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An Assessment of Crop Diversification with special reference to Anthurium in Mizoram: A Study of Kolasib and Aizawl District

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ABSTRACT

This paper attempt to study the livelihood systems and relative role of crop diversification by taking Anthurium as a product in the household economy, both in terms of its share in their income levels and also in comparison to the farmer households who are still practicing traditional agriculture without any diversification. And also the cropping pattern, production level and marketable surplus in agricultural sector and constraints in marketing.

Mizoram situated on the North eastern part of the country have very little productive land. Due to steep slope and the topography of the land, agricultural production is not productive. The agro-climatic conditions is suitable for growing wide varieties of Horticultural crops including fruits, vegetables, spices, ornamental crops and plantation crops. Commercial Floriculture has a vast potential scope for large cultivation in Mizoram, the moderate climate being quite suitable. It has come up tremendously in recent years having export market. With the Department of Horticulture, Government of Mizoram implementing the Technology Mission, providing assistance to the selected beneficiaries, there is a huge scope for crop diversification and expansion in the cultivation of commercial floriculture which is having a positive impact on the income level and the livelihood status of the grower, thereby contributing to the economic development of Mizoram. An assessment on crop diversification tries to fulfill the gap by concentrating on Anthurium as a special case and its role on the household economy at the micro level to capture the opportunities created by crop diversification at the household level.

1. Introduction

Crop diversification is one strategy that smallholder farmers may employ to sustain their livelihoods. Only 6 per cent is under cultivation out of the total geographical area of Mizoram. Therefore most of the food-grains are imported from the neighboring states. Due to steep slope and the topography of the land, agricultural production is not productive with very little productive land in Mizoram. Therefore it is very much essential to go for a possible crop diversification for their livelihood. A lead was taken by the Department of Horticulture of Mizoram in this diversion. The Department of Horticulture under the Horticulture Technology Mission introduced Commercial Floriculture in 2001 which is thriving very well in the state. In fact, Flower is the only local produce that is exported to the international markets. The contribution of Floriculture to the Gross State Domestic Product (GSDP) could not be calculated since the input is taken together with all the agriculture and livestock. However the contribution of Floriculture to the Agriculture sector is continuously increasing over the years which show that Floriculture is flourishing in the state. The economy is basically dependent on agriculture to a large extent where majority of the cultivators are depending largely on shifting cultivation. Therefore it is very much essential to go for a possible crop diversification for their livelihoods.

One of the constraints in the agricultural products is that it is seasonal and cannot be grown throughout the year since most of the farmers depend on rain for their crops. Most of the farmers are belonging to marginal and small farmers, they produce in a small quantity in scattered areas and transportation is always a constraint, the farmer disposed off their produce at the nearest market where they do not get fair price for their produce, the reason for force sale without waiting for a fair price may be lack of proper storage facilities, inadequate means of transport, lack of proper credit facilities, acute poverty of the farmers etc. which force the rural farmers to sell their products and it is not all these act together.

The agro-climatic conditions in Mizoram is suitable for growing wide varieties of Horticultural crops including fruits, vegetables, spices, ornamental crops and plantation crops. The major vegetable crops in Mizoram are mustard, brinjal, beans, tomato, peas, squash and cabbage. Spices like chilly, ginger, turmeric are grown commonly. Floriculture is taken up commercially under the Technology Mission for North-East package.

Considering the importance of crop diversification in the overall developmental strategy in Indian agriculture, the government of India has taken several initiatives for agricultural development in general and crop diversification in particular by Launching a Technology Mission for the Integrated Development of Horticulture in the Northeastern Region to establish effective linkages between research, production, extension, post-harvest management, processing, marketing and exports and bring about a rapid development of agriculture in the region.

Under the Technology Mission for Integrated Development of Horticulture in North-Eastern States, the National Horticulture Board aims to create infrastructural facilities for post harvest management, marketing and export. For this, it

has provided financial assistance to the Anthurium growers as - Back-ended capital investment subsidy @ not exceeding 20 per cent of the total project cost with a maximum limit of Rupees Twenty Five Lakhs per project under the scheme to these projects which are found technically and financially viable. However, for the North-Eastern/Tribal/hilly Areas, maximum limit of subsidy @ Rs 30.00 lakh per project. Cost of Land not exceeding 10 per cent of the project cost.

The Department of Horticulture, Government of Mizoram has initially encouraged 24 growers to cultivate Anthurium under the Technology Mission for Integrated Development of Horticulture in North Eastern states in November 2002. They were selected based on the availability of land and water source by the Department of Horticulture under the package and were given necessary trainings and were provided quality planting materials, shade nets and other farm inputs.

