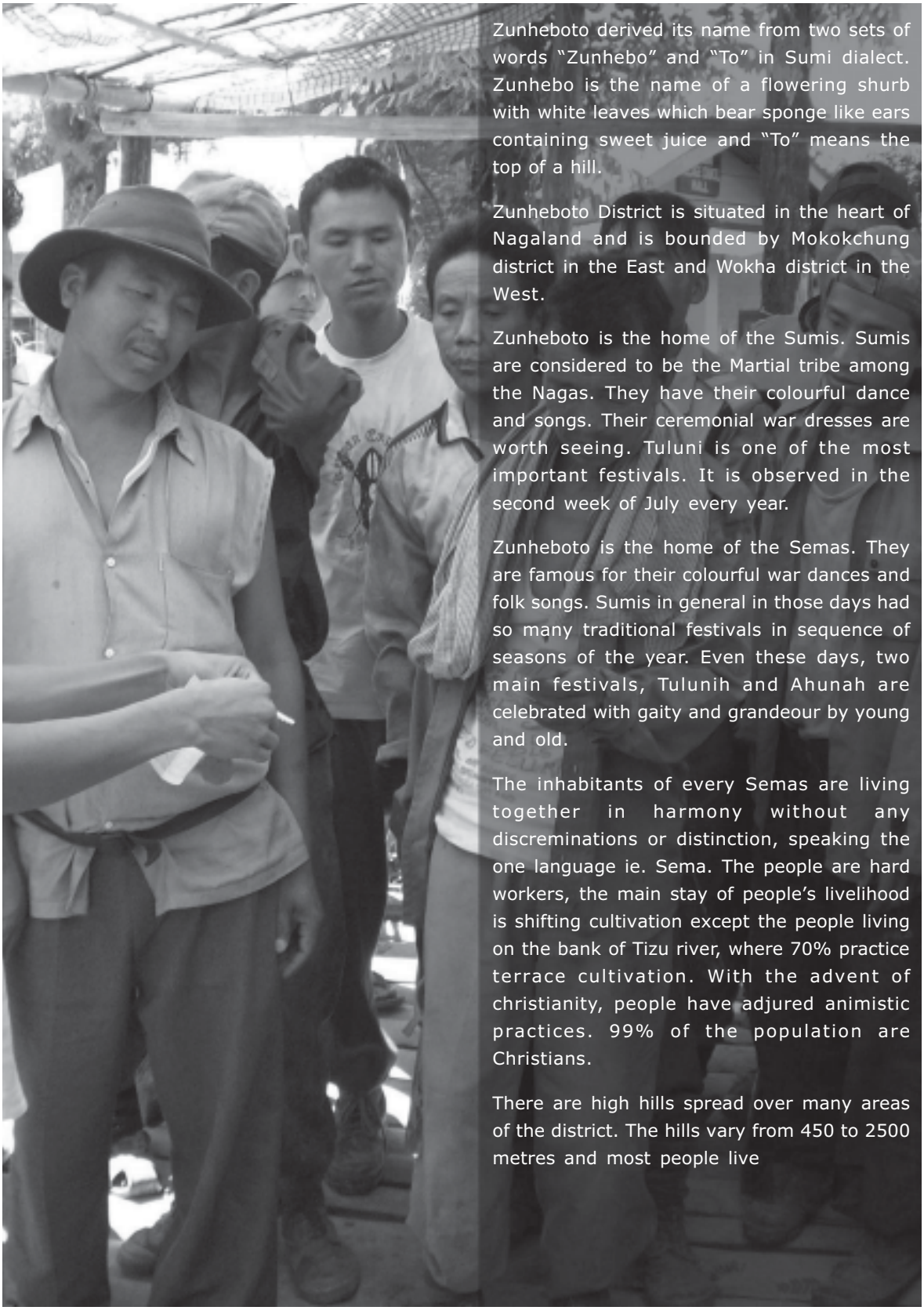
23. Agro-climatic Zones

1. Sub-tropical Hill zone
2. Sub-tropical plain zone
3. Mild tropical hill zone



AGRO-ECOLOGICAL SITUATION MAP OF WOKHA DISTRICT

7. Agricultural Situation in Zunheboto



Zunheboto derived its name from two sets of words "Zunhebo" and "To" in Sumi dialect. Zunhebo is the name of a flowering shurb with white leaves which bear sponge like ears containing sweet juice and "To" means the top of a hill.

Zunheboto District is situated in the heart of Nagaland and is bounded by Mokokchung district in the East and Wokha district in the West.

Zunheboto is the home of the Sumis. Sumis are considered to be the Martial tribe among the Nagas. They have their colourful dance and songs. Their ceremonial war dresses are worth seeing. Tuluni is one of the most important festivals. It is observed in the second week of July every year.

Zunheboto is the home of the Semas. They are famous for their colourful war dances and folk songs. Sumis in general in those days had so many traditional festivals in sequence of seasons of the year. Even these days, two main festivals, Tulunih and Ahunah are celebrated with gaity and grandeour by young and old.

The inhabitants of every Semas are living together in harmony without any discreminations or distinction, speaking the one language ie. Sema. The people are hard workers, the main stay of people's livelihood is shifting cultivation except the people living on the bank of Tizu river, where 70% practice terrace cultivation. With the advent of christianity, people have adjured animistic practices. 99% of the population are Christians.

There are high hills spread over many areas of the district. The hills vary from 450 to 2500 metres and most people live

between1500 - 2000 metres altitude. The Altitude of the district HQ. (ZBTO) is 1874.22 mtrs. above sea level. (Most of the population reside in rural areas. Zunheboto Town is the only designated urban area of the district.)

Owing to the high altitude, this district enjoys a monsoon climate almost throughout the year. Winters are very cold but summers are moderately warm. December and January form the coldest part of the season and at times the temperature comes down to 10° Celsius. The highest summer temperature is 30° Celsius. The average rainfall is about 200 cm. It falls for nine months in a year, heaviest contribution being in July and August.

Almost all the soils of the Zunheboto district belongs to the following classes/orders. There are alluvial soil, Forest soil(organic) pertaining to moolisol, non-laterised soil and soils of high altitudes belonging to order spodosals.

There are three important rivers in the district, viz, Tizu river originating in Tuensang district flows down towards south crossing at the centre of Zunheboto district and join Chindwin. Doyang river originating in Japfu passes through west part of the district and joins Dhansiri in Assam. Tsutha river, originating in North East of Zunheboto drains eastern part of the district and joins Tizu below Nihoshe village, where a Mini Hydel Power project is located. Most of the area under terrace cultivation on Tizu, Tsutha and Mela a tributary of Tizu river.

