INVENTORY SUPPORT, STRATEGIC PLAN AND SWOT ANALYSIS FOR AGRICULTURAL DEVELOPMENT OF LAWNGTLAI DISTRICT

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FORWARD

It gives me immense pleasure to learn that KVK, Lawngtlai is bringing out this valuable document entitled " Inventory Support, Strategic Plan and Vision 2020 for Agriculture Development of Lawngtlai District." KVK, Lawngtlai District is one of the youngest KVK, inaugurated on 5th August, 2008. I admire the untiring efforts rendered by Programme Coordinator, Subject Matter Specialists and other Technical Staff of KVK Lawngtlai for bringing out this publication shortly after the inception of the Kendra.

The concept of this document was actuated by Dr. V.Venkatasubramanian, Zonal Project Director, Zonal Project Directorate, Zone-III (ICAR), Umiam (Barapani), Meghalaya. During the Annual Zonal Workshop of Zone-III KVKs held on 15th – 17th September, 2008, it felt necessary for each and every KVKs to prepare and bring out a vision document following the release of the same by KVK, Papum-Pare.

This document illustrate the District Profile, the farming situation analysis, SWOT analysis of Agriculture and allied sector highlighting the problems diagnosed and proposed strategic plans.

I hope that this document will be great help and guide for the formulation of plan and programmes on agricultural sector of the district.

(Dr. O.P. SINGH)

ACKNOWLEDGEMENT

At the outset, we, the authors would like to express our deep sense of gratitude to Dr. OP Singh, Director of Agriculture (Research & Education), Govt. of Mizoram for his invaluable advice, constant inspiration, encouragement, esteemed guidance and timely support for the preparation of this document.

We express our gratefulness to Pu J.Lalzamliana, Deputy Director, Directorate of Agriculture (Research & Education), Govt. of Mizoram for his thoughtfulness and supervision for the smooth functioning of KVK, Lawngtlai.

We are very much indebted to Pu Rohmingthanga Colney, District Agricultural Officer, Lawngtlai District and his Staff for their active co-operation and support for this publication, and also their generosity for KVK, Lawngtlai.

We thanked the technical staff of DRDA, Lawngtlai for their generosity and providing secondary data of the District during the entire period of survey and compilation of the manuscript.

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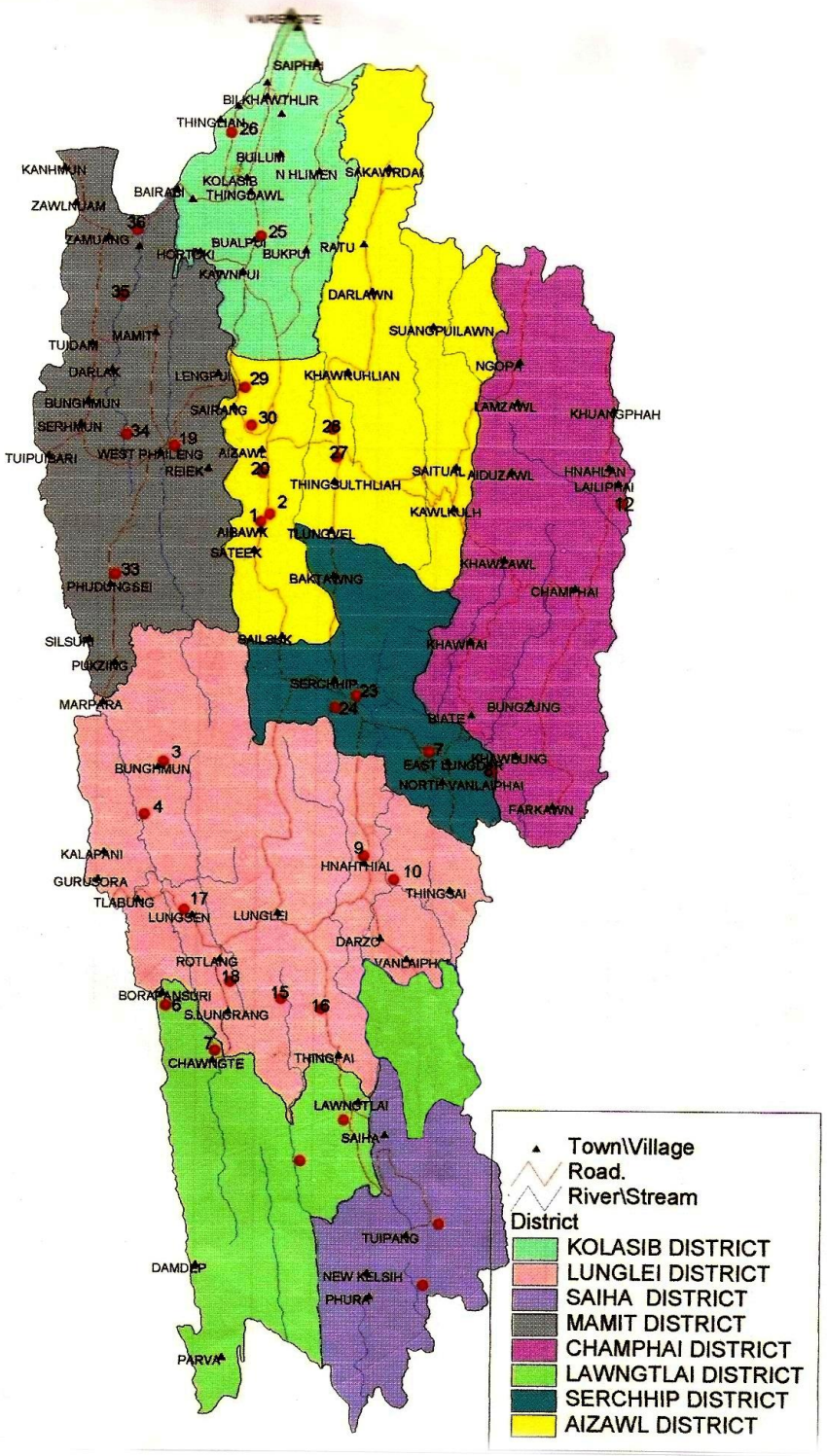
The authors would also like to express our special gratitude to Mr. Jerry, Field Consultant, DHO's Office, Lawngtlai District who helped us in gathering valuable secondary data.

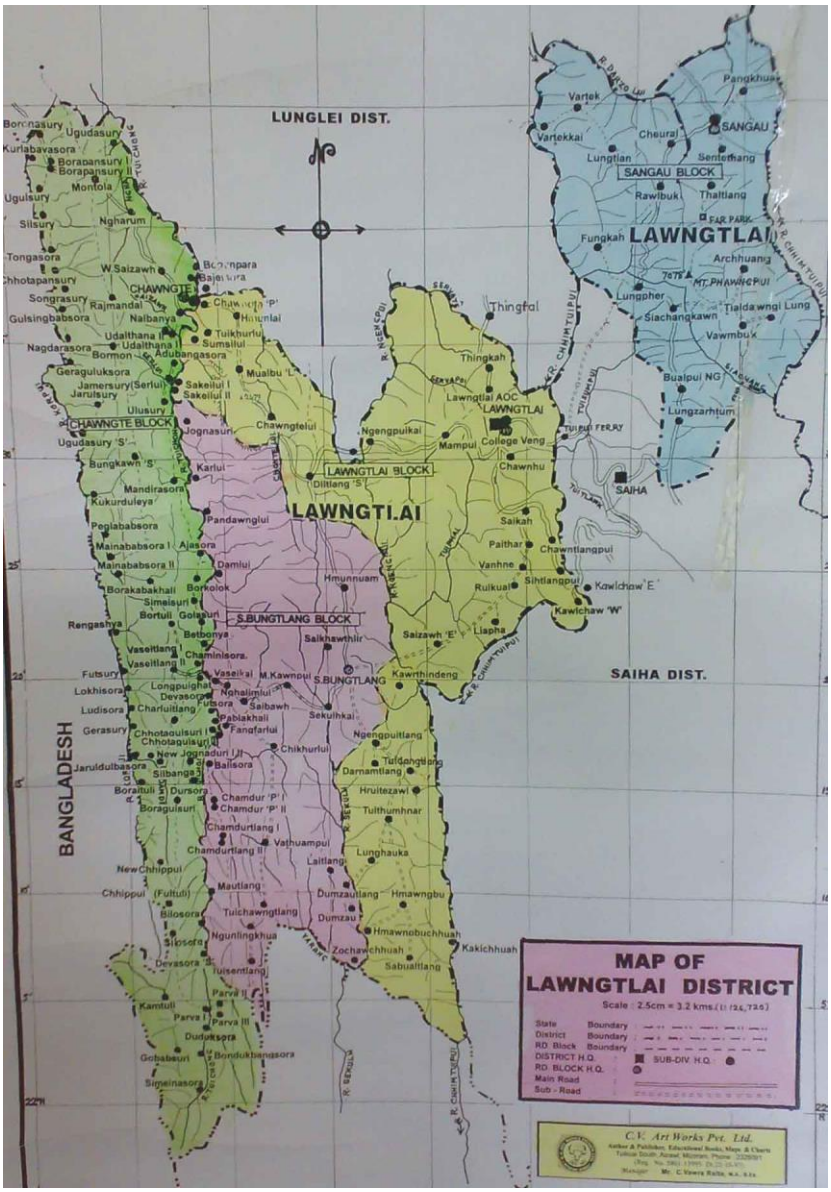
We are very indebted to all the farmers, VCPs of Lawngtlai District, prominent citizens, NGOs and various Farmers' Organizations for their active help and participation during the period of survey, collection of primary data and PRA exercises.

Last, but not the least, we thanked the Almighty God who gave us courage and perseverance during the entire period of survey and publication of this document.

Authors

Map of Mizoram showing Administrative Districts





Lawngtlai District.

DISTRICT PROFILE

PROFILE OF THE DISTRICT

Lawngtlai District is one of the eight administrative Districts in Mizoram. The District was created on 11th November 1998**.** Prior to 1998, Lawngtlai District was a part of undivided Chhimtuipui District comprising of Saiha and Lawngtlai. 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. This state of affairs kept on continuing till the British appeared on the scene in the late 18th century. On 21st February, 1888, Lai Chief Dokulha Chinzah, Chief of the then Fungkah Village raided the survey team and killed Lt. Steward, two other Englishmen and one army personnel. Punitive action was taken by the British and in the process, Lawngtlai District came under the direct control of the British after the expedition of 1889 by the British.

After India attained independence in 1947, the Lushai Hills Autonomous District Council was created under the provision if the Sixth Schedule in 1952 for the purpose to preserve and protect the identities of the Lushais. The District continued to remain as one of the districts of Assam, which later was changed in Mizo District in 1954. Along with the creation of Lushai Hills autonomous district Council in 1952, leaders of the Lai (it was then called Pawi), Mara (it was then called Lakher) and Chakma demanded a separate Autonomous District Councils as they felt they were distinct stock of tribes. Accordingly, both the Governments of India and Assam having taken all aspects of the political, social and economic lives of the Lai, Mara and Chakma into consideration ultimately created in April 1953, a separate Autonomous Regional Councils under the Sixth Schedule to the Constitution of India. The two Councils continued their existence side by side till the creation of the Union Territory of Mizoram in 1972, under the North Eastern Areas reorganization Act of 1971. Eventually the Mizo Autonomous District Council was abolished and the

erstwhile Pawi-Lakher Regional Council was trifurcated into three Autonomous District Councils viz. Pawi, Lakher and Chakma Autonomous District Councils under the same Act.

Geographical location and area:

The District is located in the South West part of Mizoram having international boundaries with Bangladesh in the west and Myanmar in the east. Lunglei and Saiha District bounded the district in the north and in the south respectively. Lawngtlai District covered an area of 2557 Sq.Km and it lies between 92.30^0 - 93^0 E Longitudes and 21.58^0 - 22.60^0 N latitudes. The District headquarters – Lawngtlai is connected by National Highway No.54 and it is about 296 Kms from Aizawl.

Demographic Profile :

As per 2001 Census, the population of the district is 73620 which account for 8% of the State population. The percentage Decadal growth rate (1991-2001) is 34.78, higher than the state averages of 29.18. The other important demographic indicators are detailed below :

Demographic features of Lawngtlai District :

Sl. No	**Particulars**	**Lawngtlai**
1	**2**	**3**
1	Total Population	1,00,180
2	Male	50794
3	Female	49386
4	Sex ratio (out of 1000 male)	972
5	Density (2001)	39

Source : Statistical handbook of Mizoram 2006

Socio-Cultural Background :

The main communities inhabiting Lawngtlai District are the *Lais, Chakmas, Bawm, Pang etc.* These are famous cultural heritage among such tribes. In the eastern side of the district where Lai communities are the main inhabitants, *Chawnglaizawn, Sarlamkai and Pawhlohtlawh* are the main cultural dances. In Chakma occupied area of the district, there are various tribes of backward classes. In these area, the main religion is Buddhism whereas in the eastern side i.e. Lai occupied area; Christianity is prevailing as the major religion. The common languages speaks in the district are Lai, Chakma and various dialects of other backward tribes i.e Pang, Bru, Bawm etc. These communities have different folk dances, habits and customs of their own. The common cultural dances of the Chakmas are Nua Jhumo Naach and Biju Naach.

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 amongst the eight districts in Mizoram.

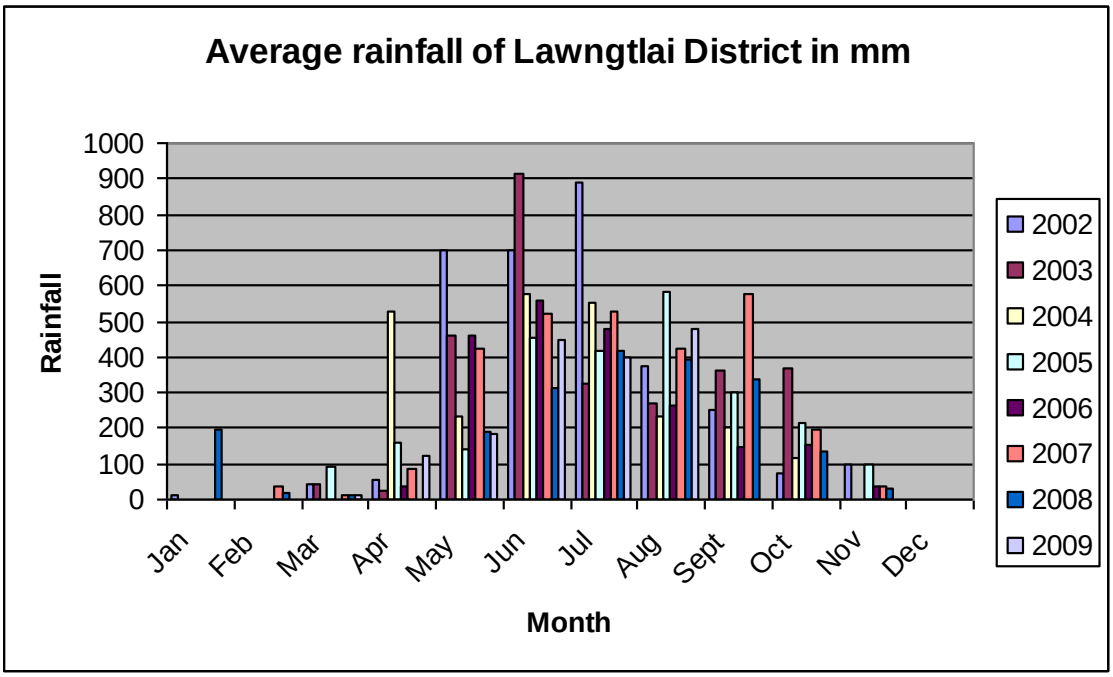
Climatic Condition :

Lawngtlai district has a pleasant climate. It is generally cool in summer and not very cold in winter. In winter the temperatures varies from 8 degree Celsius to 24 degree Celsius and in summer, it is between 18 degree Celsius and 32 degree Celsius. The western part of the district is lower in elevation compare to the eastern part, and hence it experiences a little warmer climate than the eastern part. 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.

Monthly Average rainfall of Lawngtlai District (2002-09) :

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2002	13	Nil	41	55	698	701	892	377	253	74	99	Nil
2003	Nil	Nil	42	27	462	916	323	269	365	367	Nil	Nil
2004	Nil	Nil	Nil	525	234	577	554	233	202	115	Nil	Nil
2005	Nil	Nil	89	160	140	457	416.4	582.1	302	217	97.7	Nil
2006	Nil	Nil	Nil	35	461	557	481	265	149	153	35	Nil
2007	Nil	35	11	86	423	519.5	525.5	421.1	579.5	195.5	36	Nil
2008	196	18.5	12	Nil	193	314.5	419.2	391.4	336.9	137.9	32.5	Nil
2009	Nil	Nil	12	123	183	449.9	400.7	478				

Source : Directorate of Agriculture and Minor Irrigation, Government of Mizoram.



Structure of the District Administration :

The district administration is at the hands of the office of the Deputy Commissioner and various development programmes are implemented mainly by the office of the Deputy Commissioner, DRDA and actively assisted by BDOs. The office of the Deputy Commissioner is headed by the Deputy Commissioner and he is assisted by Additional Deputy Commissioner, Sub Deputy Officer (Sadar), two assistant to Deputy Commissioner, Sub Divisional Magistrate. Judiciary is at the hands of Deputy Commissioner, Sub Divisional Officer (Sadar) and Sub Divisional Magistrate. All cases civil criminal are within their purview except some cases of customary in nature are within the purview of the District Council courts.

The district is divided into two rural development blocks for efficient implementation and monitoring of various developmental programmes of both the Central and the State Government. The following offices are function within both the R.D. Blocks.

LAWNGTLAI BLOCK : This block also constitutes a part of Lawngtlai District. Lawngtlai town is both the district and block headquarter. The following have been established :

i) Office of the Deputy Commissioner.
ii) District Rural Development Agency (DRDA).
iii) Block Development Office.
iv) Office of the Superintendent of Police.
v) District Civil Supply Office.
vi) Office of the Executive Engineer (PHE).
vii) Office of the Executive Engineer (PWD).
viii) Office of the Sub Divisional (P&E).
ix) Chief Medical Office.
x) District Agriculture Office.
xi) District AH.Veterinary Office.
xii) District Horticulture Office.
xiii) District Education Office.
xiv) Krishi Vigyan Kendra

Bungtlang ‘S’ R.D. Block has been recently inaugurated and Sub-Divisional Office (Civil) has also been come into force.

SANGAU R.D. BLOCK.

1. Block Development Officer.
2. Circle Officer, Agriculture Department.

CHAWNGTE R.D. BLOCK : This R.D. Block constitutes a part of Lawngtlai District. Its headquarter is at Chawngte. Within the block, the following offices have been established :

1) Sub-Divisional Office (Civil).
2) Block Development Office.
3) Range Office (Forest).
4) Soil Office.
5) Sub Divisional Office (PWD).
6) Sub Divisional Office (PHE).
7) Sub Divisional Office (Power & Electricity).
8) Sub Divisional Police Office.

RESOURCE INVENTORY OF THE DISTRICT

NATURAL RESOURCES :

Flora and Fauna

Lawngtlai District situated within topical belt. The forests are topical wet evergreen of mixed deciduous. The western belt is covered by thick forest. A banyan tree, Gulmohar tree, Champa and Bamboo, Numerous medicinal plant and herbs are found in this region.

Wild animals like tiger, elephant, wild-boars, bears, monkeys and different kinds of reptiles like python, lizard, tortoise and frogs are found in Ngengpui Wildlife Sanctuary. The population of these animals is gradually decreasing year by year because of illegal hunting, poaching, encroachment and practice of shifting cultivation. The district is endowed with natural beauty like Phawngpui National park.

The following table depicts the forest profile of the district.

Forest profile of Lawngtlai District.

Sl.No	Name of the region	Area in Sq.Km
1	1) Lai Autonomous district Council	**110**
	2) Ngengpui Wildlife Sanctuary	
	3) (Blue Mountain) National Park	**50**
	4) Phawngpui Safety reserve	**78**
	5) Supply Reserve	**45**
	6) Protected reserve	**70**
	7) Roadside Reserve	**27**
	8) Station reserve	**44**
	9) Revenue Reserve	**617**
	Sub Total	**1036**
2	Chakma Autonomous District Council	**465**
	1) Safety Reserve	**904**
	2) Supply Reserve	
	Total of LADC & CADC	**2405**

Source :- Office of the Deputy Commissioner, Lawngtlai.

Slope and Altitude :-

The region is characterized by the hilly rugged terrain, the ridges show serrated tops, which are highly dissected and separated by intervening 'V' shaped narrow valleys.The bill ranges aliged North-South direction and the slope aspects are mostly eastern and western with a few exceptions in some parts of the area. The hill side slopes of District are sleep to very steep and escarpment are common. The western side consists of numerous dissected low hills with strongly sloping to steep slopes. The biggest valley is Chamdur valley.

The Altitude of the area is generally increased towards the east. The highest peak in the district is Paithar Tlang with an altitude of 1466 metres above mean sea level. Other high peaks are Lungtat tlang (1180m) Mampuitlang (1157m) etc. The following table depicts slope aspects and altitude of Lawngtlai district.

Slope profile of Lawngtlai District :

Sl.No	Slope Category	Slope percent	Area	
			Ha	% to Geographical area
1	Nearly level to very gently sloping	0 – 3	120	0.06
2	Gently sloping to moderately sloping	3 – 10	2347.57	1.18
3	Strongly sloping	10 – 15	5147.50	2.59
4	Moderately steep to steep	15 – 25	11795	5.92
5	Steep	25 – 35	31652.50	15.9
6	Very Steep	35 - 50	56808.50	28.52
7	Very very Steep	50 – 100	56210	28.23
8	Very very Steep to escarpment	More than 100	35038	28.23
		TOTAL	199119	100

Source :- State remote Sensing centre, Aizawl

DRAINAGE SYSTEM :

The District has two basin viz. the eastern basin and western basin. The eastern basin is drained by south flowing river like Chhimtuipui, Ngengpui, Sekulh and their tributaries. The western basin is drained by Tuichawng river and it tributaries and Thega reverb that forms international boundary between India and Bangladesh.

Even though the region used to received surplus rainfall during the rainy season, perennial spring in this area is scarce, this is due to runoff and lithological structural condition of rock beds. Major part of agriculture is rain fed. The most important rivers are Tuichawng, Thega and Ngengpui rivers that drain the District is drain by the biggest river in Mizoram – Chhimtuipui river. It originates from the western part of Myanmar at an altitude of 2325 metres and flows in south direction. It enter Mizoram near Chapui village from which it takes the north direction making the international boundary between India and Myanmar and meets tiau River which flow in the opposite direction. Minor stream and springs include sekulh, sahri chikhurlui etc. owing to the steepness of the hillsides and the narrowness of the valleys, the river rise after heavy rain with wonderful rapidity and devastated majority of the crops in the valley.

Land use pattern :

The major land use identified within Lawngtlai District are built up land, Agriculture land. Forest, water bodies and other (current shifting cultivation) wetland rice cultivation is practiced in the flood plain of Chhimtuipui river, Tuichawng river, Ngengpui river and Thega river, river (orya sativa) is the only crop cultivated during the Kharif season. During Rabi season, some vegetable like mustards, cauliflowers etc., are cultivated in small patches of valley field in a scattered manner. Agriculture / Horticulture plantations like Orange, Banana, pineapple etc., have been practiced near habitation in various places. The following table depict land use pattern in Lawngtlai District.

Land use pattern of Lawngtlai District (area in hectares)

Sl.No	CATEGORY	AREA IN HECTARE	% TO TOTAL GEOGRAPHCAL AREA
1	2	3	4
1	BUILT UP LAND 1.1 Town 1.2 Village	 267.50 910.00	 0.13 0.46
2	AGRICULTURE LAND 2.1 Kharif	 1192.50	 0.59
3	FOREST 3.1 Evergreen/Semi evergreen forest 3.2 Old abandoned Jhum a) Misc. tree forest b) Bamboo forest 3.3 Forest Plantation 3.4 Young abandoned jhum/scrub	 43752.50 16640.50 41579.50 175.00 76750.50	 21.97 8.36 20.89 0.09 38.54
4	WATER BODIES 4.1 River/Stream/Lake	 1405.00	 0.71
5	OTHERS 5.1 Shifting cultivation 5.2 Land with scrub (barren)	 14192.50 2253.50	 7.13 1.13

Source : State Remote Sensing Centre, Aizawl

AGRICULTURE IN LAWNGTLAI DISTRICT:

The major crops in the district are rice, maize,sesamum, potato. In terms productivity, the average yields of principal crops are lesser than the state average. The production and productivity of principal crops are indicated below :

Production profile of principal crops of Lawngtlai District :

Sl.No	Crop	Area (in ha)	Dist. Production (in M.T)	Dist. Yield Kg/ha	State Yield Kg/ha
1	Rice	3374	2386	707	1936
2	Maize	348	49	284	1935
3	Sesamum	107	25	233	614
4	Potato	8	4	500	2460
5	Soyabean	21	11	523	992
6	Rice bean	12	5	416	1009
7	Cow pea	23	12	521	837
8	Sugar cane	5	3	600	25968

Source : District Agriculture Office, Lawngtlai

Pattern of Land Holding :

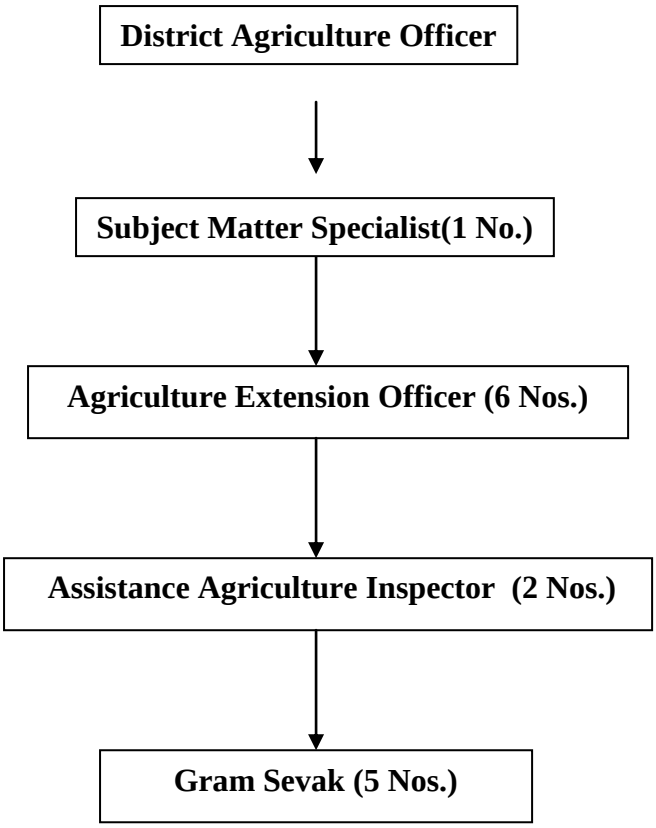
The district witnessed unequal distribution of land holding. This shows the marginalization of the rural people as shown below :

Pattern of land holding in Lawngtlai District :

Sl.No	**Classification**	**Holdings (nos)**	**% to total holding**	**Area (ha)**	**% to total area**
1	Less than 1 ha	14232	60.43	3613	23.48
2	Between 1 to 2 ha	8438	35.83	9281	60.33
3	Between 2 to 4 ha	835	3.54	2091	13.59
4	Between 4 to 10 ha	41	0.17	315	2.05
5	Above 10 hectares	7	0.03	85	0.55
	Total	23553	100	**15385**	100

Source : District Agriculture Office, Lawngtlai.

ORGANISATION CHART OF AGRICULTURE DEPARTMENT UNDER LAWNGTLAI DISTRICT.