The evaluation of crop pattern changes and their implications for crop diversification and area composition cannot be completed without considering their output and productivity effects. In the wake of globalization and opening up of the global market, there will be much more opportunity for entrepreneurship development in agriculture. This also calls for paradigm shifts in research and technology development and also the transfer of technology for successful crop diversification. In the successive years of green revolution when food security was fulfilled at national level due to stupendous efforts of ICAR, the emphasis of agricultural scientists has been put on implementation of crop diversification (C.R Hazra).

The study would mainly explore whether the livelihoods of the selected households resulted into agricultural diversification? Has this diversification been market oriented? If yes, has it resulted into greater integration with the word economy by way of giving opportunity to the farmers for exporting their products?

2. Materials and Method:

The methodology of the study consists of different aspects like:

2.1 Sources of Data:

Both primary and secondary data would be used for the present study.

Secondary Source:

Secondary data was collected from various central and state government and wherever possible from non-governmental organization also. More specifically Economics and Statistics like Central Statistical Survey Organization (CSSO), Department of Planning, Government of Mizoram and various publications including the agriculture department and other published and unpublished literature regarding the study have been considered.

Primary Data:

Primary data was generated by field-based surveys on selected households in the study area with the help of schedules and questionnaires as discussed below:

i) The data regarding the socio economic profile of the households covering aspects like age, family size, literacy level, income level and livelihood structure is collected through observation and detailed discussion with the cultivators and the selected households.

ii) The data regarding the land use and cropping pattern at the household level to assess the relative importance of food and cash crops has been collected from the selected household again.

iii) To study the production level, marketable surplus in agricultural sector, various questionnaires covering aspects like size of the land, crops grown, inputs like fertilizers, labours engaged and income derived from various crops are taken, amount of marketable surplus and marketed surplus were taken for the study.

iv) To estimate the Production level and marketed surplus, the study relies upon the primary data collected from selected villages/Village Councils of Tlangnuam Block of Aizawl district and Bilkhawthlir Block of Kolasib district. The villages/Village Councils were selected based on the presence of Anthurium cultivators. The data collected directly from the Anthurium cultivators and the farmers at random basis through discussion and the collected data were cross-checked with the concerned village Councils and also from the purchasing organization.

v) To study livelihood systems and relative role of Floriculture in the household economy, both in terms of its share in their income levels and also in comparison to the farmer households of similar categories who have not diversified their agriculture, questionnaires have been prepared to find out the total land possessed, net sown area, gross cropped area, net irrigated area, leased in and leased out land, crops grown (kharif, Rabi and Zaid, plantation crops etc) area of cultivation, number of days labour engaged, income, total production from different crops, marketable surplus and marketed surplus etc and also livestock rearing, expenditure in livestock rearing and income earned from it.

2.2 Study Area:

The study concentrated on two districts in Mizoram, Kolasib and Aizawl, for studying the trends in cropping pattern and importance of Anthurium in household economy. At present there are two blocks in Kolasib district and five blocks in Aizawl district. Out of these seven blocks two blocks, Bilkhawthlir of Kolasib and Tlangnuam of Aizawl district was selected for assessment of crop diversification at the grassroots level. At present there are nearly 100 Anthurium growers in Tlangnuam Block and fifty farmers in Bilkhawthlir Block.

2.3 Sample:

The entire sample of 200 is put in two categories- those who are growing Anthurium, termed as “Anthurium growers”, and those who are not growing Anthurium but are simple traditional farmers termed as “Non-Anthurium growers”. A total of 55 Anthurium growers and Non-Anthurium growers sample household were interacted from Aizawl district and 45 samples from both the growers and non growers were also interacted from Kolasib district. Total samples of 200 numbers were taken for the study (100 Anthurium growers and another 100 Non-

Anthurium growers). The selection of the sample was based on the simple principle of availability. Information for the rest of the study was taken from the Department of Horticulture, Department of Economics and Statistics, Economic survey of Mizoram: Department of Planning, Rural Development Department and available data and literature from various departmental websites, Village Councils and Zopar Pvt. Ltd etc.

2.4 Tools and Techniques of Data Analysis:

Standard questionnaire was prepared to collect information from the sample household both Anthurium growers and non-growers of 200 numbers. The selection of the sample was based on the simple principle of availability.

In addition to household schedule, the comprehensive village schedule was also prepared and used to understand the general level of development of villages which is helpful in understanding the general economic environment inducing the farmers to go for crops: - Anthurium in the present case - having international marketing potential.

Since the study is mainly exploratory in nature, no standard statistical tools are used.