Agriculture is the main occupation of the people. The main form of cultivation is Jhum which means, Shifting cultivation. In Jhum field, Paddy, Millet, Maize, Taro or Kuchhu, (colocasia) French bean, potato, pumkin, cucumber, chilly and several varities of gourd are grown. Terrace cultivation is practiced along the banks of Tizu, Tsutha and Mela, a tributary of Tizu river. However, terrace cultivation, hardly occupies about 20% of the cultivable land. The yield of paddy per hectare under Jhum cultivation is much lower than the production per hectare under Terrace cultivation. There is however, great scope for increasing the yield per hectare through extending the cultivation to new area, increasing irrigation facilities, use of HYVseeds, fertilisers and through soil and water conservation measures.

Most of the cultivated land belong to the village chief or few individuals. Land are given to the landless individuals for cultivation on tenancy basis in rotation. The average size of holding varies between 1.0 hectare to 45 hectares : Except, where land is converted into bench terraces, the ownership of the land is vested with the villages. Use of land and its inheritance is governed by inherited customary unwritten laws and decision taken by the Head general body. is final.

The important reasons for poor productivity in the agriculture are :-

1. Due to absence of ownership right of the individuals in cultivated land and the farmer's lack of interest and enthusiasm to make any improvement of permanent nature to the land holdings.

2. Practice of Jhumming as main form of cultivation and non adoption of improved agricultural practices.
3. Poor fertility of soil due to fast run off and erosion.
4. Complete dependence on rainfall during summer, which facilitates only one crop.

1. Position in relation to longitude and latitude : 25.97°N to 94.54°E

2. Altitude from MSL : 450 – 2500m

3. Boundaries of the district

E:	Tuensang	W :	Wokha	N :	Mokokchung
S :	Phek	NE :	Mokokchung & Tuensang	SE:	Phek & Kohima
SW:	Phek & Kohima	NW:	Mokokchung & Wokha		

4. Total population : 154909

5. Area of the district : 1605 sqkm

6. Population density : 96.5

7. Literacy percentage : 69.73%

8. Status of agriculture: : Rain fed & shifting

9. Farmers : 24742

a. Big farmers : 2400
b. Small farmers : 742
c. Marginal farmers : 7600
d. Landless Farmers : 14000

10. Farm labour mobility

a. Is sufficient farm labour available in the district: YES
c. If "YES" whether they do work in nearby or other districts also. – No

11. Climates

a. Sub-tropical / Temperate
b. Pattern of rainfall in different months

Rainfall in (mm)	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
	Nil	Low (0.4)	Low (0.3)	Low (1.7)	High (34.4)	Medium (5)	Medium (8.9)	Medium (6.1)	Medium (7)	High (55.8)	Nil	Nil

c. Maximum and minimum temperatures recorded: Max: 30°C Min: 2°C

d. Critical period for plant growth in the district

Sl.No	Crops	Critical period for growth	Coinciding calendar month(s)
1.	Paddy	Milking stage	August
2.	Maize	Silking Stage	June
3.	Passion fruit	Flowering & Fruitiung Stage	April & May
4.	Orange	Flowering & Fruitiung Stage	March & April

12. Soils

1. Soil group classifications present in the district
    1. Black Soil
    2. Sandy Soil
2. Black soils : Present (5700 ha)
3. Red soils : Not Present
4. Alluvial soils : Not Present
5. Sandy soils : Present (10600 ha)
6. Laterite soils : Not Present
7. Saline and alkaline soils : Not Present
8. Acid soils : Not Present
9. Soil fertility status : Medium

13. Irrigation

1. Area under irrigation : 3400ha
2. Irrigation potential : 3400ha
3. Source of irrigation
    1. Rivers : 2 nos
    2. Tanks (small) : 71 nos
    3. Open wells : Nil
    4. Bore wells : Nil
    5. Minor irrigation channel : 109
    6. Seasonal Stream : 71

14. Major crops

1. Principal crops, area, production and productivity

Sl.No	Principal crops	Area (in ha)	Production(in tons) (1 ton=1000kg)	Productivity (kg/ha)
1.	Jhum paddy	7300	16060	2200
2.	TRC Paddy	2400	5760	2400
3.	Maize	3700	8880	2400
4.	Naga Dal	85	153	1800
5.	Beans	180	1008	5600
6.	Kholar	270	420	1500

2. Crop rotations followed
    1. Paddy (as a monocropping on shifting cultivation basis)
    2. Maize (as a monocropping on shifting cultivation basis)
3. Crop sequences followed : No
4. Inter-cropping done, if any : No
5. Mixed Cropping done, if any
    1. Paddy with Maize and Colocasia
    2. Vegetable crops (Cowpeas, tomato etc.)
    3 Spices (chilli, Ginger etc.)
6. Catch Crop grown, if any : No

15. Socio-economic Characteristics, Land holding Pattern

1. Average size of holding : 8ha
2. Average fragmentation intensity : 3 nos
3. Existing land tenure system(s)
    1. Permanent Ownershi
    2. Leased out system
    3. Leased in system
    4. Share cropping
4. Source(s) of finance for farming : Rank 1. Money lender
    Rank 2. Relatives & friends
    Rank 3. Cooperative bank
5. Main source of income for farmers : Rank 1. Agriculture
    Rank 2. Animal Husbandry
6. Commercial commodities produced : Rank 1. Handicrafts & Handloom
    Rank 2. Dry flowers
    Rank 3. Dry Bambooshoots

16. Farm machinery and implements available in the district

1. Number of tractors : 2 nos
2. Number of power tillers : 6 nos
3. Number of carts : nil
4. Type of implements-
    a. Cultivators : 127 nos
    b. Discs : 153 nos
    c. Harrows : 127nos
    d. Others : nil
5. Pumps (Oil and electrical) : 13 nos & 7 nos
6. Harvesters and threshers : 12 nos & 9 nos
7. Sprayers and Dusters : 1324 nos & 1167 nos

17. Livestock

1.	Cattle	:	65121 nos
2.	Buffaloes	:	169 nos
3.	Sheep and goats	:	2256 & 30223 nos
4.	Pigs	:	113101 nos
5.	Poultry and ducks	:	401731 &13467 nos
6.	Production of milk	:	nil
7.	Production of meat	:	nil
8.	Production of eggs	:	nil
9.	Production of wool	:	nil