Infrastructure facility of District Agriculture Officer, Lawngtlai District :

Sl.No	Type of Infrastructure	Utility	No./ Area	Capacity	Present status
1	*2*	*3*	*4*	*5*	*6*
1.	Office Building 1) DAO	Office	1 No.	-	Needs repair
2.	SDAO's quarter	Residence	1 No.	-	Needs repair
3.	G/S quarter	Residence	1 No.	-	Needs repair
4.	Driver Lodge	Residence	1 No.	-	Needs repair
5.	Group 'D' quarter	Residence	1 No.	-	Needs repair
6.	Staff Lodge	Residence	1 No.	-	Needs repair
7.	Godown	Store House	1 No.	-	Needs repair
8.	Farms	Demonstration	1 No./2 Ha.	-	Well maintained

Fig 5.A Present Trend about growth in production of Rice in Lawngtlai District

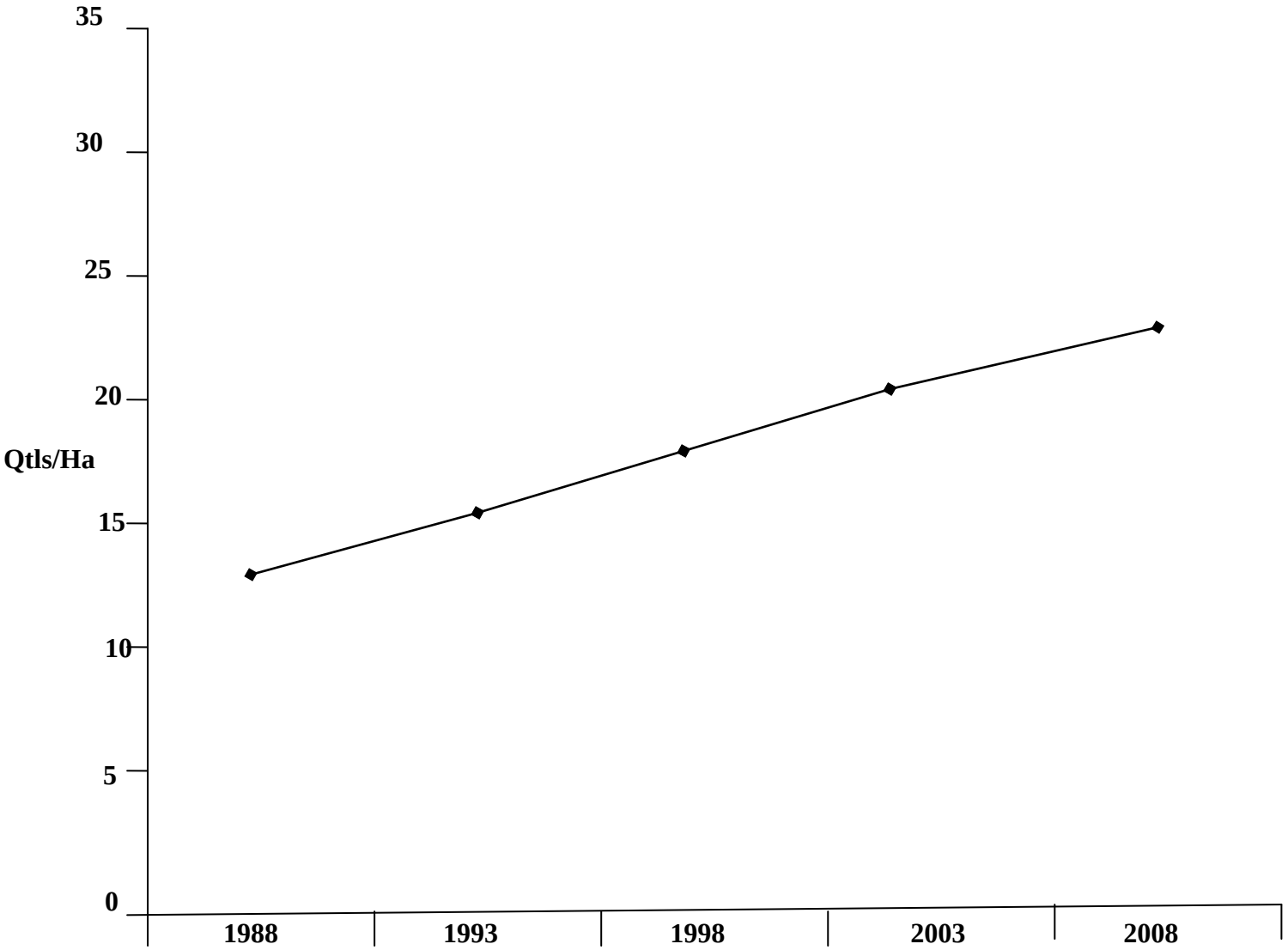


Fig 5.B Present Trend about growth in production of Pulses in Lawngtlai District

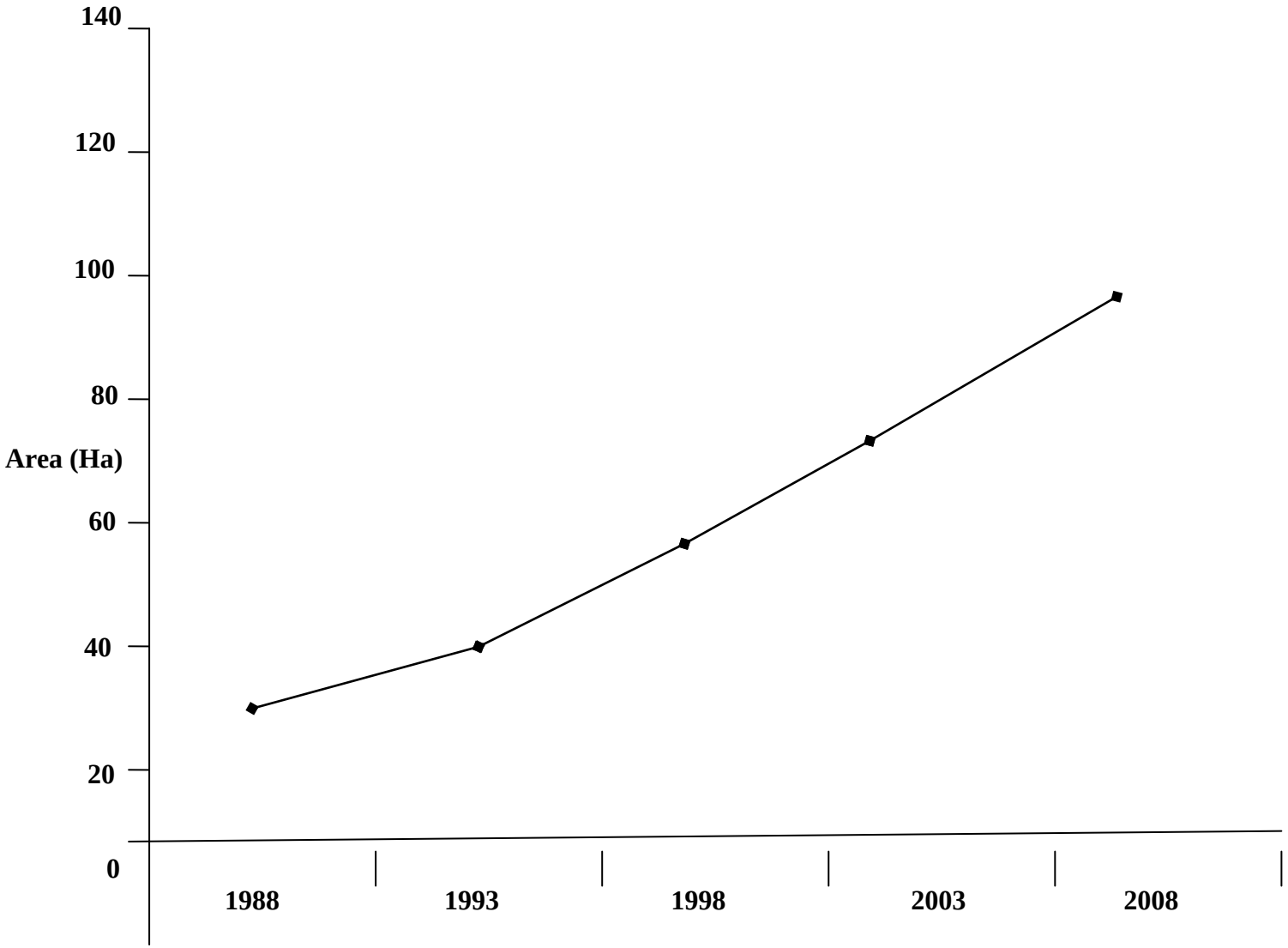
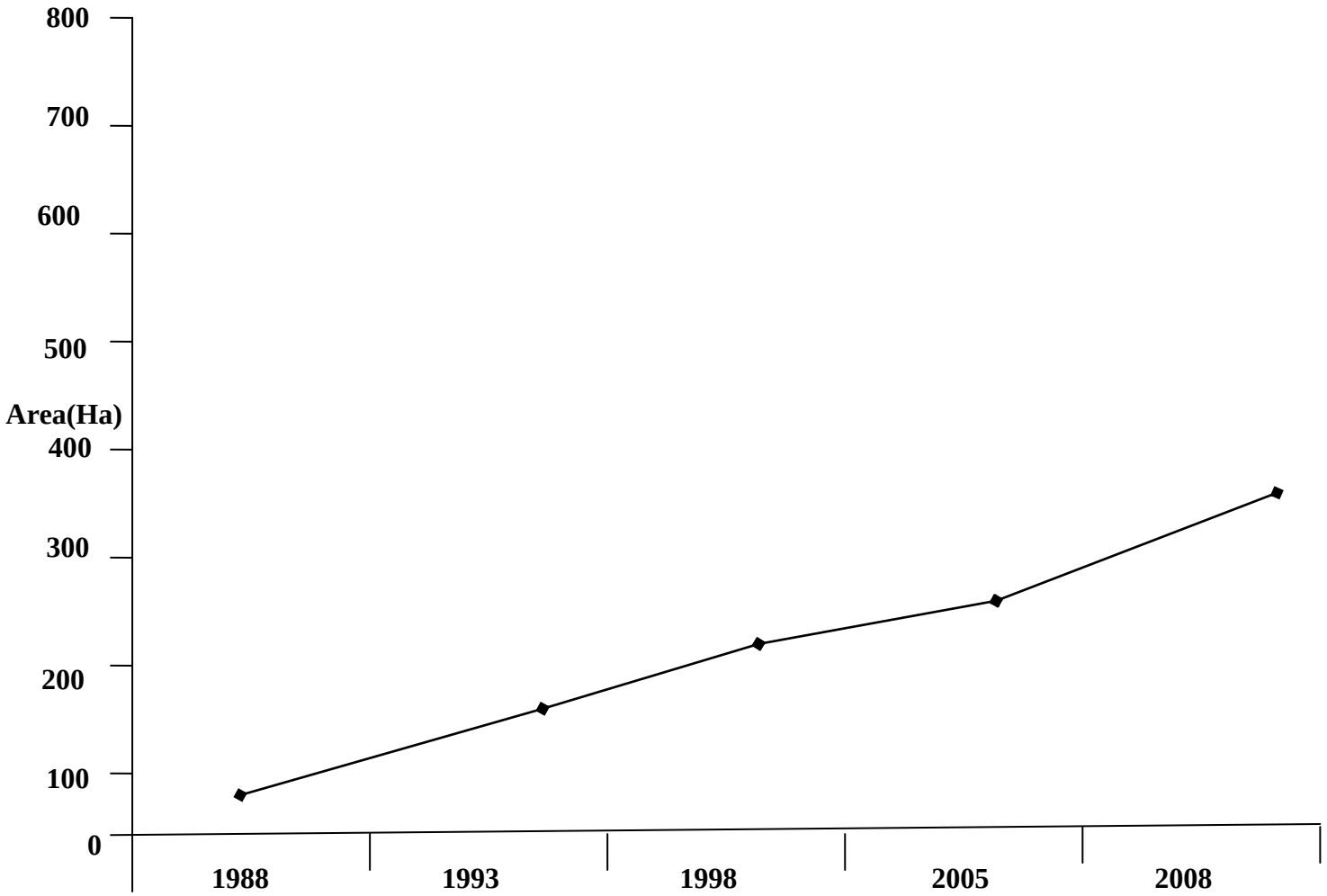


Fig 5.C Present Trend about growth in production of Sugarcane in Lawngtlai District



IRRIGATION :

Agriculture in the district depends mainly upon rainfall. The net area irrigated to net area sown is only about 20% which is which is well below the state average. Major rivers like Tuichawng, Chhimtuipui and Thega and minor rivers like Dil lui, Sekulh and chikhur lui flowed through the district. Due to her topography only minor irrigation is feasible. The area is rainfall and exploitation of ground water resource is still inadequate. Source wise net area irrigated in 2001 – 2002 is detailed below :

Irrigation source in Lawngtlai district (area in ha) :

Sl. No	**Particulars**	**Lawngtlai**		**Mizoram**	
		Area in ha	% to total area	Area in ha	% to total area
1	Total net sown area	4185	19.8		
2	Lift irrigation			370	4.5
3	River diversion schemes	837	0.85	3521	90.5

Source : District Agriculture Office, Lawngtlai

ANIMAL HUSBANDRY IN LAWNGTLAI DISTRICT:

Poultry, piggery and dairying are the major activities in the district in addition to agriculture. People take up animal rearing mainly to supplement their meager income from agriculture. The livestock profile of the district is detailed below :

Livestock :

Cattle : 2183 nos

Buffaloes : 300 nos

Sheep and goats : 117 & 2575 nos

Pigs : 10,110 nos

Poultry and ducks : 1,99,299 & NIL nos

Production of milk : 70-100 ltrs/ day

Production of meat : 589 ton

Production of eggs : 60,00,000 nos

Production of wool : NIL

Piggery of nondescript breed

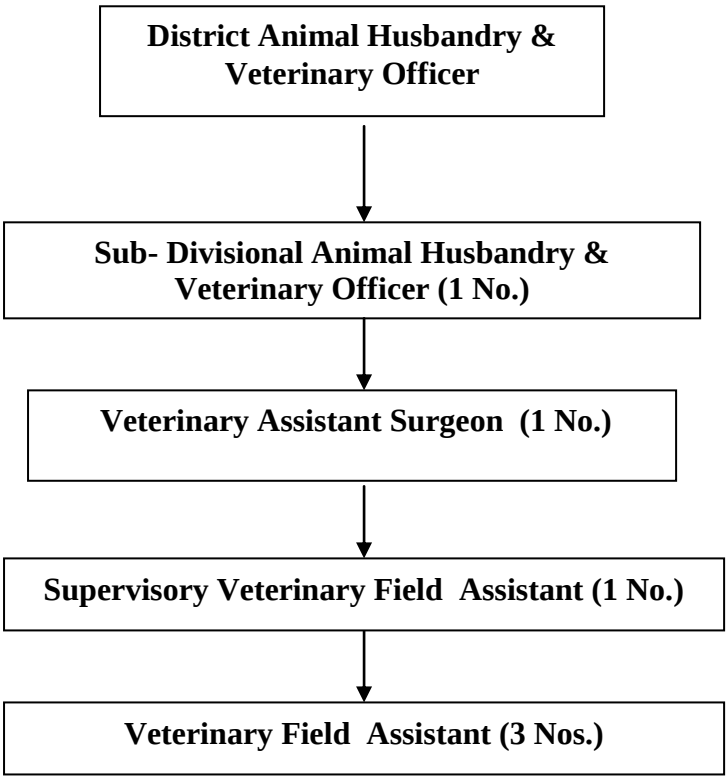
Traditional rural method of piggery

Small scale poultry in rural area

Infrastructure facility of District Veterinary Officer, Lawngtlai District

Sl.No	Type of Infrastructure	Utility	No./ Area	Capacity	Present status
1	*2*	*3*	*4*	*5*	*6*
1.	Office Building				
	i) DVO	Office	1 No.	-	Good
	ii) SDVO	-	-	-	condition
	iii) Dispensary	Dispensary	1 No.	-	-
				-	Attached to
	iv) Rural Animal Health	-	1 No.	-	DVO's Office
2.	Centre(RAHC)				Good condition
	Farms	Cattle	1 No.	-	
	i) Cattle breeding farm	breeding	1 No.	-	
	ii) Pig breeding farm	Pig breeding	1 No.	-	In good operation
	iii) Poultry farm	Poultry production			In good operation
					In good operation

ORGANISATION CHART OF A.H & VETY DEPARTMENT UNDER LAWNGTLAI DISTRICT.



HORTICULTURE IN LAWNGTLAI DISTRICT:

The major horticultural crops of Lawngtlai District are banana, pineapple, and different citrus crops such as Assam lemon, pummelo, hatkora and oranges. Different vegetables such as Chillies, brinjal, pumkin, snake gourd, bitter gourd, lady's finger, ash gourd, cucumber etc., are intercropped with paddy in the jhum land. Vegetables such as tomato, French bean, carrot, radish, French mustard, cabbage and cauliflower are important rabi crop.

Infrastructure facility of District Horticulture Officer, Lawngtlai District

Sl.No	Type of Infrastructure	Utility	No./ Area	Capacity	Present status
1	*2*	*3*	*4*	*5*	*6*
1.	Office Building	Office	1	-	Good condition
	i) DHO Office	-	No.	-	
	ii) ADHO	Office	-	-	-
2.	Office	Training	1No.	50	Good condition
3.	iii) HEO's/Circle Office	-	1No. -	-	Good condition
	Training Hall				Needs construction of Circle Office at Sangau & Chawngte
	Others				