2.5 Analytical Plan:The analytical designs of the study were as follows:

a) Analysis of the data regarding the socio economic profile of the household through observation and detailed discussion with the cultivators and the selected households.
b) Analysis of the data regarding the land use and cropping pattern at the household level to assess the relative importance of food and cash crops using the primary data.
c) Analysis of the production level, marketable surplus in agricultural sector, with the help of primary data.
d) Analysis of the Production level and marketed surplus with the help of primary data collected from selected villages/Village Councils of Tlangnuam Block of Aizawl and Bilkhawthlir Block of Kolasib district.
e) Economy, both in terms of its share in their income levels and also in comparison to the farmer households of similar categories who have not diversified their agriculture with the help of primary data.

***2.6 Indicators*:** For analyzing the primary data, the following indicators were used:-

Sample profile: The sample profile consists of the followings:

a) ***Farmers profile:*** Name,Age, Sex, Educational status, Primary Occupation, Secondary Occupation

ii) ***Household profile:***Family size, Age, Male-female ratio, Literacy level, House type, Occupational status, Income level

a) ***Land use and cropping pattern:*** Total land holdings, Net cultivated area, Net irrigated area, Rain-fed area, Cropping intensity, Area sown more than once

b) Production level, marketable surplus in agriculture sector:

Crops grown and area under different crops, Inputs like fertilizers and labours engaged

Production, yield and value of production, Volume of produced consumed, Income derived from sale of different crops, Volume of produced sold to markets

c) ***Income derived from sale of different crops:***Volume of produced sold in a year

Income derived from it (in Rupees)

d) ***Livelihood system and relative role of floriculture in the household economy*:**

Total land, net sown area, gross cropped area, net irrigated area, leased in and leased out land, Crops grown, area of cultivation, number of days labour engaged, income,

Total production from different crops, marketable surplus and marketed surplus.

3. Results and Discussion:

3.1 Profile of Sample Households:

3.1.1 Total number of Households:

The sample household consists of 200 number, of which 100 are from Aizawl district (55 are Anthurium growers and 45 are non-growers). Similarly an equal number of households for Kolasib district of 100 sample (55 are Anthurium growers and 45 are non-growers) which may be obtain from table 1.

3.1.2 Total population:

Table 1 shows the population of the sample households. The total population of the study area is 1097 (521 male and 576 female). The ratio of male and female is almost the same in cases for the districts 47.64 per cent male, 52.35 per cent female in Non-Anthurium group and 47.35 per cent male and 52.64 per cent female in Anthurium group. The female population is higher in both the cases and both districts. The overall male population is 47.49 per cent of the total population while female population is 52.51 per cent of the total population.

The total male population of the Non-Anthurium group of is 243 (144 in Aizawl and 99 in kolasib) which is 47.65 per cent (47.68 per cent in Aizawl and 47.60 per cent inkolasib) of the total Non-Anthurium group. The total female population of the Non-Anthurium group is 267 (158 in Aizawl and 109 in kolasib) which is 52.35 per cent (52.32 per cent in Aizawl and 52.40 per cent inkolasib) of the Non-Anthurium group.

The total male population of the Anthurium group of is 287 (160 in Aizawl and 118 in kolasib) which is 47.36 per cent (47.90 per cent in Aizawl and 47.64 per cent in kolasib) of the total Anthurium group. The total female population of the Anthurium group is 309 (174 in Aizawl and 135 in kolasib) which is 52.64 per cent (52.35 per cent in Aizawl and 52.10 per cent in kolasib) of the total Anthurium group.

3.1.3 Size of the family:

The size of the family of Non-Anthurium group ranges from 2-7 in both the districts where as in Anthurium group it is 2-13.

Table 1: Family size

District	Group	No. of Households	Total Population	Male	Male (%)	Female	Female (%)
Aizawl	Non-Anthurium	55	302	144	47.68	158	52.31
Kolasib	Non-Anthurium	45	208	99	47.59	109	52.40
Total	Non-Anthurium	100	510	243	47.64	267	52.35
Aizawl	Anthurium	55	334	160	47.90	174	52.09
Kolasib	Anthurium	45	253	118	46.64	135	53.35
Total	Anthurium	100	587	287	48.89	309	52.64
Grand Total	All groups	200	1097	521	47.49	576	52.51

Source: Calculated on the basis of field survey, 2013

3.1.4 Sex:

Table 2 presents the sex ratio of the sample households. Amongst the Non-Anthurium group in Aizawl district, 44 per cent are male and 11 per cent are female whereas in Kolasib district 33 per cent are male and 12 per cent are female. Overall for the Non-Anthurium group 77 per cent are male and 23 per cent are female.

Amongst the Anthurium group in Aizawl district 55 per cent are female and 45 per cent female in kolasib district. Overall 100 per cent Anthurium group cultivators are female.