18. Livestock holding patterns

a. Livestock holding pattern for big farmers

Sl.No	Animal/bird	Average no. possessed	Rank according to no. possessed
1.	Pigs	30	2nd
2.	Poultry	100	1st
3.	Cow	15	4th
4.	Mithun	20	3rd
5.	Goat	20	3rd

b. Livestock holding pattern for small farmers

Sl.No	Animal/bird	Average no. possessed	Rank according to no. possessed
1.	Pigs	10	2nd
2.	Poultry	50	1st
3.	Cow	8	3rd
4.	Goat	10	2nd
5.	Sheep	8	3rd

c. Livestock holding pattern for marginal farmers

Sl.No	Animal/bird	Average no. possessed	Rank according to no. possessed
1.	Pigs	2	3rd
2.	Poultry	15	1st
3.	Cow	1	4th
4.	Goat	5	2nd
5.	Sheep	2	3rd

d. Livestock holding pattern for agricultural labourers/Land less farmers

Sl. No	Animal/bird	Average no. possessed	Rank according to no. possessed
1.	Pigs	1	4th
2.	Poultry	10	1st

3.	Duck	8	2nd
4.	Goat	3	3rd

e. Average yields of various animals and birds in the district.

Sl. No	Animal/bird	Average yield (specify units)
1.	Pigs	80 kg / Pig
2.	Poultry	1 kg / bird
3.	Cow	1.5 lit/day(150 kg / cow)
4.	Mithun	200 kg / Mithun
5.	Goat	15 kg / Goat

19. Research Resources

1. Number of research stations : nil
2. Number of ICAR institutes/ substations : nil
3. Number of state seed farms : nil
4. Number of private seed farms : nil

20. Agricultural marketing status and constraints

1. Ways of disposal of farm produce and bye-products

Sl.No	Major farm produce	Marketing channel	By-product (if any)	Marketing channel
1.	Ginger	APMC		
2.	Maize	VMC		
3.	Rice	VMC		
4.	Pig	VMC		
5.	Cow	VMC	Milk	self

2. Whole sale and retail markets in the district :
   a. Whole sale markets : 1 Zunheboto
   b. Retail markets : 1 Akuluto 2. V.K 3. Autozoi
3. Major modes of transport to market:
   1. Bus
   2. Sumo
   3. Truck
4. Available/commonly used conveyance facilities (Road/Waterways) to market:
   1. Road

21. Agro-climatic zones

1. Sub Tropical
2. Temperate

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3.7 Agricultural Situation in Sikkim

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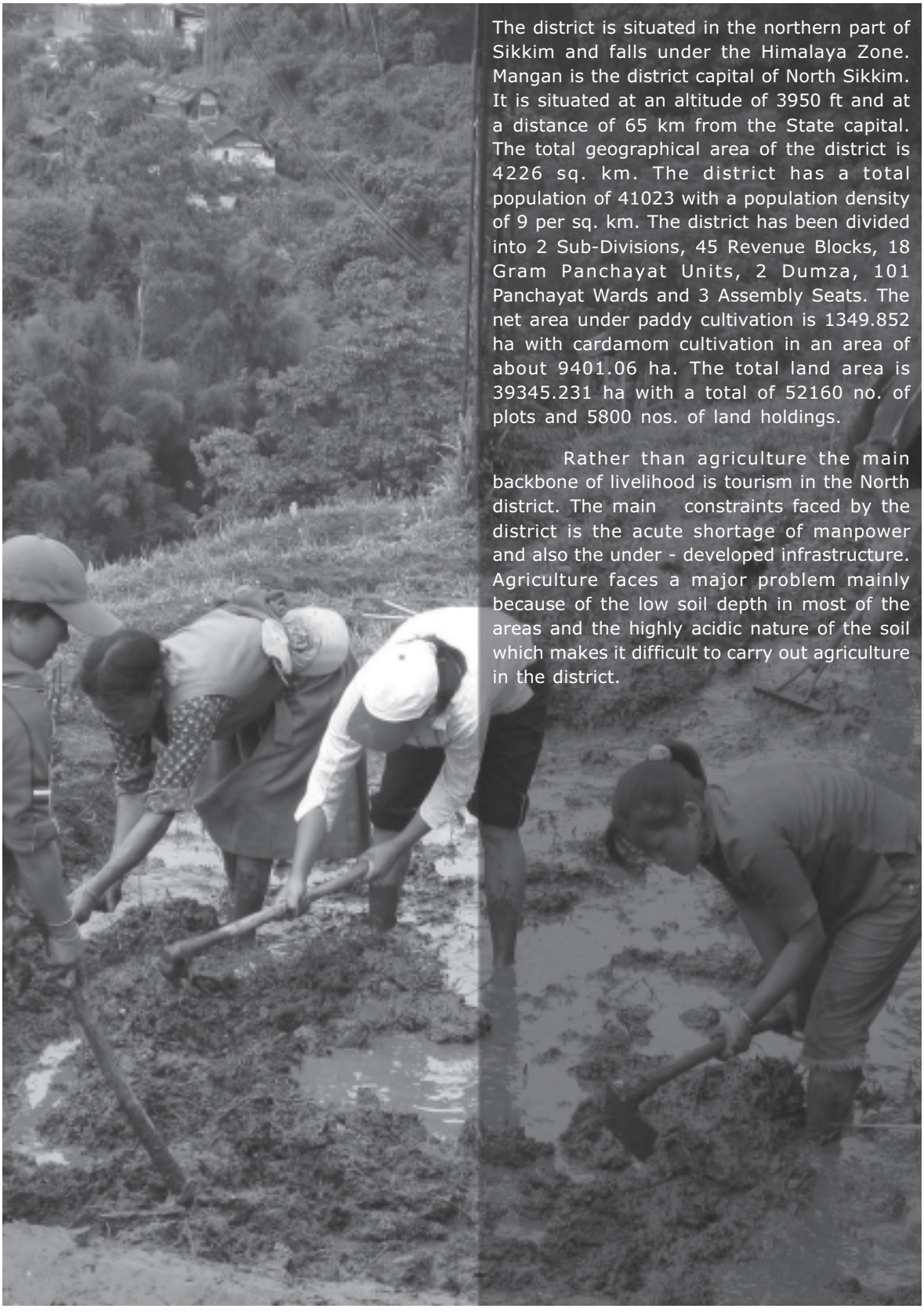
1. Agricultural Situation in North Sikkim



The district is situated in the northern part of Sikkim and falls under the Himalaya Zone. Mangan is the district capital of North Sikkim. It is situated at an altitude of 3950 ft and at a distance of 65 km from the State capital. The total geographical area of the district is 4226 sq. km. The district has a total population of 41023 with a population density of 9 per sq. km. The district has been divided into 2 Sub-Divisions, 45 Revenue Blocks, 18 Gram Panchayat Units, 2 Dumza, 101 Panchayat Wards and 3 Assembly Seats. The net area under paddy cultivation is 1349.852 ha with cardamom cultivation in an area of about 9401.06 ha. The total land area is 39345.231 ha with a total of 52160 no. of plots and 5800 nos. of land holdings.