Fig. Present Trend about growth in production of Ginger in Lawngtlai District

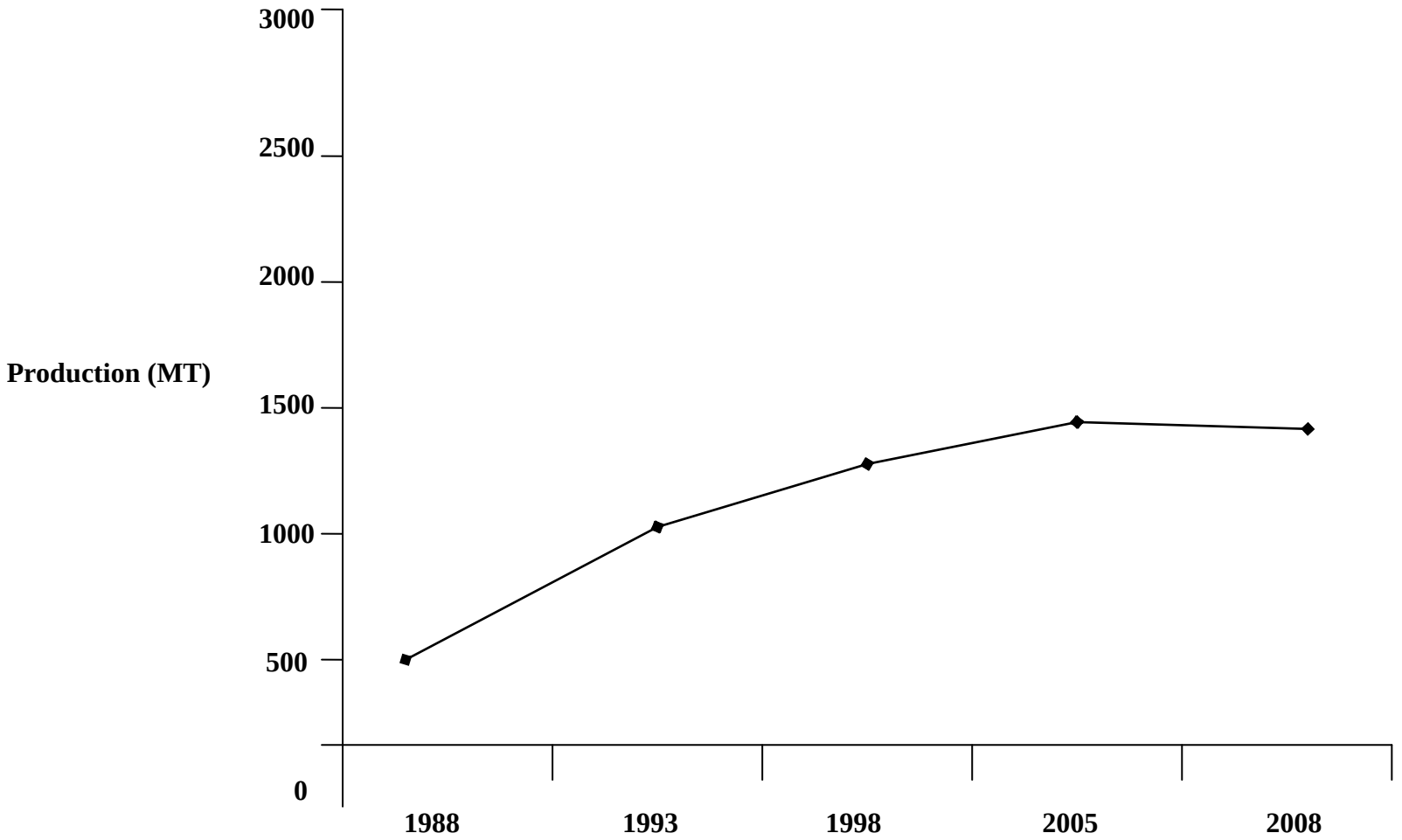


Fig. Present Trend about growth in production of Potato in Lawngtlai District

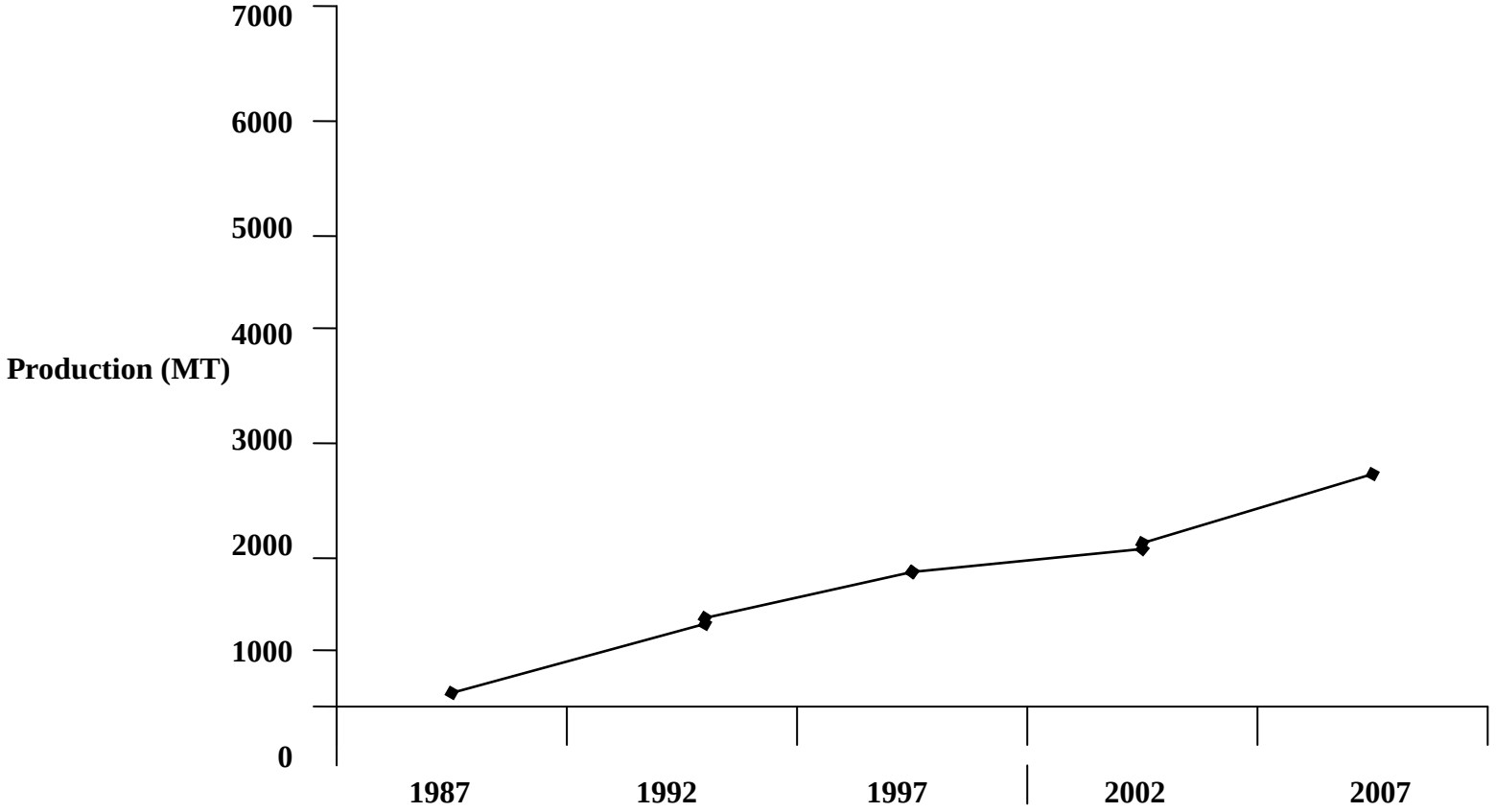


Fig. Present Trend about growth in production of Banana in Lawngtlai District

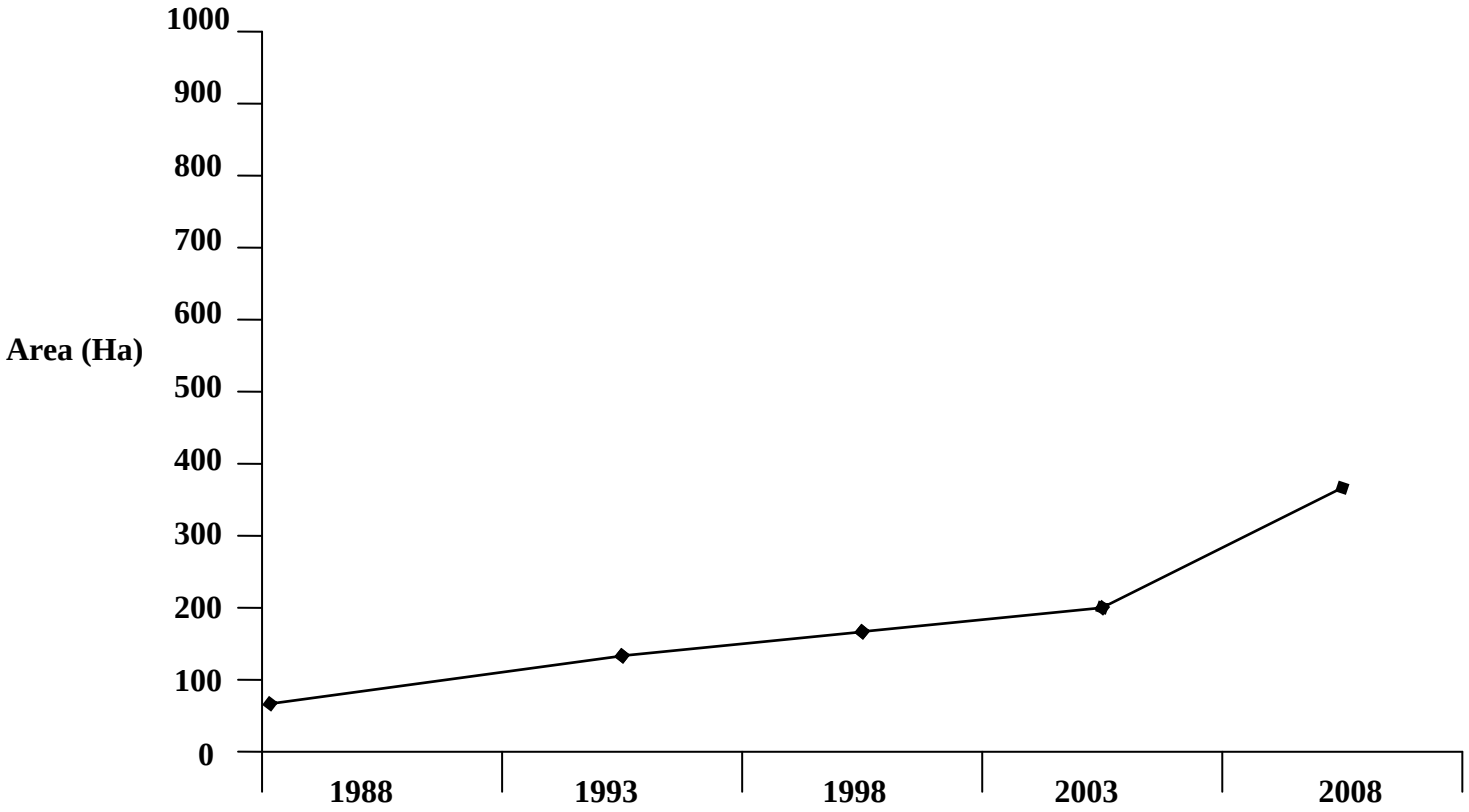
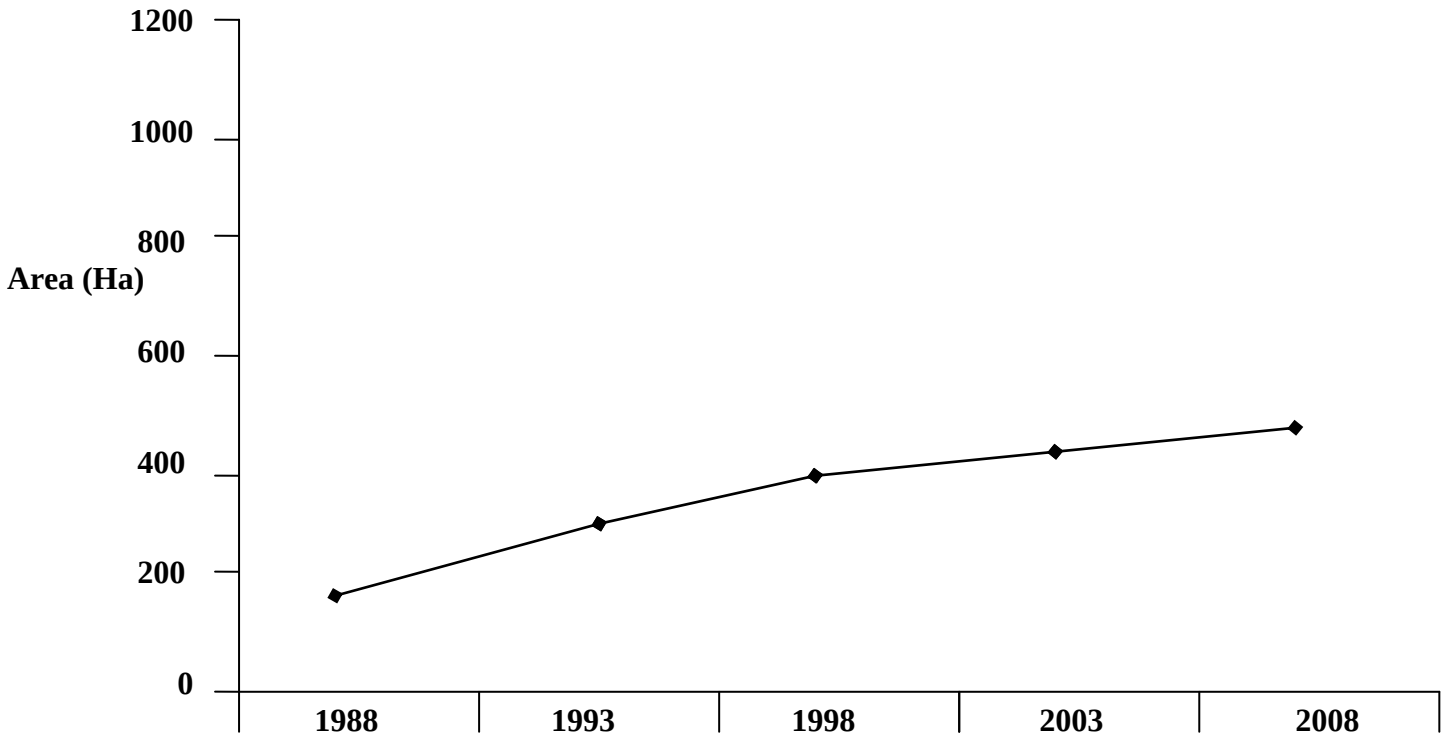
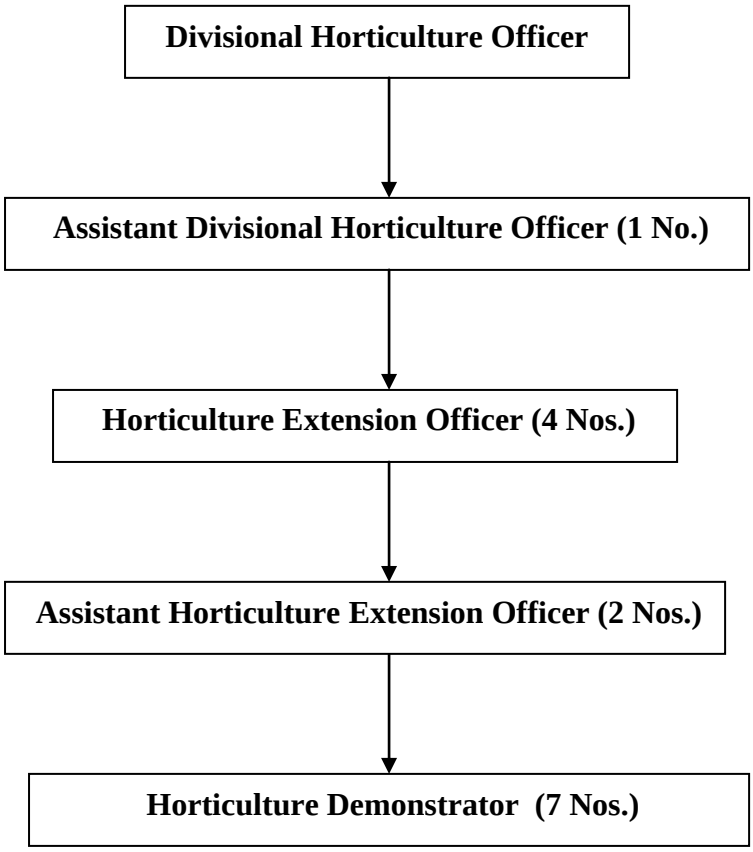


Fig. Present Trend about growth in production of Citrus in Lawngtlai District



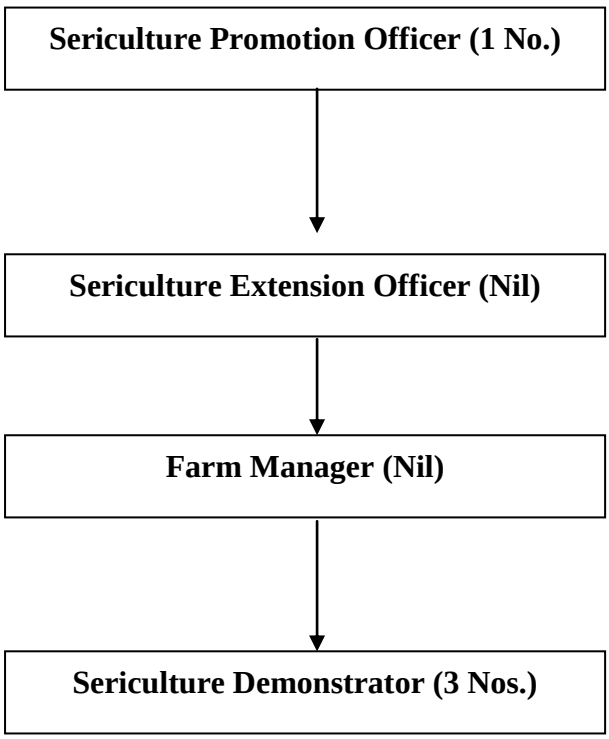
ORGANISATION CHART OF HORTICULTURE DEPARTMENT UNDER LAWNGTLAI DISTRICT.



SERICULTURE IN LAWNGTLAI DISTRICT:

Silk rearing is not popular in Lawngtlai District. However Department of Sericulture is setting up their establishment headed by Sericlture Promotion Officer. The department is initiating popularization of mulberry and eri silk production.

Fig. ORGANISATION CHART OF SERICULTURE DEPARTMENT UNDER LAWNGTLAI DISTRICT.



Infrastructure facility of Sericulture Promotion Officer, Lawngtlai District :

Sl.No	Type of Infrastructure	Utility	No./ Area	Capacity	Present status
1	*2*	*3*	*4*	*5*	*6*
1.	Office Building	Office	1	-	Good
2.	(SPO)	Store	1	-	condition
3.	Godown	Cocoon	2	-	- do -
4.	(attached to Office) Cocoon Rearing Centre (CRC) Staff quarter	rearing -	-	-	- do - -

Ongoing Extension and Development Schemes in the District

ONGOING EXTENSION AND DEVELOPMENT SCHEMES IN THE DISTRICT

Sl. No.	Name of Scheme	Period
1	AGRICULTURE	
	SUBACS WDPSCA NWDPRA IWDP AMDP ICDP IPM OPDP RKVY	2007 – 2012 2006 – 2011 2007 – 2012 2007 – 2012 2002 – 2006 2002 – 2006 2006 – 2007 2006 – 2007 2002 – 2007
2	HORTICULTURE	
	Technology Mission	2007 – 2012
3	ANIMAL HUSBANDRY & VETERINARY	
	National Project on Rinderpest Eradication (NRPE) Integrated Piggery Development Project(IPDP) National Cattle & Buffalo Breeding Project (NCBBP) Integrated Cattle Development Project (ICDP) Assistance to State for Control of Animal Diseases(ASCAD) Bio-Gas Development Project	2007 – 2012 2007 – 2012 2007 – 2012 2007 – 2012 2007 – 2012 2007 – 2012
4	SERICULTURE	
	Development of Mulberry Sericulture under special SGSY	2007 – 2012
5	FISHERY	
	Development of Riverine Fisheries (Inland capture Fisheries) Development of Cold Water Fisheries Feed seed Production-cum-Farming Fresh water Agriculture & Development of Water-logged area	2007 – 2012 2007 – 2012 2007 – 2012 2007 – 2012

ORGANISATION CHART OF KRISHI VIGYAN KENDRA, LAWNGTLAI DISTRICT.

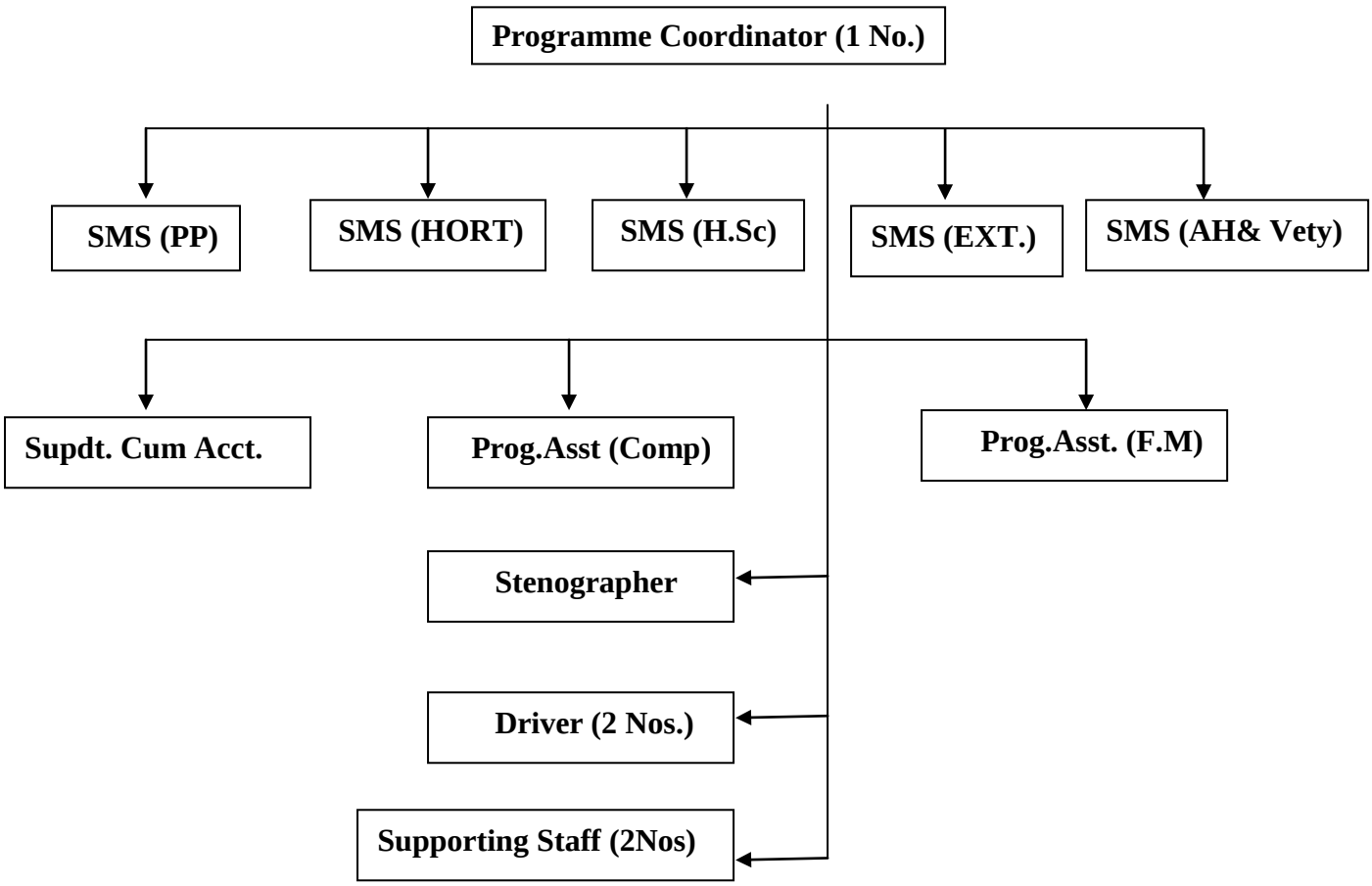


Fig.4.5: ORGANISATION CHART OF FISHERIES DEPARTMENT UNDER CHHIMTUIPUI DISTRICT.

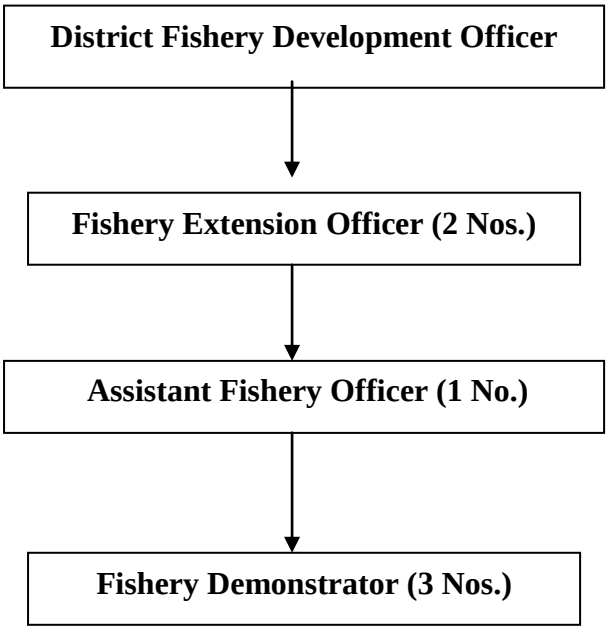


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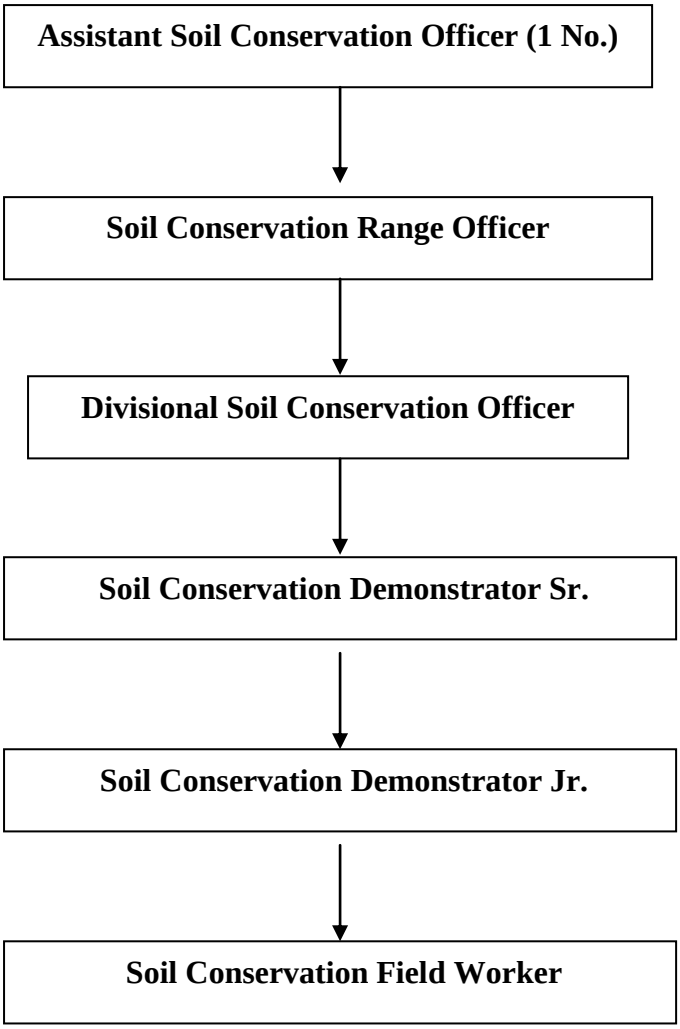
Fig.4.6: ORGANISATION CHART OF SOIL CONSERVATION DEPARTMENT UNDER LAWNGTLAI DISTRICT.



Information on infrastructure availability of Agriculture & allied departments (District Level)

A. AGRICULTURE

Sl.No	Type of Infrastructure	Utility	No./ Area	Capacity	Present status
1	*2*	*3*	*4*	*5*	*6*
1.	Office Building 2) DAO	Office	1 No.	-	Needs repair
2.	SDAO's quarter	Residence	1 No.	-	Needs repair
3.	G/S quarter	Residence	1 No.	-	Needs repair
4.	Driver Lodge	Residence	1 No.	-	Needs repair
5.	Group 'D' quarter	Residence	1 No.	-	Needs repair
6.	Staff Lodge	Residence	1 No.	-	Needs repair
7.	Godown	Store House	1 No.	-	Needs repair
8.	Farms	Demonstration	1 No./2 Ha.	-	Well maintained

B. HORTICULTURE

Sl.No	Type of Infrastructure	Utility	No./ Area	Capacity	Present status
1	*2*	*3*	*4*	*5*	*6*
1.	Office Building i) DHO Office ii) ADHO	Office - Office	1 No. -	- - -	Good condition - -
2.	Office	Training	1No.	50	Good condition
3.	iii) HEO's/Circle Office	-	1No. -	-	Good condition
	Training Hall				Needs construction
	Others				of Circle Office at Sangau & Chawngte

C. A.H & VETY DEPARTMENT

Sl.No	Type of Infrastructure	Utility	No./ Area	Capacity	Present status
1	*2*	*3*	*4*	*5*	*6*
1.	Office Building				
	i) DVO	Office	1 No.	-	Good
	ii) SDVO	-	-	-	condition
	iii) Dispensary	Dispensary	1 No.	-	-
				-	Attached to
	iv) Rural Animal Health	-	1 No.	-	DVO's Office
2.	Centre(RAHC)				Good
	Farms	Cattle	1 No.	-	condition
	i) Cattle breeding farm	breeding	1 No.	-	
	ii) Pig breeding farm	Pig breeding	1 No.	-	
	iii) Poultry farm	Poultry production			In good operation
					In good operation
					In good operation

D. FISHERIES

Sl.No	Type of Infrastructure	Utility	No./ Area	Capacity	Present status
1	*2*	*3*	*4*	*5*	*6*
1.	Office Building i) DFDO	Office	1	-	Good condition
2.	Training Hall	Training	-	50	Attached to
3.	Fish Seed Production Farm	-	1 No./2.5 Ha.	-	DFDO's Office Running smoothly

E. SERICULTURE

Sl.No	Type of Infrastructure	Utility	No./ Area	Capacity	Present status
1	*2*	*3*	*4*	*5*	*6*
1. 2. 3. 4.	Office Building (SPO) Godown (attached to Office) Cocoon Rearing Centre (CRC) Staff quarter	Office Store Cocoon rearing -	1 1 2 -	- - - -	Good condition - do - - do - -

F. KRISHI VIGYAN KENDRA

Sl.No	Type of Infrastructure	Utility	No./ Area	Capacity	Present status
1	*2*	*3*	*4*	*5*	*6*
1. 2. 3. 4. 5. 6. 7.	Office Building Farmer's Hostel Staff Quarter Tractor Shed Cow Pen Pig Sty Poultry House	Office Training / Hostel Residence Vacant Cattle rearing Pig rearing Poultry production	1 1 7 nos. 1 1 1 1	- - - - - - - 	Good condition - do - - do - -do- -do- -do- -do-

G. Information on market

Agriculture produces, forest products, livestock products, fish etc. are sold in the primary market at village level or block level. Due to lack of good marketing facility in the villages or rather due to lack of buyers, the produces are generally transported to the nearest Sub-Urban or urban areas especially District Capital i.e. Lawngtlai or sometimes even outside the district for disposal. There are no reliable market facilities in the villages except week-end markets and that too only for a small quantity of the products. This is one of the glaring problems faced by the farmers on account of which most of them are practicing subsistence farming.

Agro-Processing :

Enterprise	Location	Name of unit	Present status
1. Agriculture	Nil	Nil	Does not arise
2. Horticulture	Nil	Nil	Does not arise
3. A.H & Vety	Nil	Nil	Does not arise
4. Fisheries	Nil	Nil	Does not arise
5. Sericulture	Nil	Nil	Does not arise

Credit institutions :

Sl. No.	Name of Banks/Institutions	No. of Branches
1	Commercial Banks i) State Bank of India ii) Mizoram Rural Banks	 1 5
2	Co-operative Banks i) Co-operative Apex Banks	 1
	TOTAL	**7**

Existing Farmer Organizations in Lawngtlai District.

Sl. No.	Name of Sector	Organization	No.	Activities
1	Agriculture	i) All Mizoram Farmer's Union(AMFU) ii) SHGs	60 13	Thrift, credit and marketing Thrift, credit and marketing
2	KVK, Lawngtlai	ICAR	1	Inaugurated on 5th August, 2008.
3	Horticulture	i) Florist Association ii) Passion Fruit Grower Association iii) Turmeric Grower Association	1 15 61	Flower production & marketing Passion Fruit Production & marketing Turmeric production & marketing
4	Fisheries	Fish Farmer Union	6	Fish production & marketing
5	A.H & Vety	Nil	Nil	Nil

Krishi Vigyan Kendra

Krishi Vigyan Kendras (Farm Science Centre), an innovative science based institutions, were thus established mainly to impart vocational training to the farmers and field level extension workers. The concept of vocational training in agriculture through KVK grew substantially due to greater demand for improved agricultural technology by the farmers. They not only required knowledge and understanding of the intricacy of technologies, but also progressively more and more skills in various complex agricultural operations for adoption on their farms. The effectiveness of the KVK was further enhanced by adding the activities related to on-farm testing and Front-Line Demonstration on major agricultural technologies in order to make the training of farmers location specific, need based and resource-oriented.

The training programmes were designed to impart the latest knowledge to the farmers through work experience by applying the principles of 'Teaching by Doing' and 'Learning by Doing'. The prime goal of KVK is to impart training as per needs and requirements in agriculture and allied enterprises to all farmers, farm women and farm youths including school drop-outs in the rural area. No formal certificate or diploma is awarded, irrespective of duration of the courses to avoid the rush for jobs instead of self employment. While designing the courses, the concept of farming system as well as farming situation are taken into account to ensure that the enterprises in which they are trained are commercially and ecologically viable, sustainable and profitable. Such vocational trainings help them to sustain themselves through self-employment and to make them self-reliant economically and thus discourages them to migrate to the urban areas.

KVKs provide training not only in agriculture and allied vocations but also in other income-generating activities that may supplement the income of farm families. The methods employed in training could be formal and non-formal or a combination of both, depending upon the needs but emphasis remains to be on work-experience, as suggested by Mohan Singh Mehta Committee Report that "the programme should be operated as a plan of continuing education both in the technical and general sense."

The KVKs, thus are the down-to-earth institutions committed to vocational training, transfer of latest technologies, on farm research and thus, serving as the light house for overall rural development in the district. The activities of the KVK include technology assessment, refinement and transfer, aiming to bridge the gap between the technology developed at the research institutions and its adoption at the field level by the farmers through

demonstration of technology/ products etc. and training of farmers, rural youths and extension personnel. On the basis of "India-2002", there were 578 rural districts spread over the country and this figure has further been raised to 602 districts as per the latest data available on the internet report of NIC. In view of continuous increase in the number of districts, it is agreed to have one KVK in each district by the end of Xth plan. Realising the importance of technology assessment, refinement and transfer, the Planning Commission has allocated Rs. 500 crores specifically for the establishment of new KVKs during Xth plan period. The DDG(AE) during the 11th EFC meeting of Xth plan, held in New Delhi on 30th Sept. 2003 out lined the importance of two issues in the context of the present scenario of agriculture in India- (i) the technologies have to be assessed and refined before their transfer and (ii) a programme approach involving various technology components relevant to the farmers in varying farming situations will be required for a perceptible change. The concept of technology assessment and refinement is based on participatory mode ensuring greater scientists-farmer linkage and access to agricultural technologies generated by research systems to the farming community. For this, the role of KVKs are of immense importance for overall agricultural and rural development through its various research and technology transfer mechanisms.

The first KVK, on a pilot basis, was established in1974 at Pondicherry under the administrative control of Tamil Nadu Agricultural University, Coimbatore. The mandates of KVKs are as follows-

1. Conducting "On-Farm Testing" for identifying technologies in terms of location specific sustainable land use systems.
2. Organizing training to update the extension personnel with emerging advances in agricultural research on regular basis.
3. Organizing short and long term training courses in agriculture and allied vocations for the farmers and rural youths with emphasis on "Learning by doing" for higher production on farms and generating self-employment.
4. Organizing Front Line Demonstrations (FLDs) on various crops to generate production data and feed back information.

MANDATES OF KVK:

In order to achieve the above mandates, the following broad objectives would help the KVKs to develop their specific objectives.-

1. To promptly demonstrate the latest agricultural technologies to the farmers as well as extension workers of State Departments of Agriculture/Horticulture/ Fishery/ Animal Science/ NGOs with a view to reduce the time lag between the technology generation and its adoption.
2. To test and verify the technologies in the socio-economic conditions of the farmers with a view to study the production constraints and to modify the technologies to make them appropriate.
3. To impart trainings to the practicing farmers/ farm women, rural youth and field level extension functionaries by following the methods of "Teaching by doing" and "Learning by doing'.
4. To back-up with training and communication supports to the district level development departments viz; Agriculture/ Horticulture/ Fisheries/ Animal science and NGOs in their extension programmes.

OBJECTIVES OF KRISHI VIGYAN KENDRAS (KVKS)

1. Planning and conducting survey of the operational area in order to prepare the resource inventory with special reference to identifying the training needs of the farming community.
2. Planning and conducting production- oriented, need-based short and long duration training courses both on campus as well as in the villages for various target groups with priority on the weaker and the poor.
3. Developing and organizing non-formal educational programmes by way of field days, farm visits, farmers fair, radio talk, Farm Science clubs etc. as the follow up information support to training courses.
4. Organizing farm science clubs, both in rural schools and in villages in order to induce in younger generation a liking for and an interest for agricultural and allied sciences and scientific farming through supervised projects.
5. Developing and maintaining the campus farms and demonstration units on scientific lines as the facilities for providing work experience to the trainees as also disseminating the latest technical know how.
6. Providing practical facilities of the Kendra to the teachers and the students of the vocational agriculture of the higher secondary schools.
7. Imparting some general education to rural illiterates and school drop-outs in order to make them not only good farmers but also better citizens.