Source: Calculated on the basis of field survey, 2013
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Table 2: Sex Ratio

Group				Sex		Total
				Male	Female	
Non-Anthurium	District	Aizawl District	Count	44	11	55
			% of Total	44.0%	11.0%	55.0%
		Kolasib	Count	33	12	45
			% of Total	33.0%	12.0%	45.0%
	Total		Count	77	23	100
			% of Total	77.0%	23.0%	100.0%
Anthurium group	District	Aizawl District	Count		55	55
			% of Total		55.0%	55.0%
		Kolasib	Count		45	45
			% of Total		45.0%	45.0%
	Total		Count		100	100
			% of Total		100.0%	100.0%

Source: Calculated on the basis of field survey, 2013

3.1.5 Education and Literacy:

Table 3 present the educational status and the literacy rate of the sample households. Amongst the Non-Anthurium group in Aizawl district, 3 per cent are illiterate, 40 are below matriculate, 7 per cent are matriculate, 4 per cent are graduate and 1 per cent post graduate whereas in kolasib district none of them illiterate, 26 per cent are below matriculate, 14 per cent are matriculate, 4 per cent graduate and 1 per cent post graduate. Overall for the Non-Anthurium group 3 per cent are illiterate, 35 per cent are illiterate, 66 per cent are below matriculate, 21 per cent are matriculate, 8 per cent are graduate and 2 per cent are post graduate.

Amongst the Anthurium group in Aizawl district none of them are illiterate, 26 per cent are below matriculation, 20 per cent matriculate, 9 per cent graduate and none of them are post graduate whereas in Kolasib district none of them are illiterate, 20 per cent are below matriculate, 17 per cent are matriculate, 8 per cent graduate and none of them are post graduate. Overall for the Anthurium group, none of them are illiterate, 46 per cent are below matriculate, 37 per cent matriculate, 17 per cent graduate and none of them are post graduate.

Table 3: Education

Group				Education					
				Illiterate	Below Matriculation	Matriculate	Graduate	Post Graduate	Total
Non-Anthurium	District	Aizawl District	Count	3	40	7	4	1	55
			% of Total	3.0%	40.0%	7.0%	4.0%	1.0%	55.0%
		Kolasib	Count	0	26	14	4	1	45
			% of Total	.0%	26.0%	14.0%	4.0%	1.0%	45.0%
	Total		Count	3	66	21	8	2	100
			% of Total	3.0%	66.0%	21.0%	8.0%	2.0%	100.0%
Anthurium group	District	Aizawl District	Count		26	20	9		55
			% of Total		26.0%	20.0%	9.0%		55.0%
		Kolasib	Count		20	17	8		45
			% of Total		20.0%	17.0%	8.0%		45.0%
	Total		Count		46	37	17		100
			% of Total		46.0%	37.0%	17.0%		100.0%

Source: Calculated on the basis of field survey, 2013

We may conclude that the Anthurium groups are all literate and more educated as compared to that of the Non-Anthurium group

3.1.6 House type:

Table 4 presents the house types of the sample households. Amongst the Non-Anthurium group, 4 per cent lives in rented houses (3 per cent in Aizawl district and 1 per cent in Kolasib district), 90 per cent lives in semi-pucca houses (51 per cent in Aizawl and 39 per cent in Kolasib) and 6 per cent lives in pucca houses (1 per cent in Aizawl and 5 per cent in Kolasib district).

Amongst the Anthurium group 6 per cent lives in rented houses (1 per cent in Aizawl district and 5 per cent in Kolasib district), 54 per cent lives in semi-pucca houses (30 per cent inAizawl and 24 per cent in Kolasib) and 40 per cent lives in pucca houses (24 per cent in Aizawl and 16 per cent in Kolasib district).

Table 4: House type

Group				House type			Total
				Rented	Semi-pucca	Pucca	
Non-Anthurium	District	Aizawl District	Count	3	51	1	55
			% of Total	3.0%	51.0%	1.0%	55.0%
		Kolasib	Count	1	39	5	45
			% of Total	1.0%	39.0%	5.0%	45.0%
	Total		Count	4	90	6	100
			% of Total	4.0%	90.0%	6.0%	100.0%
Anthurium group	District	Aizawl District	Count	1	30	24	55
			% of Total	1.0%	30.0%	24.0%	55.0%
		Kolasib	Count	5	24	16	45
			% of Total	5.0%	24.0%	16.0%	45.0%
	Total		Count	6	54	40	100
			% of Total	6.0%	54.0%	40.0%	100.0%

Source: calculated on the basis of field survey, 2013

3.2 Occupational status:

The occupational status of the sample households may be obtained from table 5.