Rather than agriculture the main backbone of livelihood is tourism in the North district. The main constraints faced by the district is the acute shortage of manpower and also the under - developed infrastructure. Agriculture faces a major problem mainly because of the low soil depth in most of the areas and the highly acidic nature of the soil which makes it difficult to carry out agriculture in the district.

1. Position in relation to longitude and latitude : 28^0E 88^0 E Longitudes

2. Altitude from MLS : 3950 ft

3. Boundaries of the district :

E: China	W: Nepal	N: China	S: S.Sikkim
NE: China	SE: East Sikkim	SW: West Sikkim	NW: China

4. Total population : 41023

5. Area of the district : 4226 sq km.

6. Population density : 9.70

7. Literacy percentage : 77.78%

8. Status of agriculture : Rain fed

9. Farmers :

a. Big farmers (above 5 ha) : 2841
b. Small farmers (1-2 ha) : 457
c. Marginal farmers (below 1 ha) : 1278
d. Agricultural laborers : 429

10. Farm labour mobility

a. Is sufficient farm labour available in the district: YES
b. If 'YES' whether they do work in near by or other districts also? NO

11. Physiographic details

North District of Sikkim is the largest in area comprising of 4226 sq.kms out of the total of 7096 sq.kms. The land comprises mostly of very steep side slopes moderately dissected with 20-40% forest cover and 25-50% snow cover. Most of the lands are per glaciated land, rocky cliffs with perpetual snow leaving very less land for agricultural purpose. The remaining land too has very low soil depth making it more difficult for agricultural purposes.

12. Climates

a. Tropical/Temperate
b. Pattern of rainfall in different months

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
M	M	M	M	H	H	H	H	M	L	L	L

c. The North District is often hit by bouts of hailstones in the beginning months of November and December with perpetual snowfall in the higher altitude area. The Lower altitude areas are often hit by heavy showers along with heavy hailstones.

d. Maximum and minimum temperatures recorded: Max: $30.38^{0\ Min}$: -5^{o}

e. Critical periods for plant growth in the district

Sl. No.	Crop	Critical periods of growth	Coinciding calendar month(s)
1.	Maize	Tasseling stage	
2.	Orange	Flower –bud differentiation	
3.	Cardamom	Flower-bud differentiation	

13. Soils

1. Soil group classifications present in the district
   1. Acid soils : Present (900sq km.)
   2. Soil fertility status (in general) : Nitrogen-low
      : Phosphorous-medium
      : Potassium-low

14. Irrigation

a. Area under irrigation : 866.97 ha

b. Irrigation potential : ha

c. Source of irrigation
   1. Rivers : Many but not used for irrigation purpose.
   2. Tanks : 25nos.
   3. Open Wells : NA
   4. Bore wells : NA
   5. Any other sources- Water shed : 5nos.

15. Land use and cropping intensity

1. Gross cropped area : 10,831 ha
2. Net Area sown - Paddy : 1349.852 ha
   - Orange : 80.78 ha
   - Cardamom : 9401.06 ha
3. Fallow lands : 1030.12 ha
4. Cultivable waste lands : No data available.
5. Forest cover : 2383.77 ha
6. Barren lands : 953.325 ha
7. Cropping intensity : Na

16. Major Crops

1. Principal crops, area, production and productivity

Sl No.	Crop	Area (ha)	Production (qtl.)	Productivity (qtl/ha)
1.	Cardamom	7552.24	15104.48	2.00
2.	Paddy	867.70	8998.05	10.37
3.	Maize	3726.16	51383.75	13.79
4.	Wheat	385.00	4184.95	10.87
5.	Finger millet	520.00	3759.60	7.23
6.	Pulses	170.00	1380.40	8.12
7.	Rapeseed & Mustard	222.40	1240.99	5.58
8.	Sikkim Mandarin	419.84	61450.00	16.00
9.	Soybean	400.00	3152.00	7.88

2.	Crop rotations followed	:	1.	Maize + Soybean + Wheat
			2.	Paddy
			3.	Finger Millet
3.	Crop sequences followed	:	1.	Wheat
			2.	Maize
			3.	Millet
4.	Inter-cropping done, if any	:	1.	Maize + Soybean
			2.	Maize + Beans
5.	Mixed cropping done, if any	:	1.	Maize + Soybean
			2.	Finger millet + Soybean
			3.	Orange + maize + ginger.
6.	Catch crops grown, if any	:	NA.	

17. Socio – economic Characteristics, Land Holding Pattern

1.	Average size of land holdings	:	1-2ha.
2.	Average fragmentation intensity	:	3-4nos.
3.	Existing land tenure system(s)	:	NA
4.	Source(s) of finance for farming	:	Rank 1. NA
			Rank 2. NA
			Rank 3. NA
5.	Main source of income for farmers	:	Rank 1. Cardamom
			Rank 2. Horticulture
			Rank 3. Animal Husbandry
6.	Commercial commodities produced	:	Rank 1. Cardamom
			Rank 2. Mandarin
			Rank 3. Potato

18. Farm Machinery and Implements available in the district

1.	Number of tractors	:	NA
2.	Number of power tillers	:	1 No.
3.	Number of carts	:	NA
4.	Types of implements –		
	a. Ploughs	:	125 Nos.
5.	Pumps (oil and electrical)	:	NA
6.	Harvesters and Threshers	:	17 nos. of threshers
7.	Sprayers and Dusters	:	NA

19. Livestock

1.	Cattle	:	8204
2.	Buffaloes	:	43
3.	Sheep and goats	:	1887 & 6223
4.	Pigs	:	5336
5.	Poultry and ducks	:	23830
6.	Production of milk	:	14892 liters.
7.	Production of meat	:	10189.07 MT
8.	Production of eggs	:	NA
9.	Production of wool	:	NA

20. Livestock holding patterns

a. Livestock holding pattern for big farmers

Sl. No	Animal/bird	Average nos. possessed	Rank according to nos. possessed
1.	Cattle	5-10	1
2.	Pigs	5-10	1
3.	Poultry	20-40	1

b. Livestock holding pattern for small farmers

Sl. No	Animal/bird	Average nos. possessed	Rank according to nos. possessed
1.	Cattle	2-5	2
2.	Pigs	2-5	2
3.	Poultry	10-20	2

c. Livestock holding pattern for marginal farmers

Sl. No	Animal/bird	Average nos. possessed	Rank according to nos. possessed
1.	Cattle	1-2	3
2.	Pigs	1-2	3
3.	Poultry	5-10	3

d. Livestock holding pattern for agricultural labourers

Sl. No	Animal/bird	Average nos. possessed	Rank according to nos. possessed
1.	Cattle	-	-
2.	Pigs	-	-
3.	Poultry	-	-

e. Average yields of various animals and birds in the district.