8. Providing added training facilities in the areas for home making and nutrition education for rural community.
9. Gradually enlarging the training facilities to encompass other important areas such as home crafts, cottage industries etc. consistent to the requirements of the Integrated rural Development in collaboration with concerned organization.
10. Implementing all such schemes of the ICAR and other related organizations which intend to strengthen the training programmes of the Kendra.

BACKGROUND OF KVK LAWNGTLAI

KVK Lawngtlai is one of the youngest KVKs in NE India. The Kendra was inaugurated on 5th August, 2008. The host organization is Directorate of Agriculture (Research & Education), Govt. of Mizoram. It is located at a beautiful hill of Chawnhu Village, about 2.5 km from Lawngtlai town, capital of Lawngtlai District. From the KVK complex, there is a good panoramic view of the mighty Blue Mountain (*Phawngpui*), the highest peak of Mizoram *(2157 metres)* on the northeast side and a scenic view of Saiha town and the neighbouring KVK, Saiha District on the eastern side. The biggest river Chhimtuipui (*Kolodyne*) separates these two districts. Even in health sector, the district lack minimum facilities to cope with the problems in the form of communicable disease as well as water-borne disease due to lack of proper sanitation facilities, safe drinking water and basic health service. As is well known, the climate condition of the district, which is tropical in nature favours well for the breeding ground of various diseases, even the district capital has only community health center with accommodation capacity of 30 bedded which hardly cater the need of the people. It has few medical equipment and is deprive of necessary equipment like Endoscopy, Ultra sonic Machine, dental X-Ray machine, generator and host of items. The District is facing not of lack of knowledge and skill personnel but of minimum basic facilities and equipment and service outlets to deal with host of disease which take a huge toll on the lives of the people especially children. The District has one of the highest child mortality rates, maternal mortality rate, one of the lowest immunization coverage, and low rate of institutional delivery. Another point which needs immediate attention is lack of nutritional support to both the expectant mother and children of the rural poor. ICDS has been actively making

efforts in providing nutritional support but the outreach is still very limited with few facilities. The district has one of the highest incidences of malnourish children in India. The District posed problem of lack of staff quarter to the present health staff and limited outreach of sub centers.

In the power sector, the pace of distribution lines penetration is rather slow. Due to negligence, most of the installed facilities like wires get wasted and stolen. Also there is ignorance about economizing use of power and this cause a huge drain on the existing installed capacity lack of supply of power in the western belt and strategic location where potential areas have been identified for agriculture, horticulture, post harvest infractructure and waterways hampers the process of the much desired balance economic development of the district.

The current rural water supply system is insufficient to meet the demand of the rural people. Lack of safe and clean drinking water is one of the leading factors which are responsible of high death rate in the remote region. The District frequently witness outbreak of dreaded disease like Cholera. Other disease like Malaria, Typhoid etc is still rampant in the District. The educational institution, Anganwadi centres and sub centers also do not have good water supply system as well as storage facilities for certain necessary medicine like vaccines. This is a serious concern for the welfare of women and children.

Another nagging problem is lack of social infrastructure like vocational training institute and hostel especially for uneducated womenfolk and uneducated rural youth. They are backward due to their low literacy, low social position, poor health etc. they have little opportunities to support themselves. This call for vocational training institute like tailoring school and repairing workshop as well as Hostel for girl child attending school at the principal town so as to protect them from sexual harassment and helping them get better lives.

MANPOWER

No	Name of the incumbent	Designation	Date of joining
1	Mr. Vanlalhruaia Hnamte	Programme Coordinator	12.9.2008
2	Mr. Vanlalhruaia	SMS (Plant Protection)	22.4.2008
3	Ms. Vanlalliani	SMS (Horticulture)	23.4.2008
4	Ms. Sheela Tayeng	SMS (Agril. Extension)	28.4.2008
5	Ms. Vanlalruati	SMS (Home Science)	22.4.2008
6	Dr. Lalmuanpuii	SMS (A.H. & Vety)	5.6.2009
6	Mr. Vanlalhmuaka Ngente	Farm Manager	4.9.2008
7	Mr.Samuel Lalhruaitluanga	Computer Programmer	21.4.2008
8	Ms. C.Vanlalthlengi	Superintendent-cum-Accountant	21.4.2008
9	Ms. Zorinpuii	Stenographer-cum-Computer operator	29.2.2008
10	Mr. Lalchhantluanga	Driver	29.2.2008
11	Mr. H.Lalhmachhuana	Driver	29.2.2008
12	Mr. Vanlalnelzualpuia	Supporting staff	10.7.2008
13	Mr. Henry Vanlalthakima	Supporting staff	10.7.2008

THRUST AREA OF KVK LAWNGTLAI :

1. HORTICULTURE:

In view of the proposal of inland waterway from Hruitezawl (Lawngtlai District) to Akyap (Myanmar) Sea Port, it is felt necessary to exploit the land resources especially under horticultural sector so as to enhance exporting the produce to foreign countries and thereby uplifting the economic condition of the district. Provision of high quality seeds, Training on post harvest technology, Plant protection measures, Orchard management , Processing and value addition of produce .

2. AGRO-FORESTRY:

Integrated farming system approach is given one of the priorities. About 19.25 % of the total geographical area of the district has been considered as potential area for the development of the integrated farming system. Massive scale introduction of Agroforestry farming system approach can bring about a drastic change in the economy of the farmers of the district.

3.IPM

Integrated Pest Management approach : Another thrust area of KVK Lawngtlai District is popularization of IPM concept as the awareness of the farmers in regard to IPM approach is still minimal.

4.VETERINARY:

Training on production of feeds, rearing of upgraded breeds, provision of clinical assistance.

5. FISHERY

Provision of fish feed, provision of fish seeds, training on integrated fish farming, composite fish culture.

6.ORGANIC FARMING:

Organic certification : The Kendra is maintaining one organic farm wherein banana, Assam lemon and vegetables are grown in an area of 2 hectares under the guidance and supervision of OneCert Asia, Jodhpur as a pilot project.

7.SOCIO-ECONOMICS SERVICES/HOME SCIENCE:

Provide training on women and child care, income generating activities, value addition.

8.AGRIL. MARKETING:

Another thrust area is study, identification of marketing channels of agricultural produce.

9.To study, identify and utilize ITK (Indegenous Technical Knowledge).

STRENGTH, WEAKNESS, OPPORTUNITIES AND THREAT (SWOT) ANALYSIS OF THE DISTRICT AND IDENTIFICATION OF CRITICAL GAPS

Introduction

Lawngtlai District has numerous areas of advantages and strengths which enable it to propel itself on to higher level of trajectory of economic development if these strengths are fully exploited.

In this sector, the agro-climate condition of the district favours the development of all kind of the horticulture crops. This conclusion is drawn in accordance with the findings of Agro-Climate regional planning (ACRP) exercise undertaken by the Planning Commission since 1998. The ACRP take in to account resources endowments, strategy for balance regional development, comparative advantages, and choice of priority activities for the region, infrastructure needs and investment in its approach. The findings of ACRP regarding the District point out the strategies for agricultural development are through soil and water conservation and settle farming. In addition, there has been a paradigm shift in the state government's agriculture policy from the practice of mono crops cultivation of land use through shifting cultivation to diversification of crops by introducing location specific

crops through settled farming. A follow up policy called Land Use Policy is chalked out and implemented with limited success. However, the drawback of this new policy is its adoption of the strategy of area targeting for the implementation zone, which left out majority of the district of Mizoram including Lawngtlai district. In recent years, the state government is making great stride towards bringing land under horticulture crops through a new policy – Mizoram Intodelhna Project. Even this policy suffered from certain limits like its outreach, especially in respect of Lawngtlai District due to the latter inaccessibility, remoteness, lack of good road infrastructure etc. Another strength lies in the availability of flat land for wet rice cultivation. Most of this flat land are located in the western part of the district where Tuichawng River, Chhimtuipui River, Ngengpui River and Thega River traverse the land. Here Chamdur Valley, Tuichawng Valley, Ngengpui Valley and Thega valley offer great potential for the development of WRC provided they are equipped with good irrigation system and improved land development measures.

Another strength of the District is that it is well endowed with good drainage system and abundant rainfall. Major rivers of Mizoram like Chhimtuipui Rivers, Tuichawng River, Ngengpui River and Thega River as well as minor ones like Tuiphal, Sekulh, Chikhurlui and Sahri offer great potential for development of minor irrigation. Moreover the region receives one of the highest average rainfall in India at about 250 – 300cm. Both factor will play crucial role in the development of the agriculture sector of the District.

Another strength of the District is the possibility of transforming farming practice along the line of organic farming by using only manures since consumption of fertilizers has always been negligible. Organic farming is a production system that avoid of largely excludes the use of chemical fertilizers, pesticides and growth regulators. Instead, it relies upon crop rotation with leguminous crops, addition of crop residues, green manures, bio-fertilizers and bio pesticides. The objective encouraging organic farming in the district are to developed a sustainable agriculture system which maintain soil fertility and ensure adequate food production. Besides it is well recognize that organic products are preferred to conventional agriculture product due to the absence of harmful chemical residues in it.

For Development of infrastructure, the district strength lies in the river where there is immense scope for the development of hydro electric power project is taken up by Central water commission. If this project is materialized, and then it will greatly boost the

productivity of the District which is currently at a very low level due to inadequate power supply to producing units.

Another area of strength is due to its strategic location, the District has great potential for the development of inland waterways along the Chhimtuipui River. This in turn will facilitate the expansion interconnectivity with neighbouring country like Myanmar. Recently, there has been a proposal of waterway from Hruitezawl to Akyab Sea Port for the facilitation of border trade with Myanmar. RITES Company has been engaged to prepare Detailed Project Report on this proposal. Another likely outcome, if this project is successful, is that sea route from Hruitezawl to Kolkata can be developed and this will turn bring about socio-economic well being to the people through expansion of trade and services.

Another strength of District lies in the availability of fresh water sources like stream and rivers which are perennial in nature for the expansion of rural water supply in interior part of the region.

Another strength of the District lies is the availability of basic community assets like community hall and playground. According to the reports of the Mizoram statistical hand book 2003, the District 31 community halls where as Saiha District has only 9 and Kolasib has only 19. The District also has 61 playgrounds where as Serchhip has about 38, Saiha 23 and Kolasib has 34. This is crucial for the development of backward tribes who constantly need social cohesion and cooperation in protesting and the safeguarding their interest. Most of the village studies conducted by sociologist establish the correlation between the community assets and social cohesion and cooperation. The availability of community assets like community halls provide people a place for frequent interaction at a short notice. This in turn built close intimacy, cooperation and cohesions among the people. However, it should be added that, the present condition of all the community assets are in very pathetic state. They are very likely to be an economic waste unless a swift intervention is taken through BRGF.

Another great strength of the District is the presence of Two Autonomous District Council viz. Lai Autonomous District Council (LADC) and Chakma Autonomous District Council (CADC) in the district. The two Autonomous Councils along with the Office of the Deputy Commissioner and other line department acts as implementing agency, apart from other important function, of various socio-economic development programmed of both the state and the Central Government. Besides, these semi-government bodies along with the state Government account for 85% of total workforce engage in service and continue to provide employment opportunities on the regular basis.

Despite all the areas of strength mention above, the District suffer from various weaknesses. The following are some of the areas of weaknesses:

In this sector, the District faced constraints in the form of:

a) High run off water, increasing depletion of ground water due to excessive survey. exploitation, depletion of fertility of soil due to 'Jhum' cultivation, expansion of wasteland and inundation due to frequent change of course by the rivers.

b) Lack of quality seed and planting material.

c) Inadequate post harvest infrastructure and unorganized market.

d) Lack of systematic records of land and surveys especially cadastral survey.

e) High cost of inputs, little scope for farm mechanization, suitability of only minor irrigation and exorbitant cost of transport.

f) Destructive practice of jhuming cultivation.

g) Lack of accurate data on stock of inventory and limited research and development activities by concern departments.

h) Lack of rain water harvesting structure to supplement meager water supply during lean season for consumption and agricultural purpose.

i) Lack of awareness on the part of the farmers regarding seeds, soil condition, weather etc.

j) Lack of proper land use planning.

The communication networks especially the roads are in bad shape. Even the road which traverses through major economic centers like Saiha, Tuipang are in dilapidated state. There are certain economic centres which have the most deporable roads connectivity like Chamdur, Vathuampui, Longpuighat and Vaseikai even Chawnhu Village which lie adjacent to Lawngtlai town, continues to deprive of good road connectivity although it has great potential in coffee plantation. Most of the region where WRC has been successfully practice on a limited scale still face the problem of good road connectivity which hamper their economic prosperity to a great extends. Most of the villages in the western belt and within Chawngte Block are inaccessible especially in rainy season due to frequent landslide and improper management. There has always been a dire necessity to improve the road network to help the people of remote areas of the District.

SWOT ANALYSIS OF AGRICULTURAL SECTOR OF LAWNGTLAI DISTRICT

Strength

1. Vast potential for WRC in the western belt.
2. High potential for growing diverse crops due to varied favourable agro-climatic condition.
3. Availability of land resources.
4. Existence of line departments.
5. Availability of good drainage system and abundant rainfall.

Weakness

1. Reduction in productivity due to adoption of age old traditional cultivation practices.
2. Destructive practise of jhuming cultivation.
3. High cost of inputs, little scope for farm mechanization, suitability of only minor irrigation and exorbitant costs of transport.
4. Lack of proper land use planning.
5. Lack of rain water harvesting structure to supplement meager water supply during lean season for consumption and agricultural purpose.

Opportunity

1. Under India's Look East Policy, recently, there has been a proposal of waterway from Hruitezawl to Akyap (Myanmar) Sea Port for the facilitation of international trade.
2. Promotion of terrace rice cultivation.
3. Enhancement of crop productivity through refined technologies.
4. Popularization of organic farming.
5. Scope for establishment of agro-based processing units and cottage industries.
6. Higher potential for establishment of water harvesting structure.

Threats

1. Erratic rainfall causing landslide and soil degradation.
2. Increasing dependency on migratory labours.
3. Fluctuation in market prices of agricultural produce and inputs.
4. Incidence of pests and diseases.

SWOT ANALYSIS OF HORTICULTURAL SECTOR OF LAWNGTLAI DISTRICT

Strength

1. Varied agro-climatic condition suitable for development of almost all kinds of horticultural crops.
2. Abundant rainfall throughout the year.
3. The district is endowed with large tract of land for the development of horticultural and plantation crops.
4. Availability of unexploited fertile soil.

Weakness

1. Lack of post harvest infrastructures like cold storage facilities, go downs, etc.
2. Lack of adequate quality seed and planting materials.
3. Owing to the remoteness of the district, transport and communication facilities are inadequate
4. Farmers of the district are not aware of latest technologies.
5. Inadequate marketing facilities.
6. Occurrence of Citrus decline in the past which discouraged the moral of the farmers to go for further cultivation of citrus especially Khasi mandarin.

Opportunities

1. Under India's Look East Policy, recently, there has been a proposal of waterway from Hruitezawl to Akyap (Myanmar) Sea Port for the facilitation of international trade.
2. Varied agro-climatic condition is suitable for large scale production of various horticultural crops.
3. Shifting cultivation areas can be easily converted into horticultural area.
4. High potential for production of high value and low volume crops.

Threats

1. Outbreak of pests and diseases.
2. Uneven distribution of rainfall.
3. Uncontrolled soil erosion as jhuming is still a dominant farming system.
4. Fluctuation in market prices of horticultural produce and inputs.

SWOT ANALYSIS OF ANIMAL HUSBANDARY AND VETERINARY OF LAWNGTLAI DISTRICT

Strength

1. Agro-climatic condition of Lawngtlai district is suitable for rearing of various livestock species.
2. The district is endowed with a rich natural resources for rearing livestock.
3. Majority of the people of Lawngtlai district are non-vegetarian. Thus, there is a high demand for meat and eggs.
4. Farmers are interested and have indigenous technical knowledge on livestock rearing

Weakness

1. Poor productivity due to rearing of indigenous livestock and poultry.
2. Lack of sufficient germplasm.
3. Lack of awareness in production of livestock and poultry scientifically.
4. Major constraints for the growth of livestock sector are difficult terrain, inaccessibility and communication.
5. Lack of credit support.
6. The involvement of State government's corporations towards livestock industries is negligible.
7. The service of concerned State Department i.e., AH & Vety. is not satisfactory in regard to the provision of timely healthcare services.

Opportunities

1. Under India's Look East Policy, recently, there has been a proposal of waterway from Hruitezawl to Akyap (Myanmar) Sea Port for the facilitation of international trade.
2. Production of organic livestock for export.
3. Renovation of fallow and barren lands for fodder production.
4. The freely available natural resources can be utilized for livestock feed.
5. Artificial insemination can be popularized for up gradation of indigenous cattle and pig.
6. The services o f Subject Matter Specialists under KVK can be utilized for the general improvement of animal husbandry.

Threats

1. Spread of diseases like bird flu, swine fever, Food and Mouth Disease, etc
2. Hike in prices of animal feeds and other inputs.
3. Natural calamities.
4. Competition from neighbouring country such as Myanmar.

SWOT ANALYSIS OF PISCICULTURE OF LAWNGTLAI DISTRICT

Strength

1. Vast area of land is available for the establishment of ponds.
2. Perennial source of water is readily available.
3. Climatic condition is suitable for development of fishery.
4. High demand for fish.
5. Majority of the farmers are willing to take up fish farming.

Weakness

1. Scarcity of exotic fingerlings.
2. Lack of technical guidance.
3. Absence of Ice Plant.
4. Poor financial condition of farmers to take up fish farming.
5. Poor transport and communication.
6. Acidity of water body.

Opportunities

1. Under India's Look East Policy, recently, there has been a proposal of waterway from Hruitezawl to Akyap (Myanmar) Sea Port for the facilitation of international trade.
2. Extension services to popularize fish farming.
3. Establishment of cold storage facility (Ice Plant).
4. Facilitation of marketing facility.
5. Popularization of value added fish product.
6. Establishment of hatcheries.

Threats

1. Scarcity and high cost of fish feed.
2. Siltation of fish ponds due to the practice of shifting cultivation.
3. Competition with other districts and foreign countries like Bangladesh and Myanmar.
4. Natural calamities such as flood, landslide/ landslip, etc.

SWOT ANALYSIS OF SOCIO-ECONOMIC STATUS OF LAWNGTLAI DISTRICT

Strength

1. Presence of Autonomous District Council for development of Socio Economic condition.
2. The people are open and willing to accept innovations.
3. The people are ambitious and ready to take up new challenges for better Socio-economic condition.

Weakness

1. Remoteness of the District for the speedy economic development.
2. Poor transport and communication facilities.
3. The District has the lowest literacy percentage in the state.

Opportunities

1. Under India's Look East policy recently there has been a proposal of waterway from Hruitezawl to Akyap (Myanmar) seaport for the facilitation of International trade.
2. There is a vast scope for establishment of market facilities.
3. Establishment of Cold Storage facilities.
4. Value addition of commodities.

Threats

1. Competition with other districts and foreign countries like Bangladesh and Myanmar.
2. Illegal immigrants from Bangladesh and Myanmar.
3. Natural calamities.

SOME IDENTIFIED OPPORTUNITIES UNDER VARIOUS LAND RESOURCES DEVELOPMENT ACTIVITIES

The major activities suggested for land resources development are described below. The areas statistics is given in table – and the map showing areas for various land development activities are given in figure.

Agriculture (double cropping)

Most of the agricultural land are confined in the river valleys and foot hills, and wet land rice cultivation is practiced during the kharif season.

These areas can be brought for cultivating both kharif and rabi crops provided that better irrigation facilities are constructed. Minor irrigation tanks, check dams and water harvesting dams are proposed to be constructed for irrigating the crops and to increase infiltration rate. The river valley and foot hills having a slope of less than 25% slope are recommended for double cropping throughout the year. It is proposed to make bunds on the unutilized flat lands and terraces on the foot hills. The areas proposed for this system is 98.70 Sq.km, which is 3.86% of the total geographical area of the district. *Oryza sativa* (rice) is recommended for the main crops during the kharif season. The rabi crops recommended are rice, legumes and vegetables.

The river valleys are also suitable for agro-aquaculture system. This system is therefore, recommended to be practiced in such areas. The component of the system are composite fish culture with paddy or vegetable.

Agroforestry

Of the several approaches taken through land use system to restored productivity in hilly areas, agro-forestry figures prominently for its embodied multidisciplinary facets aiming at sustainable production. Agro-forestry is the deliberate growing of woody plants, non-woody plants and often animals for human purposes, simultaneously or in deliberate rotations on the same unit of land. It is the combination of silviculture, agricultural and other land use technologies so that their joint application will increase productivity, sustainability or equity, or achieve other social goals. The area under

Agro-forestry is proposed to be developed in 492.24 Sq.km, which is 19.25% of the total geographical area of the district.

There are a number of agro-forestry systems which consists of two or more than two components depending on the needs of the family, topography, climatic factors etc. Some of the agro forestry systems which can be developed in district are as follows:

Sericulture based Agroforestry system

Sericulture based agroforestry system has great potential for higher returns in the district. The major benefit that such a system can bring to sloppy areas, lies in its capacity to combine soil conservation with production and income as well as employment generation. Sericulture based silvi-horti-pastoral system in the hill side slope of upto 45% with 1m soil depth is ideal by planting mulberry, guava with pineapple (in paired rows) and grasses on bunds. The recommended varieties for rearing silk worms are *Morus* spp.(Thingtheihmu), *Ricinus communis*(Mutih), *Manihot esculentus*(Pangbal) and other native tree species such as *Litsea semicarpifolia* (Nauthakpui)etc.

Agro-Horticultural system

Agro horticultural system is a farming system in which both agricultural crops and horticultural crops are grown together on the same plot of land. Fruit trees and field crops can be grown together in different ways. Perennial crops, seasonal crops and nitrogen fixing plants may be grown in an alternate manner. Crop rotation will be necessary in case of seasonal crops. Conventional terracing may be done in the foot hills and contour trench farming may be practiced wherever feasible.

The recommended crops are *Areca catechu* (Betelnut), *Citrus macroptera* (Hatkora), *Camellia sinensis* (Tea), *Coffea* spp (Coffee), *Musa paradisiaca* (Banana), *Citrus reticulata* (Orange), *Passiflora edulcis* (Passion fruit-yellow variety), Red oil palm etc. with vegetables and other root crops.

Silvipastoral system

This is a system of growing trees and grasses together on a plot of land. It provides fuel, fodder and also maintain a good vegetation cover. The natural forest land and degraded forest areas around the village are potential for cultivation of grasses and trees. The selected varieties should have fodder and firewood values and some fruit species, which meet the above requirement may also be selected. The tree species such as *Ficus hirta* (Sazutheipui), *Litsea semicarpifolia* (Nauthakpui), *Ficus* spp. (Hmawng), *Mangifera indica* (Theihai) etc. are recommended for cultivation and the grass species such as *Stylosanthes* spp., *Pennisetum pedicellatum*, *Thysonalaena maxima, Erianthus longisetosus*, etc. are recommended for this system.

Other agroforestry systems such as Horti-olericultural system, Agri-silvicultural systems, Agri-horti-pastural systems, Horti-sericultural system, home garders, etc. can be practiced depending upon the physiography and the local needs.

Afforestation

Afforestation is the process of transforming an area into forest by planting suitable trees. This process becomes necessary when natural regeneration cannot keep pace with human exploitation of forests. Various afforestation programmes in which commercial tree species are planted as Government or private plantations like Teak (*Tectona grandis*) plantation have been taken up. However, such plantations being monocultures have their own drawbacks like poor nutrient cycling, fire prone undergrowth during dry season, increased soil acidity and lower level of genetic diversity and species composition leading to a higher chance of pest and disease attack. Interplanting with other suitable, non-competing tree species at appropriate tree spacing can possibly overcome this problem. The wastelands can also be reclaimed through reforestation programmes where fast growing, nutrient fixing tree species and crops can be planted under proper management practices and after-care. The biophysical and socio-economic factors have also to be taken into consideration before implementing an afforestation programme as these can differ with time and place. The recommended species for this system are - *Michelia oblonga* (Ngiau), *Accacia auriculformis* (Kalsiamthing), *Acalypha indica* (Thingtheihmu), *Castanoposis tribuloides* (Thingsia), *Leucaena leucocephala* (Japan-zawngtah), *Albizzia procera* (Kangtek), *Albizzia*

odoratissima (Thingri), *Albizzia chinensis* (Vang) etc. The area proposed for afforestation is 370.52sq km of land or 14.49% of the total geographic area.

Forest

It is proposed that the existing forest cover and the wildlife sanctuary be preserved and additional conservation techniques may be adopted to prevent encroachment and exploitation of forests for commercial and domestic purpose. Declaration and demarcation of forest areas as Reserve Forests/Supply Reserve forests in areas where their conservation is needed, preferably in every village/town, can help in preservation of the natural forests. Voluntary organization/NGOs like YMA,MHIP,MUP, etc may be encouraged and entrusted the task of further conservation of present forest cover. Since majority of the village communities are still dependent on forest resources for their domestic needs like fuel wood, construction of houses, farm implements etc, there has to be adequate substitute for such requirements which can meet their needs without disrupting their domestic lifestyle. Such can be achieved by providing Government subsidized amenties that are base on the needs of the villagers. The steps taken by the Government through Village councils, Village Forest Development Agencies in villages and various management shemes under Joint forest management (JFM) is noteworthy and can be made more effective for the purpose. The proposed area under tree forest is estimated to be 775.57sq km, constituting 30.33 % of the total geographic area.

Bamboo Forest

Bamboo forest is abundantly found in Lawngtlai district, however, due to flowering and its subsequent natural death, restocking and conservation of the genetic stock is necessary. Bamboo flowering and death have already been observed in previous years in some districts. Large areas that were once populated with lush green bamboo forest have become dry and barren now. The genetic stock of these bamboos needs to be conserved and propagated to continue the life cycle of the bamboo forests. Another fact that has to be kept in mind is that, due to the death of these bamboos, the vegetal masses becomes dried up and

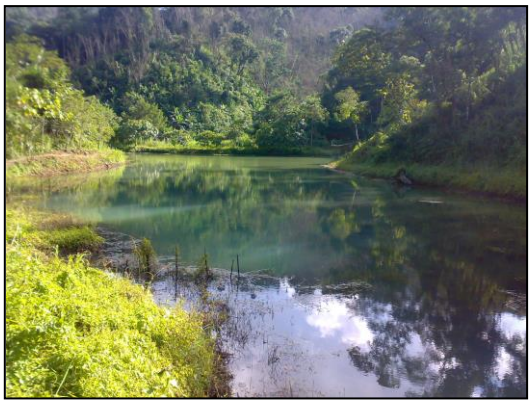
are very much prone to catch fire easily. If this happens then it can bring catastrophic damages(By spreading ground and crown fire) to the surrounding forests and vegetation in particular and to the immediate environment in general. Therefore, proper fire prevention techniques have to be carried out in such fire prone bamboo forests so that even in case of a fire out-break, the damage can be contained and controlled in that area only. Various on – going projects under the state and central government have taken up several steps related with conservation and rehabilitation of stock effected by bamboo flowering, mitigation strategies to combat the tragic incidents following bamboo flowering and to minimize their impacts on the rural economy. At present, our main aim is to recoup the bamboo forest and as such, the proposed areas for bamboo forest is estimated to be 787.59sq km or 30.8 % of the total geographic area.

Animal Husbandry and Veterinary

The area has a good potential for development of animal husbandry. Piggery, poultry and diary developments are the activities proposed to be taken up. For the large scale development of animal husbandry, some area proposed for agroforestry may be use. However, for the small scale purposed and under proposed control it can be practice at any place as per the convenient of the farmers. The development veterinary services would be a very important party of this activity.