3.2.1 Primary Occupation:

The primary occupation of the Non-Anthurium groups of both Aizawl and Kolasib district is purely agriculture whereas in Anthurium group only 75 per cent purely depends on agriculture as their primary occupation. 37 per cent depends on agriculture as their primary occupation in Aizawl district and 38 per cent in Kolasib district which may be obtain from table 5.

Table 5: Occupational Status

Group				Occupational Status		Total
				Agriculture	Others	
Non-Anthurium	District	Aizawl District	Count	55		55
			% of Total	55.0%		55.0%
		Kolasib	Count	45		45
			% of Total	45.0%		45.0%
	Total		Count	100		100
			% of Total	100.0%		100.0%
Anthurium group	District	Aizawl District	Count	37	18	55
			% of Total	37.0%	18.0%	55.0%
		Kolasib	Count	38	7	45
			% of Total	38.0%	7.0%	45.0%
	Total		Count	75	25	100
			% of Total	75.0%	25.0%	100.0%

Source: Calculated on the basis of field survey, 2013

3.2.2 Secondary Occupation:

As already mentioned that 100 per cent of the Non-Anthurium group depends on agriculture as their primary occupation. 69 per cent do not have other occupation (41 per cent in Aizawl district and 28 per cent kolasib district), 8 per cent have service as secondary occupation (3 per cent in Aizawl district and 5 per cent in kolasib district), 2 per cent depnds on wage labour as their secondary occupation (1 per cent in Aizawl and 1 per cent in Kolasib district), 6 per cent depends on small trade and business as their secondary occupation (2 per cent in Aizawl and 4 per cent in Kolasib district) and 15 per cent depends on retirement/pensions as their secondary occupation (8 per cent in Aizawl district and 7 per cent in Kolasib district).

Amongst the Anthurium group 75 per cent depends on agriculture for their primary occupation, out of which 63 per cent purely depends on agriculture without having other source of occupation (26 per cent in Aizawl district and 37 per cent in Kolasib district), 15 per cent depends on service as their secondary occupation (105 in Aizawl and 5 per cent in kolasib district), 2 per cent depends on wage labour for their secondary occupation(1 per cent in Aizawl and 1 per cent in Kolasib district), 5 per cent depends on small trade and business as their secondary occupation (3 per cent in Aizawl and 2 per cent in Kolasib district) and 15 per cent depends on retirement/pensions for their secondary occupation (15 per cent in Aizawl and none in kolasib).

It may be observed that the Non-Anthurium groups earned their livelihood more on agriculture and wage labour whereas the Anthurium group depends on service, small trade and pensions in addition to agriculture, the Anthurium groups are having more diversified source of occupation which can be obtained from table 6.

Table 6: Secondary Occupation

Group				Secondary Occupation					
				None	Service	Wage labour	Small trade &bussiness	Others	Total
Non-Anthurium	District	Aizawl District	Count	41	3	1	2	8	55
			% of Total	41.0%	3.0%	1.0%	2.0%	8.0%	55.0%

		Kolasib	Count	28	5	1	4	7	45
			% of Total	28.0%	5.0%	1.0%	4.0%	7.0%	45.0%
	Total		Count	69	8	2	6	15	100
			% of Total	69.0%	8.0%	2.0%	6.0%	15.0%	100.0%
Anthurium group	District	Aizawl District	Count	26	10	1	3	15	55
			% of Total	26.0%	10.0%	1.0%	3.0%	15.0%	55.0%
		Kolasib	Count	37	5	1	2	0	45
			% of Total	37.0%	5.0%	1.0%	2.0%	.0%	45.0%
	Total		Count	63	15	2	5	15	100
			% of Total	63.0%	15.0%	2.0%	5.0%	15.0%	100.0%

Source: Calculated on the basis of field survey, 2013

3.3 Land use pattern:

The land use pattern of the sample households covering aspects like the total land holdings, net cultivated area, fallow land, irrigated area, gross cultivated area and cropping intensity may be observed from table 7 for which data is available.

3.3.1 Total Land Holdings:

The total land holdings of the Non-Anthurium group is 94.81 hectares (47.84 hectares in Aizawl and 46.98 hectares in Kolasib district).

The total land holdings of the Anthurium group is 191.85 hectares (80.93 hectares in Aizawl and 110.92 hectares in Kolasib district). The overall land holdings of the study area is 286.67 hectares.

3.3.2 Net Cultivated Area:

For the Non-Anthurium group out of the 94.81 hectares 44.28 hectares is Net Cultivated area (21.68 hectares in Aizawl district and 22.60 hectares in Kolasib district) which is 46.70 per cent of the total land of the Non-Anthurium Group (45.32 per cent in Aizawl district and 48.11 per cent in kolasib district).