Sl. No.	Animal/bird	Average yield (Specify Units)
1.	Poultry	23830 nos.
2.	Ducks	5336 nos.

21. Research Resources : NA

22. Agricultural Marketing Status and Constraints

1. Ways of disposal of farm produce and bye-products: Most of the farm produce are produced for self consumption only and some for the local market.

Sl No.	Major Farm produce and by –products	Marketing channel	Bye product (if any)	Marketing channel
1.	Cardamom	Local market	-	-
2.	Orange	-do-	-	-

2. Whole sale and retail markets in the district :
   a. Wholesale markets: NA
   b. Retail markets: NA
3. Major modes of transport to markets:
   1. Road
4. Available/commonly used conveyance facilities (roads/waterways) to market:
   1. Road
   2. Foot paths.

23. Agro-climatic Zones in the state and district:

Alpine zone, Temperate zone, Sub Tropical Zone.

2. Agricultural Situation in West Sikkim

West District of Sikkim headquartered at Gyalshing is geographically situated at the extreme west of the Sikkim State. The districts share its boundaries with Darjeeling district of West Bengal in the south, South District of Sikkim in the east, North district of Sikkim in North East and Kingdom of Nepal in the West. The district is watershed of the River Rangit and its tributaries. The district has the population of 133230 nos residing in 24,671 household. Three ethnic community viz. Lepcha, Bhutia and Nepali are the inhabitant of the district.

Agriculture in the district is well established. Major crops comprise of Large cardamom, Sikkim mandarin, Ginger, Tomato, Cole crops, other vegetables, Paddy, Mustard, Wheat, Soyabean, Urd, Buckwheat, Millet. The district is been emerging as the floriculture hub, the production of Rose, Lilium, Cymbidium have been started commercially. Agricultural land is situated at an elevation of 300-3000m from MSL but most of the cultivated land is below 1800m elevation. Agriculture on 30-50% slope is common but at an altitude above 1500m, land with >50% slope has also been brought under cultivation. The climate of the district varies from sub-tropical to Alpine depending upon the elevation of the place. Within the same catchment watershed of a stream, subtropical climate observed at the lower elevation while temperate climate prevails in the upper reaches of the stream. Mean annual rainfall varies from 2000-5000mm with intensity ranging from the drizzling to the torrential rain. Rainfall is heavy and well distributed from May-September, July being the wettest. Rainfall is moderate in other months; sometimes dry spell may prevail from the month of Dec-March. Due to wide variation in the sharp edged mountains in the district, large variation on the temperature and rainfall is obvious. Within the district some portion receives almost half the rainfall received at high rainfall zone. Relative humidity of 70 % maintained in the district except very few places. West Sikkim is a part of perhumid eco-system and falls within agro-ecoregion 17 (warm perhumid ecoregion with growing period >210 days) in the eastern Himalayas. The climate zones of the districts are Alpine type, Sub Alpine Type, Temperate Type, Sub Tropical type. The zones have different landuse pattern, cropping pattern and inhabitation. District is richly endowed with flora and fauna. The natural vegetation consist of trees, grasses and bushes.

1.	Position in relation to longitude and latitude:		$27^0$00'46" to $28^0$07'48"N Latitude and $88^0$00'58" to $88^0$55'25" Longitude
2.	Altitude from MSL	:	270m – 8580m from MSL
3.	Boundaries of the district		
	E: South District of Sikkim	W:	Nepal
	N: North District of Sikkim	S:	Darjeeling district of West Bengal
	NE: North District	SE:	Darjeeling district & South District of Sikkim
	SW: Darjeeling district	NW:	North District & Nepal
4.	Total population	:	1, 23,256
5.	Area of the district	:	1116 sq km
6.	Population density	:	106
7.	Literacy percentage	:	58.80%
8.	Status of agriculture	:	Rainfed and Irrigated

9. Farmers (holding)

a.	Big farmers	:	18000
b.	Small farmers	:	13000 (nos)
c.	Marginal farmers	:	25000
d.	Agricultural labourers	:	7.72 percent

10. Farm labour mobility

a. Is sufficient farm labour available in the district: NO

b. If 'No' from which places do they come from? New jalpaiguri district of West Bengal and part of Bihar

11. Physiography

The mountain terrain of West Sikkim consist of the tangled series of interlacing ridges, rising one above the other, from south to the foot of the high peaks which mark the abode of snow in the north. National Bureau of soil survey and Land Use Planning have divided the terrain into 9 groups or the part viz. Summits and the Ridges, Escarpment, Very steep Slope (>50 %), Steep Slope (30-50 %), Moderately steep slopes (15-30%), Narrow valleys (<15%), cliff and precipitous slopes, Zone of glacial drifts/moraines/boulders, perpetual snow. Based on the degree of slope, vegetation and geology above nine categories are grouped into five major physiographysical division viz. Summit and Ridges, Side slope of the hills, valleys, rocky cliff

and glacial zone. The trend of the mountain system viewed as a whole is in a general East-West Direction. Main ridges run in North-south direction or east-west direction. The district being a part of the inner range of mountains of Himalayan system is a land of varied elevations extending from 300m at southern foot to 5500m in the northern part. In fact there is hardly flat land available.