Surface Water

Surface water harvesting techniques are gaining more importance nowadays in view of the dwindling water table and erratic rainfall patterns. One of the most important aspects in surface water harvesting is the identification of suitable sites/locations. Geographical Information System (GIS) is a modern technique of both thematic and non-thematic data and analyzing through suitable models for taking up appropriate developmental activities.



Lawngtlai district has good potential areas for Wet Rice cultivation and most of such flat terrain are available at different locations. The major areas of flood plains available within the district of Lawngtlai are located at the river banks of Tuichawng and its tributaries, Mengpui and Kawrpui rivers. The district receives a good amount of rainfall annually i.e. 2314mm per year. Hence, there is a

great scope for the development of water resources. At the same time, due to unpredictable and erratic rainfall, this excess rain water has to be conserved in different storage structures for the supplement of irrigation water for the survival of agricultural and horticultural crops during the critical periods and or can be directed to artificially recharge the groundwater for its use later. On account of this, water harvesting structures are proposed in various locations within the study area. These proposed structures are briefly described below:

Minor Irrigation Tanks

A good amount of land suitable for Wet Rice cultivation (double cropping) is found in different parts of the district, especially along the Tuichawng river and in spite of the natural gift of good rainfall, most of the people in this area are able to grow only rain-fed crops. Only a few areas of Tuichawng valley has yet facilitated with irrigation facility. Hence surface water harvesting was given priority and therefore 59 Minor irrigation tanks are proposed at various locations in order to meet the demands for irrigation water in the district.

These Minor Irrigation tanks are proposed to be constructed across the perennial streams for creating water reservoirs for providing irrigation water to the crops at critical periods and also to facilitate the groundwater recharge in the downstream regions. The design details of the structures are depending upon the site condition. As far as possible a narrow gorge should be selected for making the dam in order to keep the ratio of earth work to storage as minimum. Besides, geologically and structurally favourable sites have been selected in order to avoid major loss of water.

Water Harvesting Bunds

These are similar to Minor irrigation tanks except that they do not have extensive canal system and their command area is limited to fields downstream.

These harvesting bunds are proposed to be constructed in order i) To collect the impound surface run off during monsoon rains and facilitate infiltration to raise groundwater level in the zone of influence of the bunds; ii) To facilitate irrigation in the field lying in close proximity of the structure. iii) It also moderates the peak flow, partly by storing and partly by flood routing. And 55 Water Harvesting Bunds have been proposed and their locations are shown in the action map.

Check Dams

Check dams are proposed across the stream to tap the stream water for irrigation and soil conservation purposes. It also provides drinking water for the livestock and human beings. It reduces run off velocity thereby minimizing soil erosion and secondly it allows the retained water to percolate and thus results in increased recharge for the groundwater in the adjoining downstream side of the stream. Within the district 78 Check dams have been proposed and are shown in the action plan map.

Farm Ponds

Farms ponds are useful for life saving irrigation in a limited area; it also provides drinking water for livestock and human beings, pisciculture etc. Farm ponds are proposed to be constructed as an embankment across a water course or by excavating a pit or the combination of both. 21 Farm ponds have been proposed and their locations are shown in the action plan map.

Ground Water Targeting

Even though the study area receives a good amount of rainfall, most of the rain water gets wasted due to lack of water harvesting structures. Hence, surface water resource is often inadequate to meet the demand for irrigation, drinking water supply for livestock and human beings. The study area, therefore, often faces water scarcity during the lean seasons. Therefore, field studies and mapping of ground water potential zones within the study area become an important task in order to tackle the problems of the inhabitants. Efforts have been made for this important task, to exploit the ground water potential of the region by generating ground water zonation map for the whole district of Lawngtlai. This zonation map be utilized to locate the potential zones and select sites for ground water exploration. And this ground water zonation map is also shown.

Soil and Water Conservation Activities

Conservation of soil and water – a basic natural resource is a key to sustained production of food, fibre and fuel – the basic necessities of all beings. However, continued loss in productivity of land due to reckless felling of trees, improper land use and plugging of natural drains are causing increased run off, reduced ground water recharge and severe

erosion. Soil erosion severely affects hilly areas because of the steep slopes. Besides these, landslides and landslips are other problems of hilly areas.

Soil conservation in hilly areas requires a well planned and rational land use programmes combined with engineering and cultural measures. A combination of engineering measures such as bench terracing, and stone terracing of hill slopes along with afforestation and slip corrections and silvicultural practices would not only prevent or reduce the erosion on hills but also improve the well-being of the people within the district.

Control of gullies

Gully erosion is an advanced stage of soil erosion where slope stability of the side walls reduces and blocks of soil mass slough into the flow. An effective gully erosion practice is to reduce run off rate by vegetative or mechanical means so that gully flow does not have adequate capacity to clean out the slumped material.

Plugging of gullies can be done by either or in combination of brush wood, live hedges, earth, sand bags, brick masonry and boulders. Gully planting should always be made of both trees and shrubs with several different species. Earth is the cheapest and most readily available material and, therefore, easier and economical to construct the earthen gully plugs wherever possible. Boulder plugs are equally effective if material is available.

Stream Bank Protection

Stream bank erosions have been noticed during field visit by the scientist at various places like in the flood plain areas of Tuichawng, Mengpui and Chhimtuipui rivers and many other smaller streams within the district.

There are certain reasons by which stream banks erosion occurred such as destruction of vegetative cover over the stream banks, mass movement due to unstable bank slope, undermining of the top of lower bank by turbulent flow, sloughing or sliding of slope when saturated with water, etc.

Protection measures involve encouraging vegetation growth or construction of retaining walls. Retaining walls may be constructed on eroded banks which are along agricultural terraces. Creating vegetal covers with locally suitable species on the eroded banks will serve good measures for some places and protection of these vegetative covers from browsing and grazing will be needed.

Road-side Erosion Control

Road building activity is the main cause of road side erosion in the hilly terrain of Lawngtlai district. Due to these activities the slope stability breaks causing mass movement on the road side, which is dumped down hill side destroying valuable medicinal plants and other vegetations and even agricultural terraces.

Systemization of drainage, creation of retaining wall and dumping side for dumping soil debris during road construction, plantation of suitable grasses and plant species are recommended for the road side erosion control measures.

Statistic for Land Resources Development of Lawngtlai District.

Sl.No	Description	Area (sq km)	%
1	Agriculture (Double crop)	98.70	3.86
2	Agro-Forestry	492.24	19.25
3	Afforestation	370.52	14.49
4	Forest	775.57	30.33
5	Bamboo	787.59	30.80
6	Build-up land	14.58	0.57
7	Water body	17.90	0.70
	Total	2557.1	100.00

Agricultural/ Horticultural Plantation

This class includes areas, which is being utilized for plantation of cash crops. The district houses few agricultural/ horticultural plantations, of which the prominent ones includes citrus woodlands and Banana plantations.

Citrus woodland

Citrus woodland includes oranges (*Citrus reticulata*) plantation. Citrus plantations are found more to the eastern and south eastern part of the district as compared to other part of the district. The occurrence however, diminishes towards the western part where their cultivation and establishment is not favourable from the socio as well as biophysical environment point-of-view of these areas. Majority of the cultivated Citrus species are of the variety *Citrus reticulata*. Such mappable plantations are concentrated near R.Vanhne, Saizawh E, M.Kawnpui, Tuidangtlang, Hmunnuam and S.Bungtlang villages. Most of these plantations occupy only a few hectare of farm land and in some cases are cultivated along with other cash/field crops. In some remote villages, the farmers have started taking up these plantations since 2006 in small patches with aid from the Horticulture department that has provided subsidized seedlings and saplings. It covers an area of 0.36 Sq.km, which accounts for 0.01% of the total area of the district.

Banana

Banana (*Musa paradisiaca*) plantations are commonly found as secondary cash crops

cultivated along with other field/cash crops like coconut, arecanut, pineapple, ginger etc. They are more concentrated to the central and eastern part of the district particularly near Diltlang 'S', Hmunnuam, Bungtlang S, Vanhne R, Rulkual, Saizawh E, Darnamtlang, Hruitezawl, Damdep II, Chhotaguisury I & II, Cheural, Rawlbuk, Bualpui Ng, Lungzarhtum villages and outskirts of Lawngtlai town. Most of the plantations are undertaken by local farmers, which were initiated by the Horticulture/ Agriculture Department through supply of subsidized saplings and seedlings. Banana plantation covers an area of 3.87 Sq.Km, accounting for 0.15% of the total district area. Other banana plantations are found scattered in small patches but are below the minimum mappable scale.

Miscellaneous

This includes other cash crops like Beans (*Phaseolus vulgaris*), Maize (*Zea mays*), Pumpkin (*Cucurbita maxima*), Brinjal (*Solanum melongena var. esculentum*), Mustard (*Brassica juncea*), Tobacco (*Nicotiana tobacum*), Sugarcane (*Saccharum officinarum*), Coconut (*Cocos nucifera*), Mango (*Mangifera indica*), Pineapple (*Ananus comosus*), Chilli (C*apsicum annum*), Butter fruit (*Avocado sp*.) etc. These cash crops are cultivated in a mixed form in the jhum fields and they occupy only a few space of the jhum area. Besides, they do not exist in a pure plantation form and as they are cultivated only for domestic consumption or in some case initiated on a trial bases. Therefore, their area coverage cannot reach a reasonable mappable area statistics.

FOREST

The forest cover type of Lawngtlai District is mainly tropical wet evergreen forest mixed with semi evergreen and tropical moist deciduous forests comprising mainly of bamboo. The forest found to the western fringes of the district near Bangladesh and within the Chakma Autonomous District Council (CADC) jurisdiction are mostly of deciduous type with patches of grassland intermingled whereas the forest type to the eastern fringes along the Myanmar border is of Mountain Sub-tropical Forest comprising of hard wood species. Sub-tropical forests are also at high altitude places near Mampui, Saikah, Rulkual, S Diltlang, Hmunnuam and S.Bungtlang villages.

The total area of Ngengpui Wildlife Sanctuary is around 110 Sq.Kms and ranges in altitude from 200 to about 1200 Mtrs. Some of the finest patches of tropical rain forest in Mizoram with mature *Dipterocarpus* (Thingsen) are found in this sanctuary. The terrain is undulating to hilly, with a series of parallel north – south ridges, well drained by numerous streams with rocky as well as silted stream bed. Some notable bird species recorded in this Important Bird Area are the White Cheeked Partridge (Rung bek-var), Great Hornbill (Vapual), oriental Pied Hornbill (Vahai), Great Slaty Woodpecker (Thlawhsai) and a variety of raptors. The sanctuary is rich in mammals, reptiles and amphibian. It has all the typical mammals found in North East India such as Hoolock Gibbon (Hauhuk), Phayre's Leaf monkey (Dawr), Slow Loris (Sahuai), Ottar (Sahram), Flying squirrel (Vahluk/ Biang) and a small population of Elephant (Sai) and Gaur (Ramsial).

Tha Phawngpui National Park, within area of 50 sq. km. is situated in the Eastern part of the district adjacent to Myanmar. Phawngpui peak (2157 mters), the highest peak in Mizoram is located within this park. Most of the park is cover with sub-tropical broadleaf and tropical evergreen forests. Though the park is a small protected area, yet it supports a very

bird life with more than 125 species recorded so far. The important species include Blyh's Trogopan (Vanga), Dark-rumped Swift (Pengleng dum), Grey Sibia (Vasir), Striped Laughing Thrush (Vazar) etc. The site falls in the Eastern Himalaya Area. Other key fauna include the Leopard (keite), Hoolock gibbons (Hauhuk), Serow (Saza), Goral (Sathar), Asiatic Black Bear (savawm), Stump-tailed Macaque (Zawngmawt) etc. the home is also a diverse collection of Orchids.

Depending upon the density of the canopy, the forest have been divided into Dense/closed, Medium dense and less dense forest.

Densed/ closed forest

This class includes natural forests, which are not disturbed by any biotic factors like shifting cultivation and other human activities. The crown density of this class is very thick. Evergreen and semi ever-green forest covers major portion of this area. This class of forest includes the dense rain forest of Ngengpui and Phawngpui Wildlife reserves and national park. It covers an area of 331.44 sq km, which account for 12.96% of the total area of the district. Vast dense forest are found near Hmunmam, S.Diltlang, Chawngtelui, Tuithumhnar, Lungauhka, Saizawh E, Rulkual, Rawlbuk and Thaltlang villages.

The dominant species in the upper storey are *anthocecephalus chinensis, Terminalia myriocarpa, Albizzia procera, Morus macroura, Acrocarpus fraxinifolius, michelia oblonga, Bombax insigna, Callophyllum polyanthum, Artocarpus chama , Artocarpus lacucha, ficus prostrate, Tetrameles nudiflora, Dipterocarpus macrocarpus, Garuga floribunda var. gamblei, Albizzia chinensis, Pterygota alata, Parkia timoriana, Trema orientalis, Lithocarpus dealbata, Schima wallichi, Derris robusta, Elaeocarpus tectorius, Gmelina oblongifolia, Garcinia sopsopia, mesua ferrae,Dysoxylum binectariferum, Largestroemia speciosa, etc. Entada pursaetha, Smilax glabra and cayratia obovata are the dominant climbers associated with the above tree species.*

In the middle storey, the dominant species are *Mesua ferrae,Dillenia indica,Syzygium cumini,Scaphium wallichi/Trewia nudiflora, Dysoxylum binectariferum, Castanopsis indica, Bruinsmia polysperma, Castanopsis tribuloides, Lagerstroemia speciosa, Gmelina arborea,*

Podocarpus neriifolia, Dipterocarpusnmacrocarpus, Bombax insigna, albizzia procera, Anthocephalus chinensis, Lithocarpus elegans etc and different types of ferns are the dominant species. In the undergrowth the dominant species are *Ageratum conyzoides, Eupatorium odoratum, Lantana camara, Mikania micrantha, Rubus rugosus, Urena lobata, Artemisia vulgaris, Bauhinia scandens, Caesalpinia cucullata, Cissampelos pareita, Paederis foetida, Osbekia chinensis, Microlepia strigosa, Milletia pachycarpa, Nyssa javanica, Vitex heterophylla, tinospora cordifolia, Rubus rugosus etc.* There are also different species of palm and canes like *Arenga nana, Calamus erectus, Pinanga gracillis, Arenga pinnata, Calamus tenuis, Bauhinia scandens and Licuala peltata.*

Medium Dense Forest

The forests that have a crown cover neither too thick nor too thin are classed under this category. It covers an area of 229.96 Sq. Km, which accounts for 8.99% of the total area of the district. It is distributed throughout the district and found in close association with dense forests. The vegetation of this forest is more or less similar with those species found in dense forests. The only difference lies in the crown density if these forests.

Less Dense Forest

As the name of this class implies, the forest under this category has a thin crown cover. This type of forest includes forest, which were once disturbed and affected by biotic factors like cultivation and human activities. These forests are characterized by those lands where shifting cultivation had been practiced and then left fallow for over a year; the resultant new vegetation of which, regenerated to form new forests. It covers an area of 506.76 Sq. Km, which accounts for 19.82% of the total area of the district. Forests of this class are distributed throughout the district in small patches usually associated with bamboo forests and adjoining abandoned jhum lands. However, notable large patches are found near Sangau, Lungtian, Siachangkawn, Vawmbuk, Bualpui Ng, Kamalanagar, Borapansuri, Silsuri, Kukurduleya, Vaseitlang, Chamdur villages and surrounding areas of Lawngtlai town.

The dominant species in the upper storey are *Trema orientali, Lithocarpus dealbata, Macaranga indica, callicarpa arborea, Hydnocarpus kurzii,Schima wallichii, magnifera sylvatica, Helicia excelsa, Emblica oficinalis, Spondias pinnata, Derris robusta, Vivex heterophylla, Elaeocarpus tectorius, Hibiscus macrophyllus, Gmelina oblongifolia, Garcinia sopsopia, Phoebe lanceolata, anthocephalus chinensis, albizzia procera, Ficus prostrate, Albizzia chinensis, Aporusa octandra, Croton hookeri, Duabanga grandiflora, Erythrina variegate, Ficus religiosa, Ficus semicordata, Lagerstoemia speciosa, Phoebe hainesiana, terminaliancrenulata, Tetrameles nudiflora* etc.

In the middle storey, the dominant species are *Rhus javanica, Toona ciliate, Aporusa octandra, Oreocnide integrifolia, hydnocarpus kurzii, Thysanolaena maxima, Toona ciliate, Symplocos racemosa, Premna racemosa, Macaranga denticulate, Caryota mitis, Alphonsea ventricosa, Aegle marmelos, Bischofia javanica, Oroxylum indicum, Zizyphus incurve, Zizyphus mauritiana etc.* And in the undergrowth, *Pilea symeria, Phrynium capitatum, Pandanus psuedofoetidus, Dendrocnide sinuate, Clerodendrum viscosum, Cissampelos maxima, Leea indica, conyza stricta, Macaranga indica, Curculigo crassifolia, Eupatorium odoratum, Lantana camara, maesa indica, Mikania micrantha, Osbeckia sikkimensis, Polygonus glabrum, Scleria levis, ageratum conyzoides, Tithonia diversifolia, Tacca integrifolia, spilanthus acmella, Gynura bicolor, achyranthes aspera* etc.

Bamboo

Moist deciduous bamboo forests are found to be distributed throughout Lawngtlai district but more concentrated towards and within the Chakma Autonomous jurisdiction. The land cover in these areas is very much devoid of proper tree cover and large patches of land are dominated either by secondary open forests of bamboo. Bamboo forests are mostly found in low lying areas near streams and rivers. It constitutes the largest cover among the land use classes. In some places it is also found on hill slopes. Bamboo forest covers an area of 819.06 Sq.Km, which accounts for 32.03% of the total area of the district.

The dominant bamboo species found in this area are *Dendrocalamus hamiltonii, Dendrocalamus longispathus, Melocanna bambusoides, Schizostachyum fuchsianum,*

*Chimonobambusa intermedia, Schizostachyum polymorphum and Dinochloa compactiflora (*syn. *Melocalamus compactiflora).*

Forest Plantation

Forest plantations are distributed throughout the district. Some have large coverage while most of them have area below the minimum map able unit. The prominent forest plantations are given below.

Teak

Teak plantation is the most predominant forest plantation found in the district. Teak plantations in the district are often those taken up and managed by the autonomous Council's forest department (LADC/CADC) and in very few cases owned by individuals. It has replaced primary forest in many places. They are usually planted along the roadside and are found abundantly near Kawlchaw W, Lungtian, Cheural, Saizawh E, Rulkual, Ngengpuikai, Diltlang 'S', Hmunnuam, S.Bungtlang, Saikhawthlir, Vaseikai, Kalamanagar, borapansuri and Chhotaguisuri villages. Large areas of Teak plantations are found near riverbanks of Chhimtuipui, Tuichawng, Ngengpui and Kawrawng rivers. The area coverage may not tally exactly with those from the official records of Forest department as most of the teak plantations are often found in close association with bamboo forest. Besides, these plantations could not give enough signature separability due to leaf fall and dominance of other vegetative signature present around them while interpretation of the satellite imagery. Thus, only mappable and ground verified plantations are taken into consideration for the area statistics. These teak plantation covers an area of 6.65 Sq.Km, which accounts for 0.26% of the total area of the district.

Miscellaneous plantation

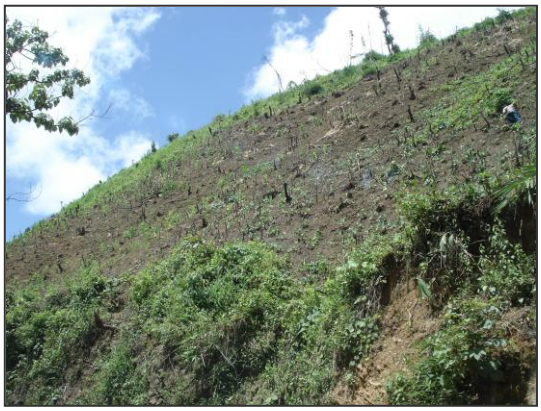
Miscellaneous plantations include any other forest plantations other than Teak or Teak planted along with other tree species. Eg Gamari (*Gmelina arborea*), Pine (*Pinus kesiya*), Champa (*Michelia oblonga*), Gurjan (*Dipterocarpus turbinatus*), Amla (*Emblica officinalis*) etc. these plantations are undertaken under Afforestation programmes of VFDC, which according to official sources, were initiated some 5 years back. In other cases, these plantations are taken up as Social Forestry programmes. Pine plantations are found at high altitude locations near Thaltlang village en-route to the peak of Blue Mountain and its ridges. These miscellaneous covers an area of 7.29 Sq.Km, which accounts for 0.28% of the total area of the district.

SHIFTING CULTIVATION

The main method of agriculture is jhuming/shifting cultivation, thus most of the people are cultivators. The seeding is done during March and harvesting period starts by the end of October and usually ends in November. Shifting cultivation area can be classified into current shifting cultivation and abandoned shifting cultivation.

Current Shifting Cultivation

Shifting cultivation commonly known, as *jhuming* is still a prominent farming system practiced by farmers in the district, mostly in small patches/land holdings near forests and settlements. The jhum plots are small in size and irregular in shape. Current jhums are always associated with young abandoned jhum and secondary forests. The location of jhum is related both to altitude and slope. Sites above 1200 mts are thus seldom jhumed. The percentage of jhumimg is found to be highest on the gentle slopes and progressively decreases on steeper slopes. It covers an area of 145.03 Sq.Km, which accounts for 5.67% of the total area of the district.



Abandoned Shifting Cultivation

Patches of young abandoned jhums are found distributed all over the district, closely associated with current jhums, settlement areas and foresrt blanks. Depending on how long the land is left fallow and phytogeography, there can be vegetative variations among young abandoned jhums consisting of young bamboo shoots, tree seedlings and saplings. However, in general, the dominant species in young abandoned jhum areas are *Melocanna bambusoides, Eupatorium odoratum, Thysonalaena maxima, Erianthus longisetosus, Urena lobata, Cynodon dactylon, Lantana camara, Plantago major, Osbeckia chinensis, Imperata cylindrical, Mikania micrantha, Ageratum conyzoides* etc.

In the present study, young abandoned jhums of approximately up to three years are considered. It covers an area of 343.05 Sq.Km, which accounts nfor 13.42% of the total area of the district.

SCRUB LAND

Scrub lands are those lands that are frequently disturbed biotic factors and other human activities; as a result these areas usually have thin vegetative cover and in some cases are void of vegetation. These areas are mostly dominated by grass species like *Saccharum longisetosum, Imperata cylidrica, Scleria levis, Cynodon dactylon* etc. and herbs like *Eupatorium odoratum, artemissia vulgaris, Mikania micrantha* etc. They are found along roadsides, abandoned river valley areas and on high altitude rugged/rocky terrains. Large patches of scrub land are found near Silsur, Chhotapansuri, Kamalanagar, Borkolok, Vaseikai, Chhotaguisuri, Balosora, devasora 'S', Parva, Mampui, Vanhne 'R', sihtlangpui, Kawlchaw W, Rawlbuk, Vawmbuk, Bualpui Ng, Lungzarhtum villages and around Lawngtlai town in notably large areas to the western and southern part. The vast river valley areas along the bank of R.Tuichawng (from Kamalanagar to Chamdur villages) has notably large stretches of grasslands which has been classed under scrub land as these areas are mostly dominated by scrub/grass species, a resultant secondary vegetative succession of abandoned jhums and wet rice cultivation. These areas can otherwise be called wastelands. The CADC has also taken up several afforestation and wasteland reclamation projects in these valley areas to recoup and reclaim these wastelands for productive use. Prominent large grasslands are also found within thePhawngpui National Park alongside the pine plantations and Rhododendron trees. The soil cover in these high altitude areas are exceptionally thin which favors the growth of other scrub species like *Parthenium* sps.etc. Scrub land covers an area of 110.63 Sq.Km, which accounts for 4.33% of the total area of the district.

WATER BODY

This class includes big rivers within the district. It covers an area of 17.86 Sq.Km, which accounts for 0.76% of the total area of the district. Four important rivers namely River Kawrpui, River Tuichawng, river Mengpui/Ngengpui, River Tuipui and River Chhimtuipui/Kolodyne drains Lawngtlai district. River Kawrpui flows to the west forming an international boundary line with Bangladesh. The north-flowing River Tuichawng forms a boundary line for the Chakma Autonomous District Council to the east till it confluences with River Chawngte forming a district boundary with Lunglei. River Darzo to the north demarcates the north eastern boundary of Lawngtlai district with Lunglei district and continues to flow into the famous Phawngpui National Park (Blue Mountain). River Tuipui forms an international boundary with Myanmar tillit meets River Siachang to the east. The south flowing River Mengpui/Ngengpui drains to the middle of the district, flowing through Ngengpui Wildlife Sanctuary and eventually confluences with the south flowing

R.Chhimtuipui/ Kolodyne. R.Chhimtuipui/ Kolodyne forms an international boundary with Myanmar to the south and a district with Saiha and Lunglei to the east and north respectively.