For the Athurium group out of the 191.85 hectares 40.28 hectares is Net Cultivated area (18.80 hectares in Aizawl district and 21.48 hectares in Kolasib district) which is 21.00 per cent of the total land of Anthurium Group (23.23 per cent in Aizawl district and 19.36 per cent in kolasib district). The overall Net Cultivated area of the study area is 84.56 hectares which is 29.50 per cent of the total land holdings.

3.3.3 Fallow land:

For Non-Anthurium group 50.76 hectare are fallow land (26.31 hectares in Aizawl district and 24.45 hectares in Kolasib district) which is 53.54 per cent of the total land of the Non-Anthurium group (55.00 per cent in Aizawl and 52.05 per cent in Kolasib district).

For Anthurium group 151.97 hectare are fallow land (62.43 hectares in Aizawl district and 89.54 hectares in Kolasib district) which is 79.21 per cent of the total land of the Anthurium group (77.14 per cent in Aizawl and 80.72 per cent in Kolasib district). The overall fallow land of the sturdy area is 202.73 hectares which is 70.72 per cent of the total land holdings of all the groups.

3.3.4 Irrigated land:

For Non-Anthurium group 8.67 hectares are irrigated (4.20 hectares in Aizawl district and 4.47 hectares in kolasib district) which is 19.58 per cent of the Net Cultivated Area of the Non-Anthurium Group (19.37 per cent in Aizawldistict and 19.78 per cent in kolasib district).

For Anthurium group 28.03 hectares are irrigated (11.58 hectares in Aizawl district and 16.45 hectares in kolasib district) which is 69.59 per cent of the Net Cultivated Area of the Anthurium Group (61.60 per cent in Aizawl district and 76.58 per cent in kolasib district). The overall irrigated area of the study area is 36.70 hectares which is 43.40 per cent of the Total land holdings of all the groups.

3.3.5 Gross Cultivated Area and Cropping Intensity:

For Non-Anthurium 48.86 hectares is the Gross Cultivated Area (23.66 hectares in Aizawl district and 25.20 hectares in Kolasib) which is 51.53 per cent of the total land of the Non-Anthurium group with a cropping intensity of 110.34 per cent (109.13 per cent in Aizawl district and 111.50 per cent inKolasib district).

For Anthurium group 51.04 hectares is the Gross Cultivated area (27.57 hectares in Aizawl district and 23.47 hectares in Kolasib district) which is 26.60 per cent of the total land of the Anthurium group with a cropping intensity of 126.71 per cent (146.65 per cent in Aizawl district and 109.26 per cent in Kolasib district). The overall Gross cultivated area is 99.90 hectares, the cropping intensity is 118.14 per cent.

Table 7: Land use pattern

District	Group	Total Land	NCA	Fallow	Irrigated	GCA	% of NCA	% fallow of NCA	% Irrigated of NCA	% GCA of NCA
Aizawl	Non-Anthu	47.84	21.68	26.31	4.20	23.66	45.32	55.00	19.37	109.13
Kolasib	Non-Anthu	46.98	22.60	24.45	4.47	25.20	48.11	52.05	19.78	111.50
Aizawl	Anthurium	80.93	18.80	62.43	11.58	27.57	23.23	77.14	61.60	146.65
Kolasib	Anthurium	110.92	21.48	89.54	16.45	23.47	19.36	80.72	76.58	109.26
Total	Non-Anthu	94.81	44.28	50.76	8.67	48.86	46.70	53.54	19.58	110.34
Total	Anthurium	191.85	40.28	151.97	28.03	51.04	21.00	79.21	69.59	126.71
G total	All groups	286.67	84.56	202.73	36.70	99.90	29.50	70.72	43.40	118.14

Source: Calculated on the basis of field survey, 2013

3.4 Income and Livelihood Pattern:

The income and livelihood pattern covering aspects like the income from agricultural crops, income from livestock, income from plantations and income from Anthurium may be obtain from table 8 for which percent data is available.

The overall average income of the study area per household is Rupees fifty seven thousand and seventy one (Rs 57,071) only. The average income per household of Non-Anthurium group in Aizawl district is Rs. 21,178/- whereas in Kolasib district it is Rs. 21,605/- which is slightly higher than Aizawl district by Rs. 426/- only and the overall average income of the Non-Anthurium group is Rs. 21,370/-.