12. Climates

a. Temperate/Sub-Temperate/Humid/Sub-Humid

b. Pattern of rainfall in different months

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
L	L	L	M	M	M	H	H	H	M	L	L

c. Special weather phenomenon in the district :

The weather of the district cannot be generalized. Every block or Gram panchayat units have the altitude range from low hills to high hills. Weather depends on the altitude and the aspect of the slope. High altitude areas are generally cold and the high rainfall zone than mid and the low hills. District experience the hailstorm during the month of Feb-April and Oct-November

d. Maximum and minimum temperatures recorded: Max: 32^0C Min: Less than 0^0C

e. Critical periods for plant growth in the district

Sl. No.	Crop	Critical periods of growth	Coinciding calendar month(s)
1.	Paddy	Seedling stage Maximum tillering stage Panicle initiation stage Flowering stage Soft dough or milky stage	June-July July August Sept October
2.	Maize	Seedling Tasselling Silking Dough	March May Last wk of May June
3.	Mustard	Pre flowering stage Pod filling stage	Jan-Feb march
4.	Wheat	Crown root initiation jointing Boot leaf Flowering stage Milky & Dough	December Jan February
6.	Soyabean	Early growth Post flowering and pod filling	July September
7.	Urd	Early growth Post flowering and pod filling	Sept-October December
8.	Cardamom	Pseudostem formation Flowering Capsule formation	April-May May-July June-August
9.	Sikkim Mandarin	New flush development Flowering Fruit setting	February March April
10.	Ginzer	Pseudostem development New Rhizome formation	April-May July- August

Note: The exact calendar cannot be given as the district has different, for eg.Maize in high altitude is 8 months long crop where as, at low altitude is 3-4 months.

13. Soils

1. Soil group classifications present in the district
    1. Sandy
    2. Gravely loam
    3. Rocky
2. Black soils : Nil
3. Red soils : 200ha
4. Alluvial soils : Not Present
5. Sandy soils : 1200ha
6. Laterite soils : Not Present
7. Saline and alkaline soils : Not Present
8. Acid soils : 11000ha
9. Soil fertility status (in general) : Medium

14. Irrigation

1. Area under irrigation : 2119.5ha
2. Irrigation potential : 10433.45ha
3. Source of irrigation
    1. Rivers : 9 nos
    2. Tanks : 500 nos (avg capacity 5000 Lts)
    3. Open wells : NA
    4. Bore wells : NA
    5. Any other sources : MI Channel: 49nos

15. Land use and cropping intensity

1. Gross cropped area : 17917.16ha
2. Net Area sown : 17077.95ha
3. Fallow lands : 840.16 ha
4. Cultivable waste lands : 840.16 ha
5. Forest cover : 2433.31 ha
6. Barren lands : 2529.11ha
7. Cropping intensity : 208

16. Major Crops: Paddy, wheat, Maize, Finger Millet, Buckwheat, Urd, Orange, Vegetables (cabbage, cauliflower, radish, beans), cardamom, Ginzer

1. Principal crops, area, production and productivity

Sl.No.	Principal Crops	Area (in ha)	Production (in tones) (1ton=1000kg)	Productivity (kg/ha)
1.	Paddy	5500	8350	1518.18
2.	Wheat	2100	3500	1666.67
3.	Maize	13000	21300	1638.46
4.	Finger Millet	1500	1450	953.33
5.	Barley	390	500	1282.05
6.	Buck wheat	770	750	974.02

7.	Urd	1800	1410	783.83
8.	Other pulses	1800	1410	783.1
9.	Rape and Mustard	1500	1140	760
10.	Soyabean	1350	1160	859.26
11.	Orange	2320	3260	1406
12.	Other Fruits	900	1400	1564
13.	Vegetables (Rabi)	960	4560	4758
14.	Vegetables (kharif)	910	3760	4185
15.	Vegetables (Off season)	870	3960	4525
16.	Potato	3260	13420	4110
17.	Other roots and tuber	120	580	4655
18.	Cardamom	2390	510	214
19.	Ginzer	1980	10580	5345
20.	Turmeric	180	580	3172

2. Crop rotations followed : 1. Paddy-wheat/mustard
   2. Maize-mustard/finger millet
   3. Potato- Pea
   4. Maize- Urd/other pulses
   5. Maize-Potato
3. Crop sequences followed : 1. Paddy- mustard/wheat/rabi potato/pea-Paddy
   2. Maize- Millet/soyabean/pulses-winter vegetable/Buck wheat
4. Inter-cropping done, if any : 1. Millet- Maize
   2. Orange- Maize/Ginzer/vegetables
   3. Urd on bund of Paddy field
5. Mixed cropping done, if any : 1. Potato- Pea 2. Mustard –wheat
6. Catch crops grown, if any : 1. Radish 2. Fodder maize
   3. Mustard for leaf

17. Socio-economic Characteristics, Land Holding Pattern

1. Average size of land holdings : 1.16 ha
2. Average fragmentation intensity : NA
3. Existing land tenure system(s) : Adhyia (Dividing the agriculture product into Equal halves by landlord and Tenant), Kutiya (Fixed amount of agriculture produce in kind is given by the landlord)
4. Source(s) of finance for farming : Rank 1. Subsidize and free input from Government
   Rank 2. Own resources
   Rank 3. Bank Loan/Loan from money Lender
5. Main source of income for farmers: Rank 1.Horticulture crop
   Rank 2. Agriculture crop
   Rank 3. Animal Husbandry

6. Commercial commodities produced: Rank 1. Cardamom
Rank 2. Ginzer
Rank 3. Orange

18. Farm Machinery and Implements available in the district

1.	Number of tractors		:	Nil
2.	Number of power tillers		:	5 nos
3.	Number of carts		:	2 nos
4.	Types of implements-			
	a.	Woden Plough	:	5178
	b.	Others (Mould board plough)	:	10nos
	c.	Power operated, seed fertilizer drill	:	257
	d.	Potato digger	:	221
	e.	Multi crop thresher	:	3
5.	Pumps (Oil and electrical)		:	& nos
6.	Harvesters and Threshers		:	& nos
7.	Sprayers and Dusters		:	5 & 4 nos

19. Livestock

1.	Cattle	:	47634 nos
2.	Buffaloes	:	1487nos
3.	Sheep and goats	:	2733 & 42429nos
4.	Pigs	:	12600 nos
5.	Poultry and ducks	:	105107nos
6.	Yak	:	1222 nos
7.	Production of milk	:	10695.35 thousand ltr
8.	Production of meat	:	1465.198 ton
9.	Production of eggs	:	155284.22 Dozen
10.	Production of wool	:	15.75 qtl