Sl.No	Category	Area (Sq.Km)	%
1	**Built-up land** Town Village	 1.77 12.62	 0.07 0.50
2	**Agriculture Land** 2.1 Cropland Kharif 2.2 Plantantion Citrus woodland Banana	 20.75 0.36 3.87	 0.81 0.01 0.15
3	**Forest** 3.1 Dense 3.2 Medium Dense 3.3 Less Dense 3.4 Bamboo 3.5 Forest Plantation Teak Miscellaneous	 331.44 229.96 506.76 816.06 6.65 7.29	 12.96 8.99 19.82 32.03 0.26 0.28
4	**Shifting Cultivation** 4.1 Current Shifting Cultivation 4.2 Abandoned Shifting Cultivation	 145.03 343.05	 5.67 13.42
5	**Scrub land**	110.63	4.33`
6	**Water body**	17.86	0.70
	Total	2557.10	100.00

Analysis Of Farming Situation Of Major Crops Or Commodities And The Proposed Strategies Of Lawngtlai District

STRATEGIES PROPOSED FOR IMPROVING PRODUCTION AND PRODUCTIVITY OF PADDY UNDER LAWNGTLAI DISTRICT

Items	Existing practice	Recommended	Problems diagnosed	Proposed strategy
Sowing – planting - Time - Method	April – May Direct sowing/Broadcast	April – May Line – sowing	- Lack of awareness	- Training & demonstration
Varieties	Non-descript	IR-64	-	- To procure variety suited for hill condition
Land preparation	Slash & burn	Construction of soil conservation structures with trenches or bunds	- Financial problem - Lack of awareness	- Credit through banks - Training & demonstration - Government assistance
Organic manure	Negligible	Composting, BD, EM Technology & Vermicomposting.	- Lack of awareness - Financial problems	- Training, demonstration & exposure visits - Credit through banks
Fertilizers (Kg/Ha) (N:P:K)	Negligible	60:40:40 (Direct seeded) 40:20:20 (Transplanted)	- Lack of awareness - Financial problems	- Training, demonstration & exposure visit - Credit through banks
Pest management	Cultural/mechanical	IPM technology	- Lack of awareness	- Training & demonstration
Weed management -	Manual	Butachlor	- Lack of awareness - Lack of finance	- Training & demonstration
Land management	-	Liming to control soil acidity	- Lack of finance	- Credit through banks - Government assistance

STRATEGIES PROPOSED FOR IMPROVING PRODUCTION AND PRODUCTIVITY OF GINGER UNDER LAWNGTLAI DISTRICT

Items	Existing practice	Recommended	Problem diagnosed	Proposed strategy
Sowing – planting - Time - Method	 April – May Direct sowing	 April – May Direct sowing	-	-
Land preparation	Slash & burns	Cultivation in terraces	- Lack of awareness - Financial problems	- Training, demonstration - Credit through banks - Government assistance
Seed treatment - Phosphotika - Blitox	 No application No application	 10gm/kg seed, 2gm/kg seeds	- Lack of awareness	- Training, demonstration & exposure visits
Organic manures	Negligible	Compost, BD , EM Technology, & Vermi-compost	- Lack of awareness - Financial problem	- Training, demonstration & exposure visits - Credit through bank
Fertilizers (Kg/Ha) (N:P:K)	Negligible	60 : 60 : 60	- Lack of awareness - Financial problems	- Training, demonstration & exposure visits - Credit through bank - Subsidy
Pest management	Cultural/ mechanical	IPM technology	- Lack of awareness	- Training, demonstration & exposure visit
Disease management - Rhizome rot	 No application	 Dithane M-45 2.5g/ lit water	- Lack of awareness	- Training, demonstration & exposure visit
Av.yield (qtl/Ha)	100	150	- Non-adoption of recommended practices	- Training, demonstration & exposure visit

STRATEGIES PROPOSED FOR IMPROVING PRODUCTION AND PRODUCTIVITY OF MAIZE UNDER LAWNGTLAI DISTRICT

Items	Existing practice	Recommended	Problems diagnosed	Proposed strategy
Sowing – planting - Time - Method	April – May Direct sowing	April – May Direct sowing	-	-
Seeds	Non-descript/ HYV	HYV	- Lack of awareness - Non-availability of seeds	- Training - Provision of HYV seeds
Organic manures	No application	2 tons	- Lack of awareness - Non-availability of compost	- Training & demonstration - Provision of compost
Fertilizers (Kg/Ha) (N:P:K)	No application	80:40:40	- Lack of awareness - Financial problems	- Training, demonstration & exposure visits - Assistance through banks - Subsidy
Weed management	Manual	Butachlor 25kgs/Ha	- Lack of awareness	- Training, demonstration & exposure visit
Land preparation	Slash & burns (jhum)	Terracing	- Lack of awareness - Financial problem	- Training - Assistance through banks - Government assistance
Av.yield (qtl/Ha)	25	45	- Non-adoption of recommended practices	- Training, demonstrations & exposure visits

STRATEGIES PROPOSED FOR IMPROVING PRODUCTION AND PRODUCTIVITY OF BANANA UNDER LAWNGTLAI DISTRICT

Items	Existing practice	Recommended	Problems Diagnosed	Proposed strategy
Sowing – planting - Time - Method	 March Pit planting	 March Pit planting	-	-
Organic manure	Not applicable	Compost,vermi-culture 5 tons	- Lack of awareness	- Training, demonstration
Varieties	Mostly non-descript	Giant & dwarf cavendish	-Non-availability of planting material	- Training & Demonstration
Seed rate/ha	1,500	1,500	-	-
Fertilizers (Kg/Ha) (N:P:K) per plant	Negligible	150g:200g:500g	- Lack of awareness - Non-availability	- Training & demonstration - Supply of fertilizers - Subsidy
Micro nutrient	No application	Spraying multiplex Banana@500g/125lits	- Lack of awareness - Non-availability	-
Pest management - Stem borer - Fruit scarring Beetle	No application	 Carbofuran G Rogor spray	- Lack of awareness	- Training, demonstration & exposure visits
Diseases management - Bunchy top - Sigatoka leaf spot	No application	 - Roguing/Legislation - Dithane M 45 0.1%	- Lack of awareness	- Training, demonstration & exposure visits
Weed management - Mechanical - Chemical	Manual	- Mulching, Diuron @ 4kg/ha	- Lack of awareness	- Training, demonstration & exposure visits
Land management - acidity	No measures taken	Liming@2kg/plant per year	- Lack of awareness - Non-availability of slaked lime	- Training, demonstration - Supply of slaked lime
Av.yield (qtl/Ha)	120 q/Ha	250 Q/Ha	- Non-adoption of recommended practices	- Training, demonstration & exposure visits

STRATEGIES PROPOSED FOR IMPROVING PRODUCTION AND PRODUCTIVITY OF CITRUS UNDER LAWNGTLAI DISTRICT

Items	Existing practice	Recommended	Problems diagnosed	Proposed strategy
Sowing – planting - Time - Method	May – June Pit planting	May – June Pit planting	-	
Spacing	4m x 4m	5m x 5m	- Lack of awareness - To avoid labour charge for after care	- Training, demonstration
Organic manure	Negligible	10kgs/plant	- Lack of awareness - Lack of organic manures	- Training & demonstration - Supply of organic manures
Fertilizers (g/plants) (N:P:K)	No application	300g : 240g : 200g	- Lack of awareness - Non-availability	- Training, demonstration - Supply of fertilizers
Micro nutrient (per plants)	No application	Spraying Multiplex (Citrus)@500g/150lit	- Lack of awareness	- Training & demonstration
Pest management - Bugs - Lemon buterflyetc.	No application	Spraying of Cypermethrin 2 times	- Lack of awareness - Lack of chemicals	- Training, demonstration - Supply of chemicals
Diseases management - Decline - Canker	No application	- Scientific management+ regular spraying of fungicide - Bacterimycin @0.04%	- Lack of awareness	- Training & demonstration
Weed management	Manual	-	- Awareness on use of weedicide	- Training & demonstration
Water management	No application	Irrigation/week during summer	- Lack of water harvesting structures	- Assistance through banks
Rejuvenation	Not done	Rejuvenation in old orchards	- Lack of awareness on methodology	- Training & demonstration

STRATEGIES PROPOSED FOR IMPROVING PRODUCTION AND PRODUCTIVITY OF POTATO UNDER LAWNGTLAI DISTRICT

Items	Existing practice	Recommended	Problems diagnosed	Proposed strategy
Sowing – planting - Time - Method	Jan – March Pit planting	Jan – March Pit planting	-	-
Organic manure	1 kg/pit	5 kgs/pit	- Lack of organic manures - Financial problems	- Supply of organic anures - Assistance through banks - Government assistance
Fertilizers (g/plants) (N:P:K)	80 : 60 : 60	150 : 130 : 150	- Financial problem - Non-availability	- Assistance through banks - Supply of fertilizers - Subsidy
Pest management - Bugs - Beetles.	No application	1 spraying	- Lack of awareness	- Training & demonstration
Diseases management - Late blight	No application	- Dithane M 45 (0.45%)	- Lack of technical support	- Training & demonstration
Weed management - Mechanical - Weedidice	Manual	Manual	- Need problems less, manual is effective	
Water management	No application	3 irrigation/week during Feb-May	- Lack of water harvesting structures	- Assistance through banks - Government assistance
Land management - Acidity	Negligible	Liming @2 kgs/plant	- Non-availability of sufficient slaked lime	- Supply of slaked lime
Av.yield	21 Qtl/Ha	60 Qtls/Ha	- Non-adoption of recommended practices	- Training, demonstration & exposure visits

STRATEGIES PROPOSED FOR IMPROVING PRODUCTION AND PRODUCTIVITY OF FRENCH BEAN UNDER LAWNGTLAI DISTRICT

Items	Existing practice	Recommended	Problems diagnosed	Proposed strategy
Sowing – planting - Time - Method	Throughout the year Direct	Throughout the year Direct	-	-
Organic manure	1 tons/Ha	10 tons/Ha	Lack of supply	- Supply of organic manures
Fertilizers (g/plants) (N:P:K)	Negligible	80:60:40	- Lack of awareness - Non-availability of fertilizers	- Training & demonstration - Supply of fertilizers
Bio-fertilizers - Rhizobium	No application	Seed treatment@ 500gms/kg seeds	- Lack of awareness - Non-availability of fertilizer	- Training & demonstration - Supply of fertilizers
Pest management - Bugs - Beetles.	No application	1 spray of Nuvans	- Lack of awareness	- Training & demonstration
Weed management	Manual	Manual	-	-
Av.yield	50 Qtls/Ha	80 Qtls/Ha	- Non-adoption of recommended practices	- Training & demonstration

STRATEGIES PROPOSED FOR IMPROVING PRODUCTION AND PRODUCTIVITY OF TOMATO UNDER LAWNGTLAI DISTRICT

Items	Existing practice	Recommended	Problems diagnosed	Proposed strategy
Sowing – planting Method	Direct sowing	Transplanting	- Lack of awareness	- Training & demonstration
Organic manure (FYM)	-	10 tons/Ha	- Lack of FYM - Lack of finance	- Training & demonstration
Fertilizers (NPK) Kg/Ha.	Negligible	60:60:120	Financial problems Non-availability of fertilizers	- Assistance through banks - Supply of fertilizers - Subsidy
Pest management Fruit borer White fly	No application	2 spraying of Nuvacron	Lack of awareness	- Training & demonstration
Diseases management Blight	No application	Dithane M-45	Lack of awareness	- Training & demonstration
Weed management	Manual	-	Lack of awareness	- Training & demonstration
Av.yield	70	150 Qtls/ha	Non-adoption of recommended practices	- Training & demonstration

STRATEGIES PROPOSED FOR IMPROVING PRODUCTION AND PRODUCTIVITY OF MULBERRY & COCOON UNDER LAWNGTLAI DISTRICT

Items of packages	Existing practice	Recommended Practice	Problems diagnosed	Fr. Proposed extension strategy
Sowing – planting - Time - Method	 April – May Pit system	 April – May Pit system	-	-
Organic manure	No Application	10 tons	- Lack of awareness - Lack of finance	- Training & credit facility
Fertilizers (N:P:K)	No Application	220:80:80	- Lack of awareness - Lack of finance	- Training & credit facility
Pest - Leaf roller	Nuvan	Nuvan	- Lack of awareness	- Training & demonstration
Rearing method	Tray rearing	Tray rearing	-	-
Cocoon yield	30 kgs	80 kgs	- Lack of awareness on General management	- Training & demonstration

STRATEGIES PROPOSED FOR IMPROVING PRODUCTION AND PRODUCTIVITY OF COW UNDER LAWNGTLAI DISTRICT

Items of packages	Existing practice	Recommended Practice	Specific problems (**)	Fr. Proposed extension strategy (***)
Feed management				
- Green fodder (Kg/day)	5 – 10	30 – 40	1,3	1
- Dry fodder (Kg/day)	0 – 1	5 – 8	2,3	3
- Concentrates (g/day)	200 – 500	2000 – 5000	1	1
- Minerals (grms/day)	5 – 10	25 – 30	1	1
- Vitamins (Ml/day)	-	5 – 1	1	1
Inter calving period	18 – 24	12 months	1,4	1,4
Health care				
- Rinderpest	Yes	1 lifetimes	-	-
- Deworming	Yes	1-2 years	-	-
- HSBQ	-	2 per year	-	2
- Artificial Insemination	No	A.I	Non-Awareness	Provision of A.I facility

** Specific problems
1. Lack of awareness
2. Lack of availability of fodder
3. Cost factor
4. Repeated breeding
5. Management practices

*** Farmer proposed extension strategies
1. Availability of technical awareness
2. Awareness
3. Availability fodder
4. Availability concentrate clear cost

STRATEGIES PROPOSED FOR IMPROVING PRODUCTION AND PRODUCTIVITY OF FISH UNDER LAWNGTLAI DISTRICT

Items of packages	Recommended Practice	Existing practice	Specific problems (**)	Proposed strategy (***)
Pond preparation - Organic manures - Inorganic manures - Bio-fertilizers	 10,000 kg cowdung/ha 200-400 kg/ha 6-8 kg	 Small ponds - -	 2 2	 1,2 1,2,4
Feeding schedule	1:1 ratio of Rice bran 2% oil cake body wt. Green leaf	Partially followed	1,2	1,2,4
Cultural practice	Multispecies culture	Monoculture	1,2	3,4

** Specific problems
1. Lack of awareness
2. Lack of knowledge
3. Lack of convention
4. Lack of finance
5. Lack intensive

*** Farmer proposed extension strategies :
1. Awareness campaign
2. Demonstration
3. Training
4. Exposure visits
5. Linkage with banks

Fig 5.D Present Trend about growth in production of Ginger in Lawngtlai District

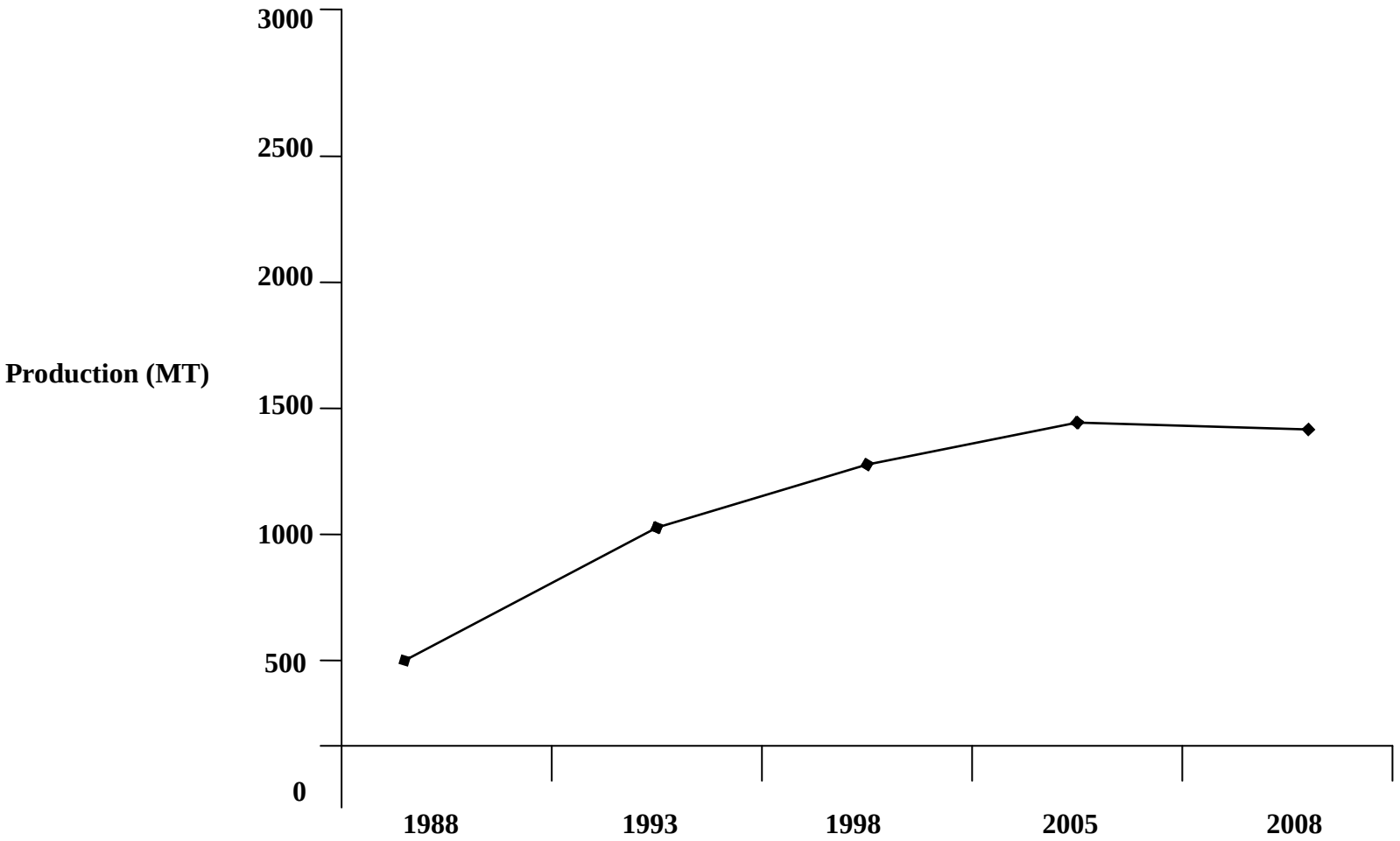


Fig 5.E Present Trend about growth in production of Potato in Lawngtlai District

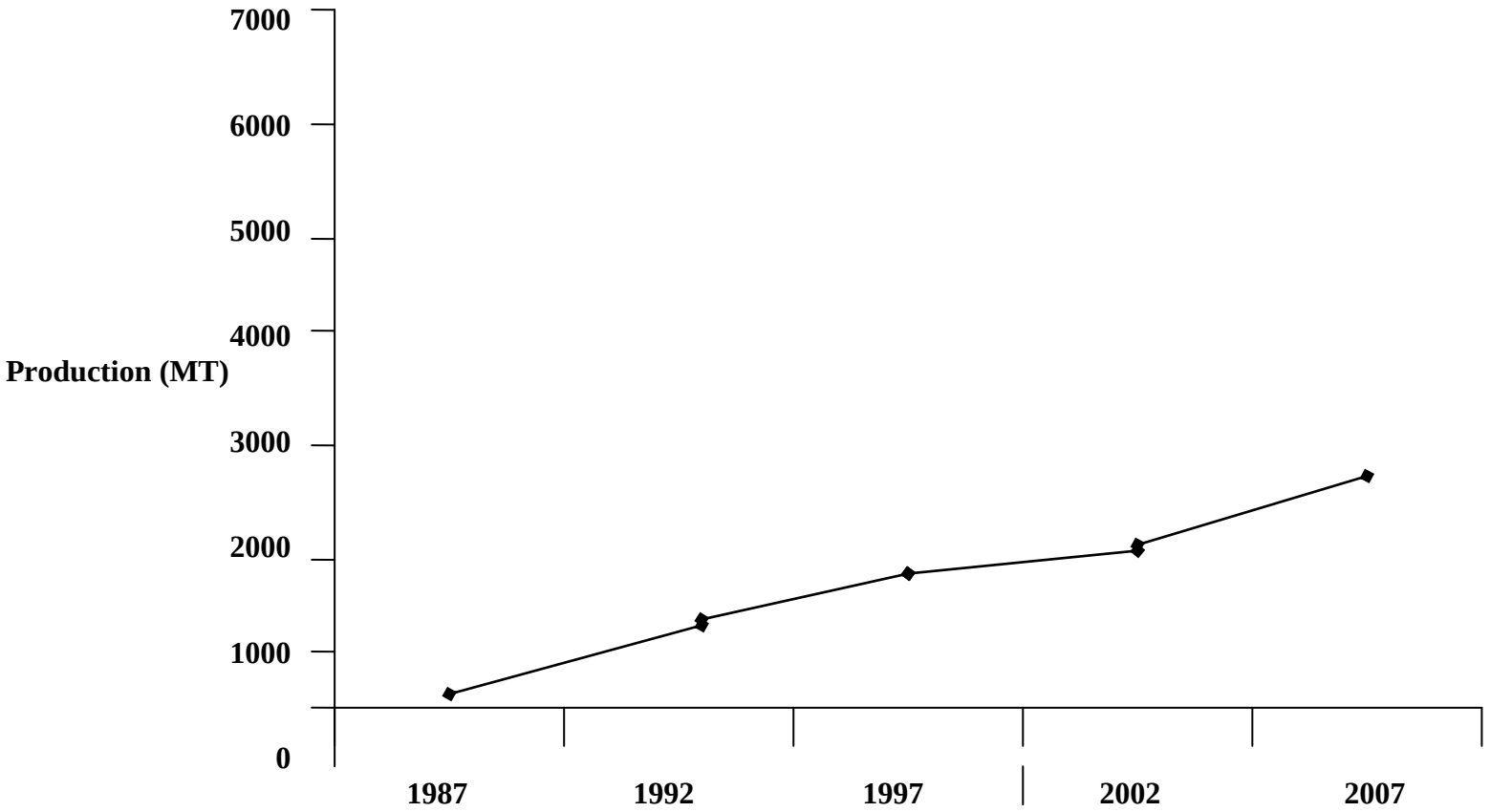


Fig 5.F Present Trend about growth in production of Banana in Lawngtlai District

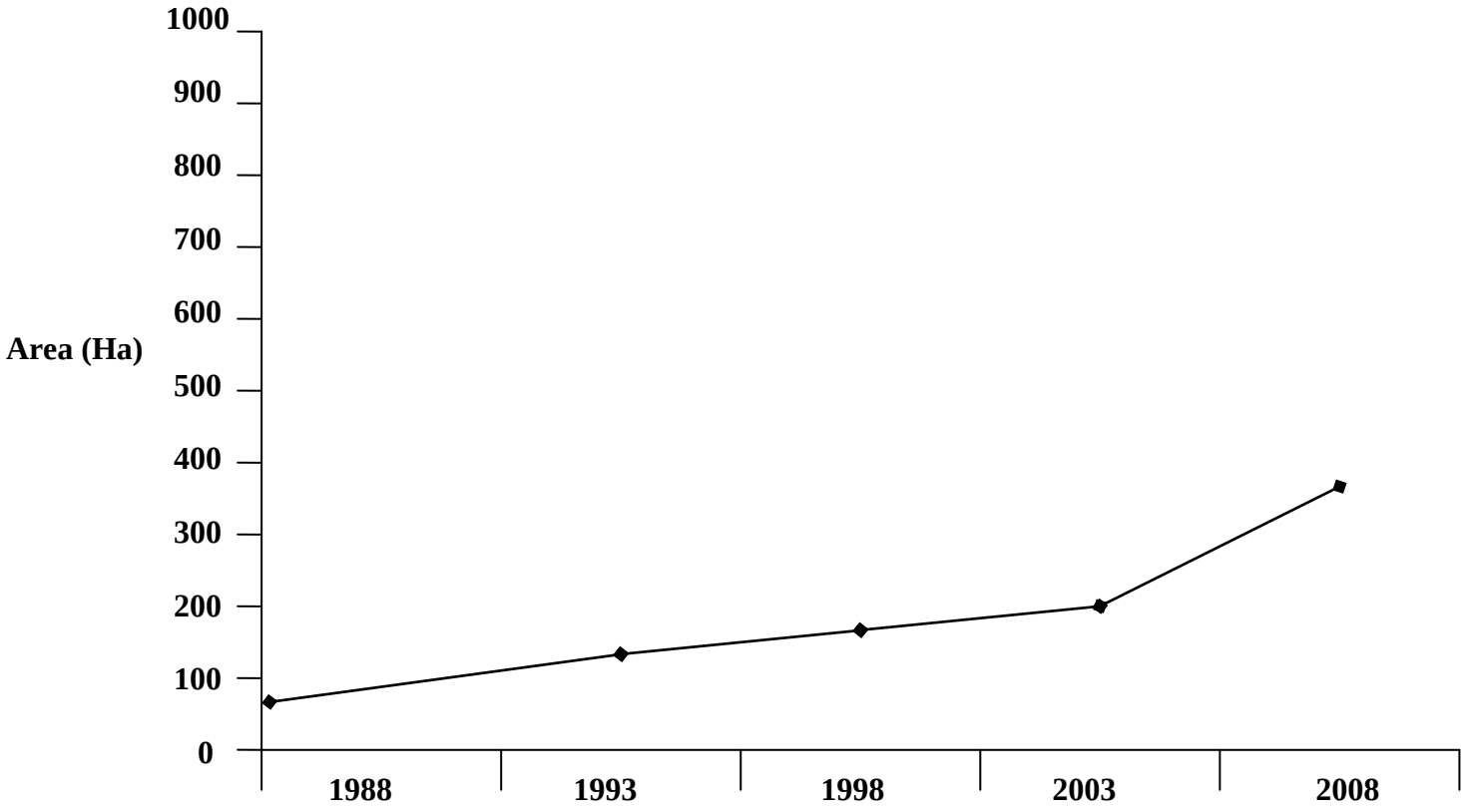


Fig 5.G Present Trend about growth in production of Citrus in Lawngtlai District

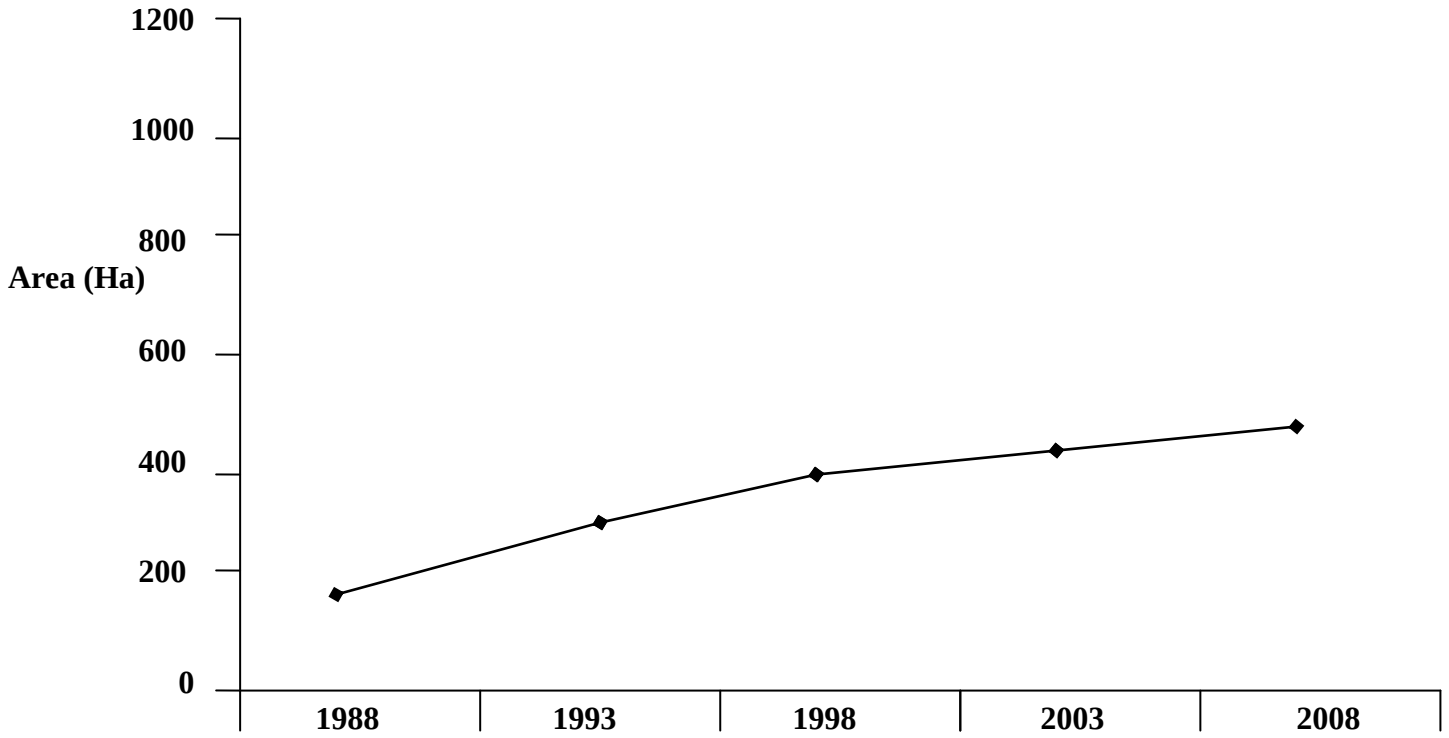
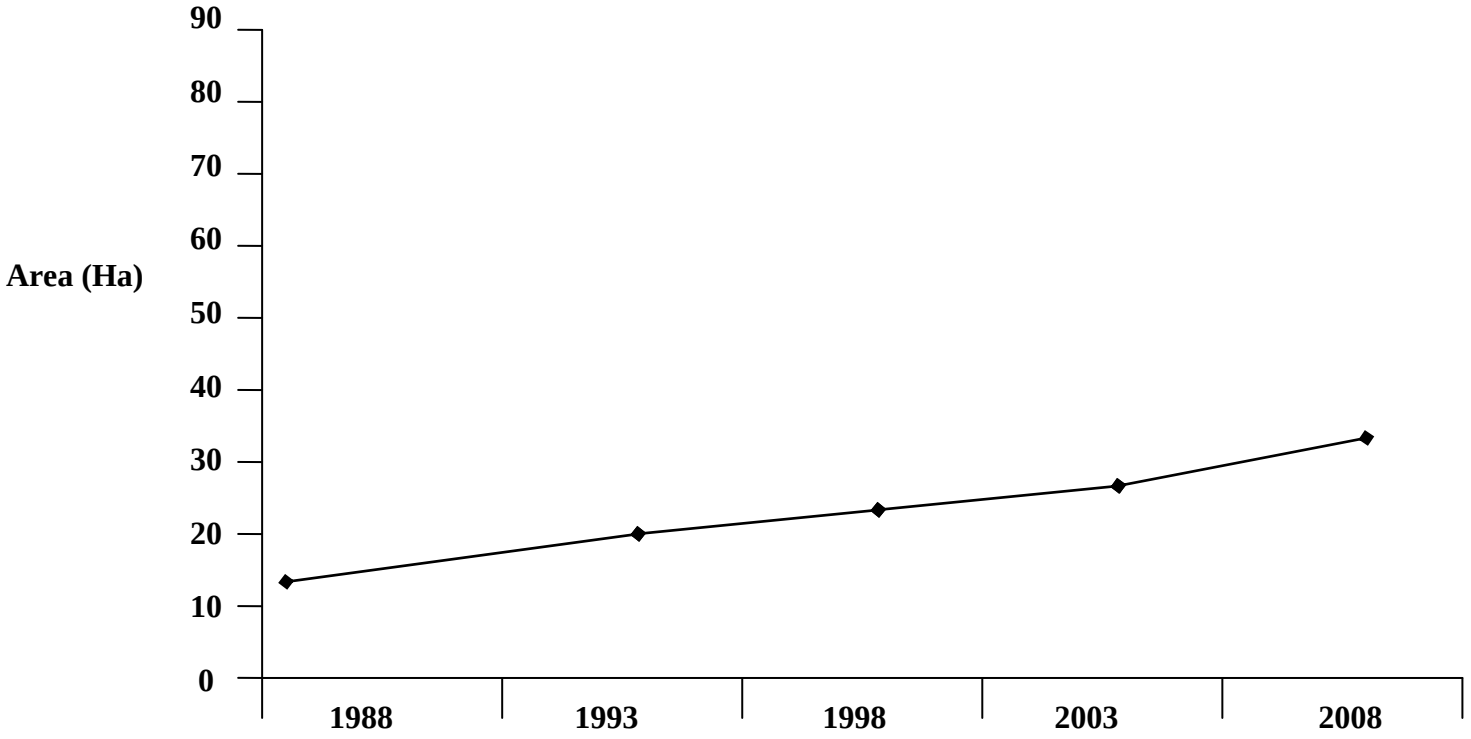