The average income per household of Anthurium group in Aizawl district is fairly high which is Rs. 1,29,923/- whereas in Kolasib district it is Rs. 47,366/- which is much lower than Aizawl district with a difference of Rs. 82,557/- only and the overall average income of the Anthurium group is Rs. 92,772/-. In Aizawl district Anthurium production is in the peak production having high yield resulting in higher level of income whereas in kolasib district Anthurium plant is still in the tender stage so the production is still in the initial stages therefore the production is not so high as compared to the Aizawl district. Due to more diversified form of occupation of the Anthurium group, they are having relatively higher income than the Non-Anthurium groups who have not diversified their occupation.

3.4.1 Income from Agricultural Crops:

The total income from Agricultural crops of the Non-Anthurium group is Rs. 6,10,602.6 (Rs. 2,88,689.8/- in Aizawl and Rs. 3,21,912.8/- in Kolasib district) which is 28.57 per cent of the total income of the Non-Anthurium group (24.78 per cent in Aizawl district and 33.11 per cent in Kolasib district).

The total income from Agricultural crops of the Anthurium group is Rs. 5,04,627.8 (Rs. 7,73,900/- in Aizawl and Rs. 3,44,009/- in Kolasib district) which is 5.44 per cent of the total income of the Anthurium group (50.22 per cent in Aizawl district and 47.22 per cent in Kolasib district).

The Grand total income from Agricultura crops of the study area is Rs. 11,15,230 which is 9.77 per cent of the total income.

3.4.2 Income from Livestock:

The total income from Livestock of the Non-Anthurium group is Rs. 10,42,000 (Rs. 5,85,000/- in Aizawl and Rs. 4,57,000/- in Kolasib district) which is 48.76 per cent of the total income of the Non-Anthurium group (50.22 per cent in Aizawl district and 47.00 per cent in Kolasib district).

The total income from Livestock of the Anthurium group is Rs. 11,17,909 (Rs. 7,73,900/- in Aizawl and Rs. 3,44,009/- in Kolasib district) which is 12.05 per cent of the total income of the Anthurium (10.83 per cent in Aizawl district and 16.14 per cent in Kolasib district).

The Grand total income from livestock of the study area is Rs. 21, 59,909 which is 18.92 per cent of the total income.

3.4.3 Income from Plantation:

The total income from Plantation of the Non-Anthurium group is Rs. 4,84,430 (Rs. 2,91,100/- in Aizawl and Rs. 1,93,330/- in Kolasib district) which is 22.67 per cent of the total income of the Non-Anthurium group (24.99 per cent in Aizawl district and 19.88 per cent in Kolasib district).

The total income from Plantation of the Anthurium group is Rs. 6,72,700 (Rs. 3,79,900/- in Aizawl and Rs. 2,92,800/- in Kolasib district) which is 7.25 per cent of the total income of the Anthurium group (5.32 per cent in Aizawl district and 13.74 per cent in Kolasib district).

The Grand total income from Plantation of the study area is Rs. 11,57,130 which is 10.14 per cent of the total income.

3.4.4 Income from Anthurium flower:

The total income from Anthurium flower of the Anthurium group is Rs. 68,92,000 (Rs. 57,36,000/- in Aizawl and Rs. 12,46,000/- in Kolasib district) which is 75.26 per cent of the total income of the Anthurium group (80.27 per cent in Aizawl district and 58.46 per cent in Kolasib district).

The Grand total income from Anthurium flower of the study area is Rs. 68,92,000 which is 61.17 per cent of the total income.

The vast difference of income in Aizawl and Kolasib district is that Aizawl district started the cultivation since 2002 and now it is in the peak production stage whereas in Kolasib the cultivation started in 2008 where the production is still in the initial stage.

It is also clear that in both the cases income from livestock is the highest 18.92 per cent of the total income followed by Plantation 10.14 per cent and agricultural crops 9.77 per cent.

3.5 Livelihood Pattern:

Information on the livelihood pattern of the sample households may be observed from table 8.

From the analysis it may be observed that maximum income is derived from livestock (18.29 per cent of their total income) followed by plantations (10.14 per cent of their total income) and agricultural crops (9.77 per cent of their total income). Anthurium alone contributes 61 per cent of the total income of the sample households. The Anthurium group have more diversified occupation..

The Anthurium groups are better off in terms of education and literacy, house type. Economically the Anthurium group derived more income than the Non-Anthurium group due to more diversified agriculture.