20. Livestock holding patterns

a. Livestock holding pattern for big farmers

Sl. No.	Animal/bird	Average nos possessed	Rank according to nos possessed
1.	Cow	4	4
2.	Pig	5	3
3.	Goat	8	2
4.	Poultry	25	1
5.	Ox	2	5

b. Livestock holding pattern for small farmers

Sl. No.	Animal/bird	Average nos possessed	Rank according to nos possessed
1.	Cow	2	4
2.	Pig	2	3
3.	Goat	3	2
4.	Poultry	5	1

c. Livestock holding pattern for marginal farmers

Sl. No.	Animal/bird	Average nos possessed	Rank according to nos possessed
1.	Cow	2	4
2.	Pig	4	3
3.	Goat	5	2
4.	Poultry	10	1

d. Livestock holding pattern for agricultural labourers

Sl. No.	Animal/bird	Average nos possessed	Rank according to nos possessed
1.	Cow	1	3
2.	Pig	1	3
3.	Goat	2	2
4.	Poultry	5	1

e. Average yields of various animals and bird in the district

Sl. No.	Animal/bird	Average yield (Specify Units)
1.	Cross breed Cow	1200 lt/animal/annum
2.	Local Cow	480 lt/animal/annum
3.	Graded Buffalo	
4.	Buffalo (Local)	630 lt/animal/annum
5.	Pig	90 Kg/animal/annum
6.	Poultry	1.5 kg/bird/45 days
7.	Goat	10 kg/annum

21. Research Resources

1. Number of research stations : Nil
2. Number of ICAR institutes/substations : Nil
3. Number of state seed farms : 3 nos
4. Number of private seed farms : Nil

22. Agricultural Marketing Status and Constraints

1. Ways of disposal of farm produce and bye-products

Sl. No.	Major Farm produce	Marketing channel	Bye product (if any)	Marketing channel
1.	Cardamom	Local vendor/Regulated market	-Nil-	-
2.	Ginzer	Local vendor/Regulated market/ SIMFED	-Nil-	-
3.	Orange	Local vendor/Regulated market/ SIMFED/Cooperatives	Squash	Food Preservation factory Singtam
4.	Vegetable	Local vendor/Regulated market/ SIMFED/Cooperatives	-	-
5.	Potato	Local vendor/Regulated market/ SIMFED/Cooperatives	-	-

2. Whole sale and retail markets in the district :

   a. Wholesale markets : 1. Nayabazar 2. Reshi 3. Geyzing

   b. Retail markets : 1. Soreng 2. Dentam 3. Sombaria

3. Major modes of transport to market:

   1. JEEP
   2. Truck
   3. Headload (Labour)

4. Available/commonly used conveyance facilities (roads/waterways) to market:
    1. Road
    2. Foot path from village for head load

23. Agro-climatic Zones

1. Tropical (<610 m from MSL)
2. Sub-tropical (610-1524 m from MSL)
3. Temperate (1524-4723 m from MSL)
4. Subalpine (2743- 3962 m from MSL)
5. Alpine (3692- 5182 m from MSL)

3.8 Agricultural Situation in Tripura

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1. Agricultural Situation in West Tripura

West Tripura district with its headquarter located at Agartala, which is also the capital of the State comprises of 6 Community Development Blocks. It has 10 towns and 274 inhabited villages. A diverse ethnic element among the people of the district is that there are two major racial elements, namely, the Indo- Aryans represented by the Bengalese and the Indo- Mongloids represented by a few communities like Tripuris, Reangs, Jamatis, Noatias, Kukis, Halams, Chakmas and Moghs. Besides these eight major tribes, there are ten more tribes. All the eighteen tribes are classified as Schedule Tribes. The economy of Tripura as a whole is predominantly agrarian and also is in the case of the district. Agricultural situation of the West Tripura district differs to some extent from other districts in regard to topography of soil, extent of rainfall, variation in temperature and humidity which has resulted in difference in cropping pattern also from that of other districts. The tribal population of the district resides in hills and practice Jhum cultivation whereas the plain land people grow single crop preferably paddy and some vegetables. The rainfall being the controlling feature for choice of crops posed as a problem in absence of minimum irrigation facilities. Another constraint for better agriculture practice is the minimum size of the operational holdings. The paucity of plain land available for cultivation of cereal crops is also an imperative reason for attaching more stress on exploring possibility of horticultural development on hill land and introduction of plantation crops of economic value like rubber, tea, black pepper, cocoa, coffee, cinnamon, cashew nut and other crops like wheat, groundnut, green gram, black gram etc., for maximum utilization of land by growing multiple crops. Cattle and poultry are the main livestock wealth of the district. Due to topographical feature the fisheries reserves in the district are limited to ponds, tanks etc.

1. Position in relation to longitude and latitude: Latitude between 23°16'North to 24°14'North and Longitude between 91° 09' East to 91°47' East
2. Altitude from MSL : 12.8 m
3. Boundaries of the district :

E: Dhalai district W: Bangladesh N: Bangladesh
S: Tripura South dist. NE: Dhalai district SE: Dhalai district
SW: Bangladesh. NW: Bangladesh

4. Total population : 15, 30,531
5. Area of the district : 3544 sq km
6. Population density : 431.87 persons/sq km
7. Literacy percentage : 77.3 %
8. Status of agriculture : Mainly rainfed

9. Farmers

a. Big farmers : 1,036
b. Small farmers : 41,354
c. Marginal farmers : 62,031
d. Agricultural labourers : 1, 68,519

10. Farm labour mobility

a. Is sufficient farm labour available in the district: Yes
b. If 'YES' whether they do work in near by or other districts also? No

11. Physiography

The terrain is made up of parallel hill ranges alternating with narrow valleys. In the Westernmost is the Baramura and part of Atharamura hill range is the loftiest being 224 m high. The low hills detached from the main ranges occur in the interior. The valleys which are not very broad are, in general, slightly undulating or flat. Thus the physiography can be divided into three broad topographic classes, viz, (1) hill ranges of Baramura and Atharamura, (2) undulating to hilly highland of narrow and broken plateau and (3) lowlands and river belts.