Fig 5.H Present Trend about growth in production of Fish in Lawngtlai District



Proposed Strategies for IPM/INM/ Seed replacement/ Marketing / PPP Farm Mechanization / Burning problems etc. in the District

Proposed strategy for promoting integrated nutrient management in Paddy

Particulars	Existing practices	Recommended Practice	Problems (**)	Proposed strategy (***)
Use of manure(t/ha) - FYM	Nil	5 tons	a,e,f	a,c,d
Major nutrient (Kg/ha) (NPK)	Nil Nil Nil	60:40:40	a,f a,f a,f	a,d a,d a,d
Top dressing (Kg/ha)-N	Nil	50	a,e,f	a,c,d
Use of micro-nutrient (Kg/Hs) Zn So4	-	20	a,e,f	a,c,d
Cultivation of legumes as green manures	-	-	a,e,d	a,c,d
Use of bio-fertilizer (Kg/Ha)-Azospyrillum	-	-	a,f	a,d

** Problems

a) Lack of awareness

b) Other farmer follow it

c) High residual effect of fertilizer manure used in previous crop

d) Fear of loss of yield if does is reduced

e) Lack of finance

f) Lack of availability

*** Proposed strategy

a) Training, method Demonstration & Exposure visit

b) Mass Media

c) Linkage with credits institution or cried thrift activity in self help group

d) Training on compost making and use of fertilizer

Proposed strategy for promoting integrated nutrient management in Ginger

Particulars	Existing practices	Recommended Practice	Problems (**)	Proposed strategy (***)
Manure (t/ha) - FYM	No application	1 ton	a,f	a,d
Major nutrient (Kg/ha) (NPK)	No application	80:60:60	a,e,f a,e,f a,e,f	a,c,d a,c,d a,c,d
Use of micro-nutrient	No application	200gms	a,f	a
Use of bio-fertilizer	No application	10gm/kg	a,e	a,c
Cultivation of legumes as green manures	Not done	2 tons	a,f	a

** Problems

a) Lack of awareness

b) Other farmer follow it

c) High residual effect of fertilizer manure used in previous crop

d) Fear of loss of yield if does is reduced

e) Lack of finance

f) Lack of availability

*** Proposed strategy

a) Training, method Demonstration & Exposure visit

b) Mass Media

c) Linkage with credits institution or cried thrift activity in self help group

d) Training on compost making and use of fertilizer

Proposed strategy for promoting integrated nutrient management in Sugar cane

Particulars	Existing practices	Recommended Practice	Problems (**)	Proposed strategy (***)
Use of Manure (t/ha) - FYM	No application	10 tons	a,e,f	a,c,d
Major fertilizer (NPK)	No application	100:70:60	a,e,f	a,c
Top dress (Kg/Ha) – N	No application	65kgs	a,e,f	a,c
Cultivation of legumes as green manures	Not done	2 tons	a,f	a
Use of bio-fertilizer (Kg/Ha)-Azospyrillum	Not done	200gms	a,f	a,c

** Problems

a) Lack of awareness

b) Other farmer follow it

c) High residual effect of fertilizer manure used in previous crop

d) Fear of loss of yield if does is reduced

e) Lack of finance

f) Lack of availability

*** Proposed strategy

a) Training, method Demonstration & Exposure visit

b) Mass Media

c) Linkage with credits institution or cried thrift activity in self help group

d) Training on compost making and use of fertilizer

Proposed strategy for promoting integrated nutrient management in Banana

Particulars	Existing practices	Recommended Practice	Problems (**)	Proposed strategy (***)
Use of manure(t/ha) - FYM	2kgs/plant	10kgs/plant	a,f	a,c
Use of (NPK) (gmp/plant)	No application	110:120:330	a,e,f	a,c
Use of micro-nutrient Multiplex Banana	No application	500g/125lits	a,f	a
Cultivation of legumes as green manuring	Not done	2 tons	a,e,f	a,c

** Problems

a) Lack of awareness

b) Other farmer follow it

c) High residual effect of fertilizer manure used in previous crop

d) Fear of loss of yield if does is reduced

e) Lack of finance

f) Lack of availability

*** Proposed strategy

a) Training, method Demonstration & Exposure visit

b) Mass Media

c) Linkage with credits institution or cried thrift activity in self help group

d) Training on compost making and use of fertilizer

Proposed strategy for promoting integrated nutrient management in Potato(rainfed)

Particulars	Existing practices	Recommended Practice	Problems (**)	Proposed strategy (***)
Use of manure(t/ha) - FYM	-	5-10 tons	a,f	a
Major nutrients (NPK) (gm/plant)	60:50:50	100:110:150	a,e,f	a,c
Cultivation of green manures	Not done	2 tons	a,e,f	a,c

** Problems

a) Lack of awareness

b) Other farmer follow it

c) High residual effect of fertilizer manure used in previous crop

d) Fear of loss of yield if does is reduced

e) Lack of finance

f) Lack of availability

*** Proposed strategy

a) Training, method Demonstration & Exposure visit

b) Mass Media

c) Linkage with credits institution or cried thrift activity in self help group

d) Training on compost making and use of fertilizer

Proposed strategy for promoting integrated nutrient management in Orange

Particulars	Existing practices	Recommended Practice	Problems (**)	Proposed strategy (***)
Use of manure(t/ha) - FYM	No application	10kgs	a,e,f	a,c
Major nutrients (NPK) (gm/plant)	No application	300:240:200	a,e,f	a,c
Micro-nutrient (Multiplex Citrus)	No application	500/150 litres water	a,f	a
Use of green manuring	Not done	2 tons	a	a

** Problems

a) Lack of awareness

b) Other farmer follow it

c) High residual effect of fertilizer manure used in previous crop

d) Fear of loss of yield if does is reduced

e) Lack of finance

f) Lack of availability

*** Proposed strategy

a) Training, method Demonstration & Exposure visit

b) Mass Media

c) Linkage with credits institution or cried thrift activity in self help group

d) Training on compost making and use of fertilizer

Proposed strategy for promoting integrated nutrient management in Soyabean

Particulars	Existing practices	Recommended Practice	Problems (**)	Proposed strategy (***)
Use of manure(t/ha) - FYM	No application	2 tons	a,f	a
Major nutrients (NPK) (gm/plant)	No application	20:60:40	a,e,f	a,c
Top- dressing MOP	No application	3kgs/100lit water	a	a
Use of bio-fertilizer Rhizobium	No application	200gms	a	a

** Problems

a) Lack of awareness

b) Other farmer follow it

c) High residual effect of fertilizer manure used in previous crop

d) Fear of loss of yield if does is reduced

e) Lack of finance

f) Lack of availability

*** Proposed strategy

a) Training, method Demonstration & Exposure visit

b) Mass Media

c) Linkage with credits institution or cried thrift activity in self help group

d) Training on compost making and use of fertilizer

Proposed strategy for promoting Integrated Pest Management in Paddy (Irrigated)

Particulars	Existing practices	Recommended Practice	Problems (**)	Proposed strategy (***)
Cultural practices - summer ploughing	Nil	Deep ploughing	- Lack of awareness - Non-receipt of early rains	- Demonstration
Bio-pesticides - Trichograma - Nuvan - NPV	Cultural & small use of pesticides	2 application spray NPV once	- Lack of awareness - Non-availability of materials	- FFS/demonstration - Provisions of materials by Deptt.
Other practices - Rhizome traps - Light traps etc -	Nil	8-10 Pheromone traps	- Lack of awareness - Non-availability of traps	- FFS/demonstration - Supply of Pheromone traps
Pesticides (appln) - Spraying - Dusting - Seed treatment - Soil application	No application	1	- Lack of awareness - Non-availability of chemicals	- FS concepts - Demonstration & supply of chemicals

Proposed strategy for promoting Integrated Pest Management in Paddy (Jhum)

Particulars	Existing practices	Recommended Practice	Problems (**)	Proposed strategy (***)
Cultural practices - summer ploughing	Done	-	-	-
Bio-pesticides - Trichograma - Nuvan - NPV	No application	2 application 1 spraying NPV	- Lack of awareness - Non-availability	FFS(farmers' field school/concept - Demonstration & supply of nutrients
Other practices - Rhizome traps - Light traps etc -	Not done	8-10 Pheromone traps	- Lack of awareness - Non-availability of traps	- FFS concept - Demonstration & supply of pheromone traps
Pesticides (appln) - Spraying - Dusting	No application	1	- Lack of awareness	- FFS concepts & demonstration

Proposed strategy for promoting integrated Pest Management in Ginger

Particulars	Existing practices	Recommended Practice	Problems (**)	Proposed strategy (***)
Cultural practices - Clean seeds	Done	Disease free seeds	-	-
Bio-pesticides - Neem product - NPV etc	No application	2 application	- Lack of awareness - Non-availability of materials	- Training & demonstration - Supply of materials
Other practices - Pheromone traps - Light traps etc -	Not done	-	- Lack of awareness - Non-availability of traps	- Training, demonstration & supply of traps
Pesticides (appln) - Spraying - Dusting - Seed treatment etc	No application	1	- Lack of awareness	- Training & demonstration

Proposed strategy for promoting Integrated Pest Management in Maize

Particulars	Existing practices	Recommended Practice	Problems (**)	Proposed strategy (***)
Cultural practices - summer ploughing - Clean seeds	- Done	Deep ploughing April-May	- Lack of awareness	Training & demonstration
Bio-pesticides - Neem product - NPV etc	- No application	2 application	- Lack of awareness - Non-availability of materials	- Training & demonstration - Supply of materials
Other practices - Pheromone traps - Light traps etc -	- Not done	-	- Lack of awareness - Non-availability of materials	- Training & demonstration - Supply of materials
Pesticides (appln) - Spraying - Dusting - Seed treatment	- No application	1	- Lack of awareness	- Training & demonstration

Proposed strategy for promoting integrated Pest Management in Soyabean

Particulars	Existing practices	Recommended Practice	Problems (**)	Proposed strategy (***)
Cultural practices - Timely sowing - Clean seeds etc.	Done	-	-	-
Bio-pesticides - Neem product - NPV etc	- No application	2 application	- Lack of awareness - Non-availability of materials	- Training & demonstration - Supply of materials
Other practices - Pheromone traps - Light traps etc	- Not done	-	- Lack of awareness - Non-availability of traps	- Training & demonstration - Supply of traps
Pesticides (appln) - Spraying - Dusting	- No application	1	- Lack of awareness	- Training & demonstration

Proposed strategy for promoting integrated Pest Management in Chilli

Particulars	Existing practices	Recommended Practice	Problems (**)	Proposed strategy (***)
Cultural practices - Timely sowing - Clean seeds etc.	-	-	-	-
Bio-pesticides - Neem product - NPV etc	- No application	2 application	- Lack of awareness	- Training & demonstration
Other practices - Pheromone traps - Light traps etc	- Not done	-	- Lack of awareness - Non-availability of traps	- Training & demonstration - Supply of traps
Pesticides (appln) - Spraying - Dusting	- No application	1	- Lack of awareness	- Training & demonstration

Table – 7.2(g) Proposed strategy for promoting integrated Pest Management in Banana

Particulars	Existing practices	Recommended Practice	Problems (**)	Proposed strategy (***)
Cultural practices - Seed selection etc	Done	-	-	-
Bio-pesticides - Neem product - NPV etc	Use of pesticides	2 application	- Lack of awareness - Non-availability of materials	- Training & demonstration - Supply of materials
Other practices - Pheromone traps - Light traps etc -	Not done	-	- Lack of awareness - Non-availability of traps	- Training & demonstration - Supply of traps
Pesticides (appln) - Spraying - Dusting	1	2	- Lack of awareness - Lack of pesticides	- Training on IPM - Supply of pesticides

Proposed strategy for promoting integrated Pest Management in Potato

Particulars	Existing practices	Recommended Practice	Problems (**)	Proposed strategy (***)
Selection of seed Cultural practices - Timely planting - Earthing up - Removal of dry leaves.	Nondescript Done	Certified -	Non-availability in time -	- Timely supply of certified seed -
Bio-pesticides - Neem product - NPV etc	No application	2 applications	- Lack of awareness - Non-availability of materials	- Training & demonstration - Supply of materials
Other practices - Pheromone traps - Light traps etc -	- Not done	-	- Lack of awareness - Non-availability of traps	- Training & demonstration - Supply of traps
Pesticides (appln) - Spraying - Dusting	No application	1	- Lack of awareness	- Training & demonstration

Proposed strategy for promoting integrated Pest Management in Citrus

Particulars	Existing practices	Recommended Practice	Problems (**)	Proposed strategy (***)
Cultural practices - Removal of dry leaves - Liming of trunks - Sanitation	Done	-	-	-
Bio-pesticides - Neem product - NPV etc	No application	2 application	- Lack of awareness - Lack of supply	- Training & demonstration & exposure visits
Other practices - Pheromone traps - Light traps etc -	- Not done	-	- Lack of awareness - Non-availability of traps	- Training & demonstration - Supply of traps
Pesticides (appln) - Spraying - Dusting	1	3	- Lack of awareness - Lack of pesticides	- Training on IPM - Supply of pesticides

Proposed strategy for promoting integrated Pest Management in Mulberry

Particulars	Existing practices	Recommended Practice	Problems (**)	Proposed strategy (***)
Cultural practices - Timely planting - Weeding - Earthing up - Plant sanitation	Done	-	- Lack of awareness	- Training & demonstration & exposure visit
Bio-pesticides -	No application	2 application	- Lack of awareness - Non-availability of materials	- Training & demonstration - Supply of traps
Other practices - Pheromone traps - Light traps etc -	- Not done	-	- Lack of awareness - Non-availability of traps	- Training & demonstration - Supply of traps
Pesticides (appln) - Spraying - Dusting	No application	2	- Lack of awareness	- Training & demonstration

Proposed strategy for promoting farm Mechanization

Sl.No.	Type of machinery	Nos. available in the District	Nos. required	Problems	Proposed solution
1	Tractor	3	30	- Lack of finance - Lack of awareness	- Assistance through banks - Training, demonstration and exposure visits
2	Power Tiller	4	50	- Lack of finance - Lack of awareness	- Assistance through banks - Training, demonstration and exposure visits
3	Seed Drill	Nil	5	- Lack of finance - Lack of awareness	- Assistance through banks - Training and demonstration
4	Harvester	Nil	-	- No application due to small and holdings	- Training and demonstration
5	Power Pump	56	100	- Lack of finance - Lack of awareness	- Assistance through banks - Training and demonstration

Strategy for seed replacement and organizing seed village scheme in Lawngtlai District

Sl. No.	Crop	Total seed requirement (qt)	Demand as per projected seed replacement norms (qt)	Availability (qt)	Deficit (qt)	Strategies
1	HYV Rice	200	(30%)60	Nil	60	- Organizing seed village scheme - Encouraging pvt. seed supplies - Encouraging NGO/SHG to go to seed banks
2	HYV Ginger	25,000	7,500(30%)	Nil	7,500	- Encouraging pvt. seed supplies - Import from other states - Organizing seed village scheme
3	Improved Maize	300	90(30%)	Nil	90	- Encouraging pvt. seed supplies - Import from other states - Organizing seed village scheme

Figure in parenthesis indicates projected seed replacement ratio

Table – 7.5 : Gap in adoption and proposed research strategies for improving production the productivity and income

SN	GAP IN ADOPTION	REASONS FOR NON ADOPTION	STRATEGIES	ACTIVITIES
1	**AGRICULTURE**			
1	No suitable variety for jhum paddy	Non-availability of varieties	To develop or identify suitable varieties	- Conducting research by KVK/ICAR
2	Non-adoption of improved varieties in WRC paddy	Poor cooking quality, susceptibility to pests & diseases	To identify suitable variety for cooking quality and tolerance to pests & diseases	- Address the issue to State Deptt. - Researches by KVK/ICAR of the state
3	Lack of improved variety of ginger	Non-availability of suitable variety	To identify fibreless improved varieties	- To import seeds from other states - Adaptive trials/field days
4	Pests & disease problems in gingers	Non-availability of IPM package for ginger	To develop IPM technology for Rhizome fly and Rhizome rot	- Address the issue to ICAR, NEH Regions to conduct Research
5	Pre-dominance of jhumming in the district(80% of cultivated area)	Lack of finance for terrace construction	To construct terraces in areas having less than 30% slope	- Address the issue to state Agriculture Department
6	Predominance of acid soils due to high rainfall and high slope percentage	Lack of finance for purchase of lime	To apply sufficient quantity of lime	- Address the issue to State Department.
7	Low cropping intensity(100%)	Lack of rain water harvesting structures & irrigation channels	To construct irrigation channels, arrange PVC pipes and rain water harvesting structure	- Address the issue to State Department.
8	Leaf curl viral disease in chilli	Lack of pesticides & IPM technology	To develop IPM technology for Bird’s Eye Chilli	- Address the issue to ICAR to conduct Research

Sl. No	GAP IN ADOPTION	REASONS FOR NON ADOPTION	STRATEGIES	ACTIVITIES
II	**HORTICULTURE**			
1	Rainfed vegetable cultivation	Lack of rain water harvesting structures	To conduct Rain water harvesting structures, provision of PVC pipes etc.	Address the issue to State Horticulture Department
2	Citrus decline	Lack of appropriates technology to control citrus decline	To develop control technology	Address the issue to ICAR, NEH Region to conduct research
3	Non-availability of HYV seeds	Lack of supply of sufficient quantity	To have sufficient seed supply	Address the issue to State Horticulture Department
4	Non-adoption of INM in vgetables	High cost of fertilizers and non-availability of vermi technique, composting etc.	To develop vermi units, composting techniques etc.	Address the issue to State Horticulture Department
III	**A.H. & VETY**			
1	Lack of green feeds for milk cows	Non-availability of pasture development schemes	To develop pasture develop schemes	Address the issue to State A.H & Vety Department
IV	**FISHERY**			
1	High percentage of damage during fish harvest	Lack of storage facility & lack of ice-plant	To create storage & ice-plant	Address the issue for State Fishery Department

Table – 7.6 : Critical Issues and proposed extension strategies in Agriculture Sector.

Sl. No	Critical gap	Strategies	ACTIVITIES
1	**SOIL ACIDITY-BURNING PROBLEM**		
a.	Soil acidity(4-5.5PH) due to high rainfall		Generate awareness
b.	Retention of plant nutrient in the soil	- Application of lime	Demonstration
2	Severe soil erosion due to high rainfall	- Soil and water conservation practices on holistic approach of watershed management	Create awareness through training & exposure visit
3	Abundance of green matter/vegetation	- Soil conservation structures to be created	Training, demonstration
4	Severe deforestation due to jhumming	- To make use of abundance of green vegetables for making of compost	Generate awareness through training, demonstration & exposure visit
5	High rainfall, high run - off	- To motivate farmers to go for permanent system of farming	Generate awareness through training, demonstration & exposure visit
6	Non-availability of quality fish seeds	- Enhancing quality fish seed production both in Govt. & Private firms - Production of advance fingerlings and stunted carp seed	- Improved infrastructure facilities in seed farms - Generate awareness

Table – 7.7: Critical Research Issues in Agriculture Sector their proposed strategies

Sl. No	Crop	Gap in adoption	Research Strategies	Activities
1	Ginger	a) Susceptible to Rhizome rot b) Susceptible to Rhizome fly	To develop IPM technology for Ginger	On farm existing & research by ICAR, Mizoram
2	Rice	a) Leaf roller problem b) Stem borer problem	Resistance varieties to be developed	Evolving suitable varieties by ICAR/KVK, Lawngtlai
3	Chilli	a) Leaf curl disease problem	To evolve resistant variety	Evolving suitable varieties by ICAR, Mizoram
4	Banana	Bunchy top problem	Resistant variety to be developed	Evolving suitable variety by ICAR, Mizoram
5	Citrus	a) Fruit sucking bugs b) Decline	To develop suitable technology for control and also to develop resistant variety	Evolving resistant variety by ICAR and also to develop control technology
6	Tomato	Blight	To identify resistant variety	Evolving/identifying resistant variety by ICAR, Mizoram
7	Potato	Blight	To identify resistant variety	Evolving/identifying resistant variety by ICAR, Mizoram
8	Mulberry cultivation	a) Powdery mildew Leaf spot b) Disease control of silkworm c) Low real ability during winter	Disease resistant varieties to be evolved. Silkworm race capable of with-standing high humidity during spinning to be evolved	Evolving suitable varieties by ICAR, Mizoram
9	Potato	Glut in the market during peak period of production coped with poor keeping quality	Value addition like preparation of jam, pickle etc.	Appropriate technology to be evolved by KVK
10	Mustard oilseed	Pests like aphids, cutworm & painted bugs	Tolerant varieties to be evolved	Evolving suitable varieties by ICAR

Table – 7.8 : PROPOSED STRATEGIES FOR MARKETTING IN LAWNGTLAI DISTRICT

Sl. No	Critical Issues	Problem/Issues	Strategies	Activities
	HORTICULTURE			
1	Glut in Potato production during summer	Excessive production during summer & non-availability of price security	- Provision of support price system - Creation of market information system - Providing link between commodity & agro-processing centers	- Address the issue to State Govt. - Value added products like jam, jelly, pickles etc. - Create awareness on export potentials
	Non-existance of cold storage units	- Established cold storage units - Creation of export facility	- Creating awareness on agricultural marketing act - Construction of cold storage	- Address the issue to State Department.
2	Glut in ginger production	- Excessive production during winter which reduces the selling price - Lack of value addition units	- Creation of market information - Established of processing units	- Address the issue to State Department - Address the issue to State Department
	ANIMAL HUSBANDRY			
1	Glut in milk production during Oct – Nov every year	- Lack of awareness of preparation of milk products - Non-existence of cold storage facilities - More production of milk due to more green leaves supply	- Awareness on value added products - Formation of commodity groups/SHG for sale of milk and milk products	- Training on value addition - Training on value addition

Table – 7.9 : STRATEGIES FOR PROMOTING FIG'S AND FO'S IN DISTRICT

Sl. No	Existing FIGs and Fos	Proposed FIGS & Fos	Strategy
1 2 3 4	90 AMFU branches/umits 2 Anthurium Growers Association 1 All Mizoram Florists Association About 50 SHGs	Following FIGS are proposed : a) Ginger Growers group b) Chow chow growers group c) Mulberry growers group d) Banana growers group e) Orange growers group f) Vegetables growers group g) Organic farmers group h) Vermi-compost producers group through SHGs i) Fish farmer group j) Vety farmers group	a) Users and producers to be involved in forming the groups b) Creating awareness, programes & training to these groups c) Appropriate sale points to be create & for marketing the commodities d) Exposure visits.