12. Climates

a. Humid/Sub-Tropical
b. Pattern of rainfall in different months

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low	Low	Low	Medium	Medium	High	High	High	Medium	Low	Low	Low

c. Maximum and minimum temperatures recorded: Max: 37°C Min: 5-6°C

d. Critical periods for plant growth in the district

Sl.No.	Crop	Critical periods of growth	Coinciding calendar month(s)
1	Winter *(Aman)* paddy	Panicle initiation, flowering	Sept10th-Oct20th, Sep 30th –Non15th
2	Summer *(Boro)* paddy	Panicle initiation, flowering	Jan 10th -Mar 20th, mar 1st –Apr 15th
3	Spring *(Aush)* paddy	Panicle initiation, flowering	July 10th –Aug20th, July30th –Sep 15th
4	Potato	Tuber initiation to tuber maturity	Dec 15th – Feb 15th
5	Black gram	Flowering and pod formation	Sep 25th –Oct 25th, Oct 5th –Nov 5th
6	Green gram	Flowering and pod formation	Sep 25th –Oct 25th, Oct 5th –Nov 5th
7	Maize *(kharif)*	Tasseling, Silking	May 15th- June15th,June 30th–July 30th
8	Maize *(rabi)*	Tasseling, Silking	Oct 15th–Nov 15th, Nov 30th – Dec 30th
9	Groundnut	Peak flowering, pegging to early pod formation	July30th –Sep15th, Aug 5th–Sep30th

** Prepared with the help of farmers' experience*

13. Soils

1. Soil group classifications present in the district
   1. Inceptisols
   2. Entisols
   3. Ultisols
   4. Alfisols
2. Soil fertility status (in general) : Medium

14. Irrigation

a. Area under irrigation : 21,840 ha

b. Irrigation potential : 15,989 ha

c. Source of irrigation

1. Rivers : 5 nos
2. Tanks/Pond : 335 nos
3. Open wells : NA
4. Bore wells : 2,670 nos
5. Any other sources : Overflow : NA

15. Land use and cropping intensity

1. Gross cropped area : 1, 92,941 ha
2. Net area sown : 1, 11,771 ha
3. Fallow lands : 4,203 ha
4. Cultivable waste lands : 12,617 ha
5. Forest cover : 1, 14,586 ha

6. Barren lands : 13,861ha
7. Cropping intensity : 176 %

16. Major Crops

1. Principal crops, area, production and productivity

Sl. No	Principal Crops	Area (in ha)	Production (in tones) (1ton=1000kg)	Productivity (kg/ha)
1.	Spring *(Aush)* rice	3493	6544	1874
2.	Winter *(Aman)* rice	59446	155238	2611
3.	Summer (*Boro)* rice	34215	88774	2595
4.	Wheat	342	677	1549
5.	Maize	540	504	933
6.	Potato	5280	93472	17170

2. Crop rotations followed : 1. Paddy-vegetable-paddy
   2. Aush paddy-aman paddy-winter vegetable
   3. Aman paddy-boro paddy
3. Crop sequences followed : 1. Paddy-potato
   2. Paddy-oilseeds
   3. Paddy-vegetables-pulses
4. Inter-cropping done, if any : 1. Paddy, Pulses
5. Mixed cropping done, if any : 1. Paddy + Mesta+ Sesamum+ Vegetable
   2. Potato + Pumpkin + Amaranthus
6. Catch crops grown, if any : 1. Vegetable, Sugarcane

17. Socio-economic Characteristics, Land Holding Pattern

1. Average size of land holdings : 0.56 ha
2. Average fragmentation intensity : NA
3. Existing land tenure system(s) : NA
4. Source(s) of finance for farming : Rank 1. SHG inter-lending
   Rank 2. Money lenders
   Rank.3.Cooperatives, Banks and other development organizations
5. Main source of income for farmers : Rank 1. Agriculture
   Rank 2. Livestock
   Rank 3. Fishery
6. Commercial commodities produced : Rank 1. Vegetables, Potato
   Rank 2. Paddy
   Rank 3. Poultry birds and Pig

18. Farm Machinery and Implements available in the district

1.	Number of tractors	:	101 nos
2.	Number of power tillers	:	303 nos
3.	Number of carts	:	nil
4.	Pumps (Oil and electrical)	:	NA and 05 nos
5.	Harvesters and Threshers	:	NA and 37 nos
6.	Sprayers and Dusters	:	2,525 and NA

19. Livestock

1.	Cattle	:	3,05,482 nos
2.	Buffaloes	:	3,384 nos
3.	Sheep and goats	:	1,203 & 1,72,412 nos
4.	Pigs	:	80,427 nos
5.	Poultry and ducks	:	3,04,478 & 2,74,053 nos
6.	Production of milk	:	4,20,46,574.802 ltr
7.	Production of meat	:	NA
8.	Production of eggs	:	615.62235 Lakh nos
9.	Production of wool	:	NA

20. Research Resources

1.	Number of research stations	:	3 nos
2.	Number of ICAR institutes/substations	:	1 nos
3.	Number of state seed farms	:	6 nos
4.	Number of private seed farms	:	NA

21. Agricultural Marketing Status and Constraints

1. Ways of disposal of farm produce and bye-products

Sl. No	Major Farm produce	Marketing channel	Bye product (if any)	Marketing channel
1.	Paddy	Producer-Consumer, Producer-Trader-Consumer, Producer-Miller-Trader-Consumers	-	-
2.	Vegetable	Producer-Consumer, Producer-Trader-Consumer,		
3.	Pineapple	Producer-Consumer, Producer-Trader-Consumer,	Juice, jam and jelly	NERAMAC, Dabur
4.	Potato	Producer-Consumer, Producer-Trader-Consumer,	-	-

2. Whole sale and retail markets in the district :
   (a) Wholesale markets :
      1. Khowai Sub-Division (6 Nos),
      2. Jirania Sub-Division (5 Nos),
      3. Teliamura Sub-Division (2 Nos),
      4. Mohanpur Sub-Division (3 Nos),
      5. Bishalgarh Sub-Division (8 Nos),
      6. Melaghar Sub-Division (8 Nos)
   (b) Retail markets :
      1. Khowai Sub Division (32 Nos)
      2. Jirania Sub Division (5 Nos),
      3. Teliamura Sub Division (34 Nos)
      4. Mohanpur Sub Division (42 Nos)
      5. Bishalgarh Sub Division (65 Nos)
      6. Melaghar Sub Division (45 Nos)
3. Major modes of transport to market:
   1. Mini truck
   2. Head load
   3. Drawing card
   4. Cycle, Van and Rickshaw
4. Available/commonly used conveyance facilities (roads/waterways) to market :
   1. Roads
   2. Waterways

22. Agro-climatic Zones

1. Various zones in the state :
   1. Humid Dissected Mount & Valleys
   2. Sub Humid
   3. Sub Humid Dennuded Hills
2. List the various zones in the district :
   1. Humid Dissected Mount & Valleys
   2. Sub Humid Dennuded Hills