Table – 7.10 : EXISTING PUBLIC-PRIVATE PARTNERSHIP (PPP) IN THE DISTRICT

Sl. No	Types of Enterprises	Types of Partnerships	Activities Undertaken	volume and Value of Trade
1	Maize – Soyabean farming	Pvt. – Public, Pvt. – Pvt.	-Production of maize and soyabean for feed plants. -Production of maize for local market.	Rs. 8 lakhs
2	Ginger farming	Pvt. – Public, Pvt. – Pvt.	Ginger for sale outside the state (raw ginger)	Rs. 8 lakhs
3	Orange farming	Pvt. – Pvt.	Raw oranges sold in local market .	Rs. 8 lakhs
4	Milk production & procurement	Pvt. – Pvt.	Production of milk for local consumption	Rs.15 lakhs
5	Poultry	Pvt. – Pvt.	Rearing of Broilers & Layers for local consumption	Rs.10 lakhs
6	Reeling of cocoon	Pvt. – Public (Farmers – Deptt.)	1 Unit	Rs.10 lakhs
7	Processing and value addition (Horti.crops)	Pvt. – Pvt.	Locally preserved and sold in local market.	Rs. 4 lakhs
8	Fish marketing	Pvt. – Pvt.(Farmers – Dealers)	Production of fish for sale at local/District Hqr. market	Rs.2 lakhs

Proposed Activities for the identified Research and Extension Strategies

Diversification and intensification of farming systems

Sl. No	Extension strategy	Proposed activity
A	**Agricultural Production System**	
1	Control of jhumming	- Sustainable agriculture in Mizoram - Management of dryland terraces
2	Expansion of Hybrid Maize in rainfed dryland by crop diversification	- Conducting demonstration on crop diversification - Organizing field days near successful demonstration sites - Facilitate supply of critical inputs
3	Improvement of rice cultivation techniques	- IPM & INM in rice - Management of rice cultivation
4	Improvement of ginger cultivation	- Management of ginger cultivation including IPM & INM - Value addition in ginger
5	Adoption of dryland technology for crop improvement	- Organizing awareness campaign for adoption of dry land technology - Exposures visit of farmers on dry land technology have been adopted - Training of farmers on dry land technology such as crop-planting, in-site moisture connection, soil & water conservation, run-off harvesting, alternate land use and standard crop husbandry practices (Field level) - Organizing crop demonstration on standard crop husbandry practices - Facilitate supply of critical inputs - Organizing field days as successful demonstration sites
6	Growing HYV varieties	- Conducting on-farm trials with existing varieties and new varieties
		- Conducting maize-soyabean demonstration on medium lands
		- Organizing field days on successful demonstration sites
7	Expansion of area and improvement of management in paddy	- Organizing crop demonstration with new HYVs
8	Expansion of area and improvement of management in Ginger	- Organizing crop demonstration with new/improved seeds
		- Organizing field days on successful demonstration sites
9	Expansion of area under mustard oilseed	- Identification of successful sites and

	including general management	arranging exposure visits of farmers
10	Intensification of Sugarcane cultivation	- Inter cropping of sugarcane with kharif crops
		- Management of sugarcane cultivation including IPM & INM
		- Conducting on farm trials with existing variety and new variety
		- Organizing field days on successful demonstration sites
11	Expansion and intensification of Pulses	- Conducting demonstration on rice bean & cowpea
		- Training on management of pests & diseases on rice bean & cowpea
B	**Horticultural Production system**	
1	Expansion of area under HYV vegetables	- Conducting participatory field trials with new HYV vegetable seeds
		- Organizing farmers training for improved cultivation of vegetables
		- Facilitate supply of HYV seeds

2	Improvement of Banana & Citrus cultivation in rainfed dryland	- Organizing wareness campaign for dryland horticulture
		- Exposure visits to sites where dryland horticulture has been successfully taken
		- Training on farmers on dryland horticulture (Citrus)
		- Facilitate supply of grafts for dryland horticulture (Citrus)
		- Decentralized production of seedlings and grafts by involving NGOs and prvate firms
		- Linkage with marketing
3	Expansion and improvement of organic cultivation	- Awareness campaign us for motivating farmers regarding organic spices
		- Training of farmers group for organic spice cultivation
		- Facilitate supply of HYV ginger
		- Conducting demonstration on Organic spices
		- Arranging field days at successful field sites
		- Agro-processing & value addition
4	Introduction of commercial floriculture	- Exposure visits to successful sites

		- Organizing training on cultivation methods of important commercial flowers
		- Organizing farmers group for promotion of floriculture
		- Facilitate supply of leaf inputs for floriculture

C	**AH & Vety**	
1	Fodder management & production	- Training on fodder development (institutional)
		- Training on production & management of feed in dairy cows (Village level)
2	General health and management	- Training on general health & management of milch cows (Village level)
3	Popularization of poultry	- Introduction of local efficient breeds of poultry birds for backyard poultry (field level)
		- Training to farmers for care and maintenance of poultry birds (field level)
4	Popularization of Piggery	- Training to farmers on general health & management of piggery
		- Training to para vets on breed upgradation
		- Management of piglets
D	**Fish Production System**	
1	General management of ponds	- Training to farmers on general pond management (village level)
		- Training to Extension workers on quality seed production
		- Demonstration on critical practices
		- Facilitate supply of critical inputs like fingerlings
2	Improvement of feed management	- Desentration on feed preparation and management
		- Training to farmers on general feed management
IV	Sericulture	-
1	General awareness on mulberry silk production	- Training farmers on mulberry silkworm rearing

Improvement of Productivity and income of existing farming systems

Sl. No	Extension strategy	Proposed activity
A	**Agricultural Production System**	
1	Overcoming technological gaps in case of agricultural crops like rice, maize, pulses, oilseeds and sugarcane	- Education of farmers through mass media on technological gaps
		- Organizing farmer's trainings on technological gaps (Field level)
		- Conducting demonstration on critical practices and critical inputs
		- Linkage of farmers with credit,input, marketing
		- Demonstration on agro-processing and value addition techniques
2	Decentralized production of seed preferred varieties under the concept of seed village scheme	- Identification and analysis of success stories where seed is produced and sold by farmers
		- Exposure visit of farmers to successful sites
		- Identification of sites (villages) and farmers for seed production
		- Training for seed production and certification
		- Procurement of foundation seeds of preffered variety from reliable sources on payment

Sl. No	Extension strategy	Proposed activity
3	Farm mechanization for timely and effective agricultural Operation	- Organizing awareness campaign on farm mechanization
		- Organizing trainings and demonstration on farm mechanization (Farm level)
		- Identification of agro-service center for dealing farm machinery
		- Linkage with on-going schemes for subsidized sale of agricultural implements land farm machinery
		- Group formation for group finance
4	Value addition and agro-processing in maize, pulses and groundnut	- Identification of farmers

		- Organizing demonstration and training on agro-processing and value addition (Field)
		- Facilitate linkage with supply of machinery, credit and marketing
B	**Horticultural Production System**	
1	Overcoming technological gaps in vegetables crops and chilli	- Educating farmers through mass media on technological gaps
		- Organizing need based trainings on technological gaps
		- Demonstration on seed treatment planting techniques, INM, IPM,etc.
		- Linkage of farmers with credit, supply of inputs and marketing
		- Organizing special trainings on hybrid vegetable production technology (Institution)

Sl. No	**Extension strategy**	**Proposed activity**
2	Centralization of vegetables seed production and production of planting materials	- Identification of sites and selection of willing farmers for seed and planting material production
		- Training for seed production and planting material production
		- Organizing field days for farmers and dealers who are willing to purchase seed
		- Linkage with supply of foundation seeds on cost payment
		- Dovetailing of ongoing scheme on seed and planting material production
3	Post harvest technology, value addition and agro-processing of fruits and vegetables	- Carryout diagnostic study about issues relating to market problem
		- Assess market surplus of each commodity with different types of farm families
		- Identify alternate market opportunities for each commodity
		- Assess specification regarding consumer's preference for each commodity and alternate market

		- Assess new technological options regarding post harvest handling at farm level
		- Organizing trainings and demonstration for farmers about post harvest handling, value addition and agro-processing to meet consumer's preference
		- Linkage with input and marketing
4	Overcoming Technological Gaps in fruits crops like Banana, Citrus & Pineapple	- Awareness campaign on fruit plantation and technological gaps
		- Organizing need based training on serious technological gaps (Field)
		- Demonstration on raising of grafts, saplings, after care and maintenance of old orchards
		- Linkage of farmers with credit, input supply and marketing

Sl. No	**Extension strategy**	**Proposed activity**
5	Rejuvenation of old orchards of Citrus	- Identification of old citrus orchard
		- Organizing trainings and demonstration on rejuvenation of old orchards (Field level)
6	Micro propagation of banana	- Identification of successful sites where tissue culture banana has been planted
		- Exposure visit of farmer to successful sites
		- Arranging farmers training on cultivation of micro-propagation of banana (Field)
		- Forward and backward linkage
7	Micro-irigation in fruit crops	- Identification of successful sites where micro-irrigation (drip and sprinkler) has been successful
		- Exposure visit to successful sites
		- Linkage with credit and input
C.	**Livestock Production System**	
1	Improved feeding, housing, health care and general management of dairy animals	Awareness campaign on breed upgradation, care and maintenance of dairy animals and scheme processing
		Identification of farmers for improved dairy and group formation
		Organizing trainings for the farmers to close the technological gap

		Forward and backward linkage
l. No	**Extension strategy**	**Proposed activity**
2	Vaccination, deworming and treatment against ecto-parasites of poultry and piggery	Identification of para vets and NGOs willing to take up the work.
		Organizing trainings for para vets, NGOs and farmers on vaccination, de worming and treatment techniques
		Supply of critical inputs on cost sharing basis organizing or mobile treatment campus at village level
3	Processing and preservation of milk products	Assessment of marketed surplus of milk
		Identification/formulation of farmers for milk processing
		Organization of farmer's training on processing and preservation of milk products
		Linkage with input, credit and marketing
4	Artificial Insemination for breed upgradation	Awareness campaigns on breed upgradation
		Identification para vets and NGOs for door service
		Organizing A.I campaign involving para vets and NGOs in rural areas
		Supply of frozen semen on cost payment
5	Cultivation of green fodder	Identification of success stories where fodder cultivations has been taken successfully
		Exposure visit to identified farmer groups to successful sites
		Identification of sites and species (grasses) for green fodder cultivation
		Organizing farmer's training in improved fodder cultivation techniques
		Facilitate supply of critical inputs
Sl. No	**Extension strategy**	**Proposed activity**
D	**Fish Production System**	
1	Pond preparation, feed management and adoption of technology for higher production of fish	Exposure visit to Departmental farms.
		Farmer's training on improved production technology
		Facilitate linkage with supply of critical inputs, credit and marketing

2	Decentralized production of fish seed and fingerlings	Identification of ponds, water bodies where fish production are composite techniques or poly culture is feasible
		Identification of fish growers/farmers for fish seed production
		Exposure visit to departmental Hatcheries
		Organizing training on fingerling production
		Forward and backward linkage
3	Integrated fish farming	Identification of ponds/water bodies and fish growers/farmers for integrated fish farming.
		Exposure visit to CIFA by the identified farmers.
		Identification infrastructure arrangement and earthwork etc.
		Organizing farmer's trainings and demonstration on integrated fish farming
		Documentation of case studies of successful integrated fish farming

Table 9.3 : Natural Resources management for ensuing sustainability in production and productivity

Sl. No	Extension strategy	Proposed activity
1	Adoption of SALT in places of shifting cultivation	Awareness campaign to motivate the farmers against shifting cultivation on short cycle and on SALT as substitute to shifting cultivation
		Selection of proposed sites with the help of NGOs and local communities
		Linkage of revenue and forest department for adoption of SALT
		Organizing trainings for farmer groups on SALT
		Organizing demonstration on small scale of adoption of SALT
		Organizing field days on successful sites
2	Integrated watershed management for soil and water conservation and conservation of other natural resources	Soil and water conservation
		Regeneration of vegetation
		Judicious use of natural resources
3	Amendment of soils	Testing of soils to assess the pH.
		Identify the up land area where the pH is 5 or less for amendment
		Organize the farmers to obtain soil amendments like slaked lime@2t/ha
		Train the farmers to amend the acid soils by using local materials or paper mill sludge or use or MRP + SSP at 3 : 1 ratio

Sl. No	Extension strategy	Proposed activity
4	Conservation of Bio-diversity	Identify the valuable indigenous crop varieties and forest species by involving farmers
		Multiply these varieties and species among farmer co-operatives
		Characterize these varieties and species using farmer participatory research
		Promote *in-situ* conservation on small farmers through encouragement of diversification
		Combine the re-introduced and indigenous varieties and species with improved and ecologically sound soil, water and nutrient management to further improve the productivity of these local varieties/species
5	INM in major Agricultural and horticultural crops	Organize awareness campaigns.
		Organize trainings for farmers on production and use of bio-fertilizers, compost, vermi compost and use of balanced nutrition
		Identify the feasible waste land for production of green manure seeds and bio-fertilizers like Azolla, BGA by SHGs/Mahila Samiti etc.
		Supply of bio-fertilizers at subsidy and organize crop demonstration
		Follow-up support for use of non-traditional nutrients sources lke bio-fertilizers, vermi compost etc
		Refinement of technological package on INM for the district for recycling organic wastes, crop residues. etc.

Sl. No	Extension strategy	Proposed activity
6	IPM practices in major agricultural and horticultural crops	Organize awareness campaigns for IPM technology
		Identification of key crop pest and diagnosis of pest problems in an endemic village in the district
		Analyses of technological options emerging through different sources of innovation including bio-pesticides
		Organizing demonstration action research on crop pest management
		Concurrent evaluation of technological options by participating farmers

		Organizing Farmers Field Schools(FFS) programme to make the farmer IPM expert
		Facilitate supply of bio-pesticides, pheromone traps, etc. on payment of cost

Table 9.4: Community Organization

Sl. No	Extension strategy	Proposed activity
1	Organization of farmer groups for new commodities to be produced through diversification of farming system	Identify the new commodities and assess the scope for farmer's groups
		Sub-contract of NGOs for organization of farmer groups
		Organizing trainings for capacity building of the groups
2	Organizing commodity oriented groups for better access to inputs, marketing and technological support	Identify the success stories .
		Exposure visit of feasible farmer groups to successful areas .
		Organize groups with the help of NGOs
		Organize trainings for skill up-gradation, empowerment (specialized) institutional training
3	Organization of women SHGs for NRM and sustainable livelihoods	Identify successful SHGs
		Organize SHG formation through regular interaction by involving local NGOs
		Motivate the group members for capacity to share, collectiveness to work on groups and capacity to make decision
		Organize trainings for the SHGs on mamagement of records and capacity buildings
		Facilitate linkage with other institutions for development of economic base of members, supply of credit and inputs etc.
		Conduct regular meetings of the SHGs and decide further course of action

Table 9.5: Human Resources Development

Sl. No	Extension strategy	Proposed activity
1	Training need assessment for extension personnel, NGOs, Private service providers, farmers and professionals	Organizing workshop and to assess the need
2	Organizing need based training programme for extension functionaries of agriculture, line departments, NGOs and private service providers including farmers	Farmers trainings at Block level
		Training for grass root level workers at Block level
		Training
3	Exposure visit of public and private extension workers.	Organizing exposure visits in successful areas.
4	Specialized training courses for NGOs, farmers including farm women.	Training
5	Skill up-gradation training for grass root level workers.	Training
6	Orientation training for extension workers.	Organizing orientation training.
7	Training on IT and Cyber extension	Organizing training

Type of research activities to be carried out for evolving sustainable technology

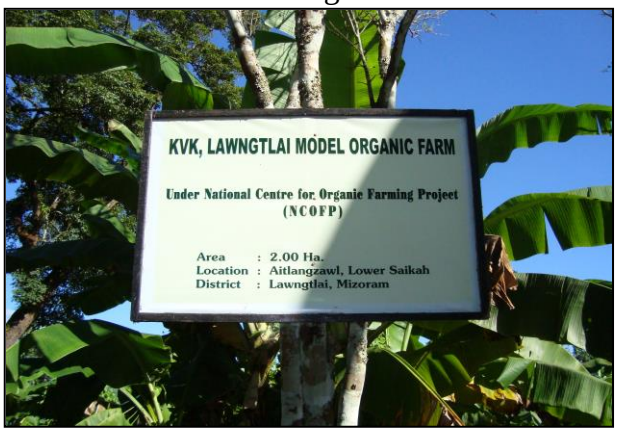
Sl. No	Extension strategy	Proposed activity
A	**Resynthesis of technological package as per farming situation of each commodity**	
1	Deletion of those technologies from the generalized package which are not relevant or suitable for a particular farming situation	Preparation of technology maps for the district.
		Organizing issue based workshop for the district, involving Scientists, Extension workers and innovative farmers
		Deletion or irrelevant technologies for different farming situation under which important commodities are grown and documentation
2	Addition of new items in the generalized package which expected to solve a problem specific to the particular farming situation	Identification of specific farming situation based problems in the issue based workshop
		Field verification of innovation technologies adopted elsewhere to solve specific problems
		Addition of appropriate technological package in the new recommendation
3	Addition of ITK option for farmer's choice	Documentation of ITKs evolved by the innovation farmers, public sector and NGOs
		Validation of ITKs on the research station
		Inclusion of successful ITKs to the technological options for specific problems of different farming situations
		On-farm trials on rain fed technologies
		Documentation of proven technology

B	**Farmer participatory on farm research on problems which can not be simulated at Research farms**	
1	Identification of specific problems which cannot be easily simulated at research farm	Identification of researchable problem and prioritization
2	Identification of available technological options to address concerned problem	Issue based workshop involving expert panel, innovative farmers and NGOs
		Identification of technologies evolved by innovative farmers, NGOs and private sectors
3	On-farm testing of technological options	Prioritization of problem using various tools and preparing an action plan for on-farm testing of technological options
		Selection of proven technologies by using participatory method
		Conducting adaptive trials on selected technologies for two seasons
4	Adaptive trials on technological options	Conducting adaptive trials on selected technologies for two seasons
		Analysis of data and documenting the proven technology which have passed the final testing
5	rice based cropping system	Application and Formulation of operational modalities
6	vegetable crops	On-farm trial on varietal evaluation of different vegetables.
7	Use of farm inputs to reduce production cost of rice	Conducting field trial on use of transplanting and reaper
8	Amendment of acid soils using liming materials	Conducting field trials on acid soil management

10	Participatory variety selection of rice crop against drought	Identification and analysis of farmers' need
		Search for suitable seed material
		On-farm testing of seed materials in farmer's field
		Selection of preferred variety by the farmer
11	Rain-water management in rainfed uplands	Identification of sites and farmers for on-farm test
		On-farm testing of technological options
12	Control of RD and fowl pox in poultry birds	Selection of farmer and village
13	Mixed plantation using different proportion of fuel wood and fodder species	Identification of sites and farmers for on-farm trial
		On-farm trial with need technology
14	Standardization of fish feed using locally available materials	On-farm trial with different feed mix at village level
15	Technology to eliminate nutrition in cows	Field trial with different feed mix containing greed fodder and concentrates
16	Selection of hybrids of vegetable crops	Collection of promising hybrid vegetable seed
		Selection of sites and farmers for field testing
		Conducting field trials with new hybrid
		Organizing field day of farmers on successful sites

POLICY ISSUES TO BE ADDRESSED IN LAWNGTLAI DISTRICT

The Lawngtlai District of Mizoram lies in the South Western part of the state. It has a population of 1,00,180 out of which 16% of the populations reside in the Lawngtlai town and the rest 84% live in sub-urban and rural areas. Like most of other districts, the percentage of rural population is much higher than urban population. However, the District Capital being the district headquarters as well, there is a good scope for marketing of agricultural produces. The state of Mizoram does not have much resources and scope for employment generation except in the government services which, at present, seems to be much over-staffed. As such, the rural communities are left with no choice but opt for agriculture and allied activities. About 90% of the rural population, therefore, are directly or indirectly dependent on agriculture. However, the productivity per area and the income obtained by the farmers are much lower as compared to other state. In order to overcome the problem faced by the farmers of this district, the following issues need to be addressed.



10.1 Infrastructure development :

Only some of the departments have their own buildings which are used as district offices. However, most of them are too small and are undergoing deterioration thereby hampering the official works to a great extent.

10.2 Potential Area Activity :

As the district is comprised of steep hills, the fertile cultivable areas generally lie on the base of the hills. The small hills and small streams running in between them makes accessibility very difficult for transportation of inputs and produce for the farmers. So good roads are badly needed for connecting the villages and the cultivable area.

10.3 Good seeds and other inputs :

Most of the seeds and other inputs are presently supplied by State departments. However, the inputs cannot reach the farmers in proper time in most of the seasons. The inputs are also not available in sufficient quantity, which generally is due to

lack of fund on the part of the department. As such supply of sufficient quantity of HYV seeds and other inputs in proper time are needed to be addressed urgently.

10.4 Settlement of jhumias :

Of all the farmers of the district, only about 15% practised permanent/settled cultivation. The rest 85% have no option but go for jhumming. Jhumming involves slash and burn method which is primitive and harmful for the ecology. Steps have been taken to wean away the people from it. However, the success is not very satisfactory till today. Out of all the jhumia family, about 50% will be able to be motivated to go for settled farming provided assistance is given to them for construction of terraces coupled with rain water harvesting structures. More fund is needed so that the number of settled cultivators could be increased form 15% to about 45%

10.5 Severe soil erosion :

The topography, soil type and high rainfall in the district lead to severe soil erosion. The top soils are removed leaving the soil poorly fertile. An action in the form of effective soil and water conservation measures is urgently needed to conserve soil and moisture.

10.6 Problem of soil acidity :

High rainfall and high slope percentage resulted in the removal of basic salts from the soil, leading to high soil acidity. The acidity has a profound effect on permanent orchards and farming system in acid soil. Nutrient elements are retained by soil particles which prevented the crops from getting enough nutrition. The normal correction measure taken up is liming which is found to be very effective by the farmers. Hence, heavy demand is seen at all times. However, the high cost of slaked lime including transportation charges put the supply beyond the reach of majority of farmers. A sufficient supply of slaked lime at reasonable price is urgently called for.

10.7 Processing units :

The district, rather the whole state of Mizoram, is not having any viable and functional processing units. All the agricultural produces, livestock or fishery products have to be disposed off hurriedly to avoid damages, which prevented the farmers from getting maximum profits from their harvest. Creating a number of agro-processing and value-addition units would greatly help to improve the economic conditions of the farmers.

10.8 Cold storage :

The district is ideal for producing crops like potato, orange, banana, passion fruits and various vegetables which exceeds the requirement during the peak season. However, lack of storage facilities prevented the farmers from getting maximum returns for their produce. This is especially true for the fish farmers. Establishment of cold storage would greatly help the farming community.

10.9 Market sheds and organization :

Presently, the farmers directly transport their produces to the district headquarters where disposal is made direct to either middlemen or consumers. A good marketing system/organization that helps the farmers is lacking. A good farmers' godown/warehouse for storing the produce and a good organization that helps in the management of the produce is needed.

10.10 Credit facilities :

The farmers of the district are very much in need of fund for infra-structural development, farm mechanization, purchase of seeds and other inputs etc. Although there are credit institutions (such as banks like SBI, Co-operative Banks, etc), other facilities are not sufficient or sometimes they are reluctant to come forward to help the farmers.

Baseline data of the District with reference to the issues/opportunities and challenges

Sl. No	Sector	Baseline data		Achievement by 2020		Intervention
		Area (Ha)	Productivity (tons/Ha)	Area (Ha)	Productivity (tons/Ha)	
	AGRI – HORTI					
1.	**Productivity improvement**					
	Paddy (WRC)	810	2.50	1500	3.00	Introduction and popularization of HYV
	Paddy (Jhum)	17999	1.80	12000	2.20	Introduction of improved variety and construction of dryland terrace
	Maize	530	2.20	1000	3.00	Better management and HYV
	Ginger	865	9.03	1200	12.00	Better management and HYV
	Sugarcane	632	42.00	1000	60.00	Introduction of HYV & IPM/INM
	Rape & Mustard	130	1.80	200	2.50	Introduction of HYV & IPM/INM
	Banana	720	10.00	1000	15.00	Better management and HYV
	Orange	885	2.70	1200	3.00	Better management and HYV
	Cabbage	53	3.80	80	5.00	Introduction of HYV & IPM/INM
	Bird Eye chilli	49	2.10	80	3.00	Better management and HYV
	Soyabean	2920	1.10	4000	2.00	Better management and HYV

Sl. No	Sector	Baseline data	Achievement by 2020	Intervention
2.	Diversification/Current area under crops/plantation	- Pre dominance of Jhum settlement of Jhumias to permanent farming - Lack of soil & moisture conservation structure in orchard	- Encourage dry terracing - Use of rainfed dry land terraces - Provision of rain water harvesting structure	- Through training, demonstration & exposure visit - Assistance through State Department Watershed Scheme etc. - Assistance through State Department Watershed Scheme etc.
3.	Area expansion in HYV's Paddy Maize Ginger Soyabean Beans Tomato Cabbage Chilli Lady's finger	 Only 5% of WRC under HYV Only 20% under HYV No HYV Only 20% under HYV Only 20% under HYV Only 15% under HYV Only 25% under HYV Only 30% under HYV Only 20% under HYV	 50% area under HYVs 50% area under HYVs 50% area under HYVs 50% area under HYVs 50% area under HYVs 50% area under HYVs 50% area under HYVs 50% area under HYVs 50% area under HYVs	 Popularization & introduction of HYVs Popularization & introduction of HYVs Popularization & introduction of HYVs Popularization & introduction of HYVs Popularization & introduction of HYVs Popularization & introduction of HYVs Popularization & introduction of HYVs Popularization & introduction of HYVs Popularization & introduction of HYVs
4.	Animal Husbandry			
	Upgradation through A.I. service & introduction of new breeds	Local cows – 2098 Upgraded cows -85	5000 2000	Improvement through veterinary and animal husbandry services
	Animal health care: No.of camps	10	60	a) Availability & supply of good quality semen b) Entrust synchronizations c) Entrust detection d) Regular/Timely vaccination
	Animal Nutrition	Poor	Good	Balanced feeding/mineral mixture/Regular deworming

	Sector	Baseline data	Achievement by 2020	Intervention
	Quality feed and fodder free from pp residues/ Aflatoxins	Poor	Good	Good quality & high yielding fodder varieties Training programmes/AV media Field visits
	Introduction of new enterprises a) Poultry b) Piggery	 199299 10,110	 2,50,000 80,000	Backyard poultry - Regulars deworming & high protein diet - Control of ecto & endo parasites - Regulars vaccination schedule.
	Promotion of dairy co-operative/federation	Good	Improvement	Clean milk production through machine milking
5	Fisheries production technologies for Fresh water fish (area)	Area : 90 Ha Production :70MT	110 Ha. 100 MT	- Quality seed supply of appropriate variety/species/size/Nos. - Use of production enhancing inputs like manures & supplementary feeds.
6	Sericulture Area expansion under improved varieties of mulberry – area in Ha.	Area : 102 Ha. Production : 3633 Kgs	1000 Ha 30,000 kgs	To create linkage with important silk industries/corporation
	Linkage with textile and trade : efforts	-	-	To create linkage with important silk industries/corporation

VISION 2020 FOR LAWNGTLAI DISTRICT

Sl. No	Sector	Base line 2007-2008 (Normal)	Intervention	Projections After 12 years (2020)
1.	**AGRICULTURE**		.	
	1) Paddy – Productivity	25.00 q/Ha	- Use of HYV, pest & diseases tolerant variety - Integrated nutrient management.	60 q/Ha.
	2) Maize – Productivity	22 q/Ha	- Use of HYV - Use of Organic manures & fertilizers as per Recommendation - Use of Micro- nutrients (ZnSo4)	35 qtls..
	3) Soyabean – Productivity	11 q/Ha	- Use of suitable variety - Adoption of IPM & INM technology	20 q/Ha.
	4) Sugarcane – Productivity	42 q/Ha	- Use of HYV and adoption of IPM and INM technology	60 q/Ha.
	5) Paddy - Reducing the area of Jhum Paddy - Increasing area under5 Maize, Soyabean cultivation in terrace.	17,999 Ha 1.8 q/Ha	- Divert paddy area to hill terraces where maize-Soyabean can be taken up - Control of pests & diseases & adoption of INM	12,000(33% area reduced) 22 q/Ha (Jhum Paddy)
2.	**HORTICULTURE**			
	1) Ginger – Productivity	90 q/Ha	- Introduction of improved variety and better management	120 q/Ha.
	2) Banana – Productivity	120 q/Ha	- Better management and adoption of IPM and INM technology	150 q/Ha.
	3) Potato– Productivity	150 q/Ha	- Better management and adoption of IPM and INM technology	300 q/Ha.
	4) Citrus – Productivity	27 q/Ha	- Better management and adoption of IPM and INM technology	30 q/Ha.
	5) Birds Eye chilli– Productivity	21 q/Ha	- Better management and adoption of IPM and INM technology	30 q/Ha.

Sl. No	Sector	Base line 2007-2008 (Normal)	Intervention	Projections After 12 years (2010)
3.	**SERICULTURE**			
	1) Area expansion (Ha) Cocoon production 2) Employment generation 3) Income from silk industry	102 Ha. 3,633 Kgs - -	- Use of improved varieties & better management - Production of good quality cocoons - Higher price of cocoons	210 Ha. 6,000 Kgs
4.	**FISHERY**			
	1) Area expansion (Ha) 2) Productivity (MT)	90 Ha 70 MT.	- Better management - Quality seed supply - Use of production enhancing inputs	110 Ha. 100 MT
5.	**AH & VETY**			
	1) Upgradation of breed through A.I & better management	i) Local Cows 2098 ii) Buffaloes 300 iii) Upgraded breed 85	- Better management, crossing of local breed with exotic breed and multiplication of upgraded breed through A.I	Local - 5000 Nos. Upgraded - 2000 Nos.
6.	**HOME SCIENCE** 1) Improved nutritional status 2) Increased family income 3) Food and nutrition security		- Nutrition education to promote dietary diversification to achieve a balanced intake of all nutrients. - Promotion of income generating activities such as pickle making, jam and squash making etc. - Popularization of nutritional gardening. - Reduced the rate of infant mortality and morbidity through awareness of proper weaning foods. - Enrichment or supplementation of existing dietary practices.	


Field Demonstration
on Organic Inputs


FISH PICKLE
Made by David Hruaizela of Lower Saikah
Village, Lawngtlai District


TRAINING
ORGANISED BY KRISHI VIGYAN KENDRA
LAWNGTLAI DISTRICT


FARMERS' FIELD DAY
DATE : 25.08.2009.
VENUE : CHANNHU VILLAGE
ORGANISED BY : KVK, LAWNGTLAI DISTRICT


ON FARM TESTING
ON RHIZOME ROT
MANAGEMENT IN
GINGER USING
BIOFOR-PI
R1T0