Table 8: Gross Income from various sources

District	Group	Agriculture	Livestock	Plantation	Anthurium	Total Income(Rs)	No. of HH	Income Per HH (Rs)
Aizawl	Non-Anthu	288689.8 24.78%	585000 50.22%	291100 24.99%	0	1164790	55	21178
Kolasib	Non-Anthu	321912.8 33.11%	457000 47.00%	193330 19.88%	0	972242.8	45	21605
Total	Non-Anthu	610602.6 28.57%	1042000 48.76%	484430 22.67%	0	2137033	100	21370
Aizawl	Anthurium	255980.3 3.58%	773900 10.83%	379900 5.32%	5736000 80.27%	7145780	55	129923
Kolasib	Anthurium	248647.5 11.67%	344009 16. 14 %	292800 13.74%	1246000 58.46%	2131457	45	47366
Total	Anthurium	504627.8 5.44%	1117909 12.05%	672700 7.25%	6982000 75.26%	9277237	100	92772
G. Total	All Groups	1115230 9.77%	2159909 18.92%	1157130 10.14%	6982000 61.17%	11414269	200	57071

Source: Calculated on the basis of field survey, 2013 HH: Household, Anthu: Anthurium

Based on Table 8, one sample T-test for mean difference was conducted, income from anthurium was used as the test value and income derived from agriculture, livestock and plantation were tested. From table 9, we can see that the average income from Anthurium is significantly higher than those from Agriculture, Livestock and Plantations. This shows that Anthurium cultivation is a promising activity for sustainable economic activity in the region.

Table 9: Test of mean difference taking the value of Anthurium as a test value

One-Sample Test						
	Test Value = 3491000 (Mean income from Anthurium)					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Agri	-191.215	3	.000	-3.21219E6	-3.2657E6	-3.1587E6
Livestock	-32.003	3	.000	-2.95102E6	-3.2445E6	-2.6576E6
Plantation	-83.999	3	.000	-3.20172E6	-3.3230E6	-3.0804E6

Source: calculated on the basis of field survey, 2013

Figure 1 shows that the mean income from Anthurium is significantly higher than that of Agriculture, Livestock and Plantation.

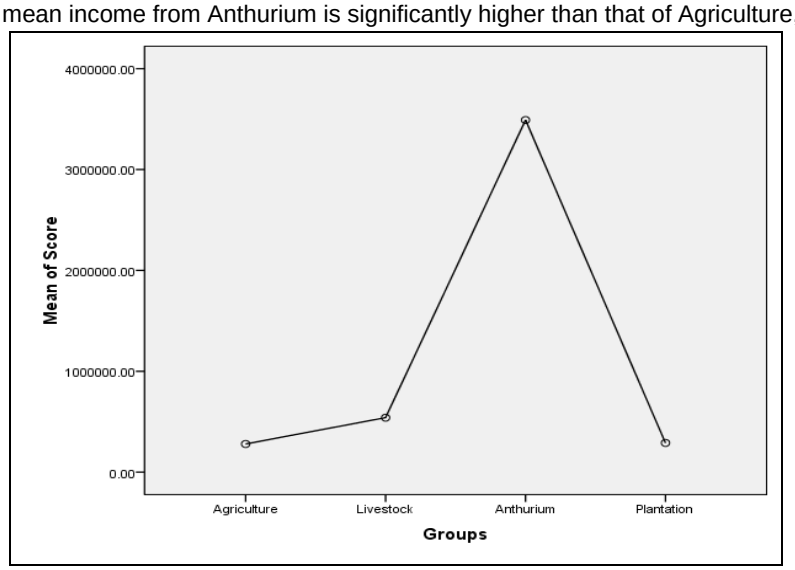

Figure 1: Mean Plots of income from various activities of the sampled farmers

3.6 Cropping Pattern of the Sample Household:

Table 10 shows the cropping pattern of the two groups (Anthurium growers and non-growers) among the sample household in the two districts covering aspects like the net cultivated area, area under different crops etc.

Table 10: Cropping pattern.

District	Group	NCA	Maize	Paddy	Others	GSA	Maize	Paddy	Others
Aizawl	Non-Anthu	20.78	8.98	9.52	5.41	23.91	37.56	39.82	22.63
Kolasib	Non-Anthu	22.6	10.67	9.06	5.47	25.2	42.34	35.95	21.71
Aizawl	Anthurium	18.8	5.9	15.73	8.26	29.89	19.74	52.63	27.63
Kolasib	Anthurium	21.48	9.2	5.9	9.57	24.67	37.29	23.92	38.79
Total	Non-Anthu	43.38	19.65	18.58	10.88	49.11	40.01	37.83	22.15
Total	Anthurium	41.4	16.57	24.79	13.73	55.09	30.08	45.00	24.92
Grand Total		84.78	36.22	43.37	24.61	104.2	34.76	41.62	23.62

Source: Calculated on the basis of field survey, 2013

3.6.1 Area under Maize:

For the Non-Anthurium group, of the Net cultivated area of 43.38 hectares (20.78 hectares in Aizawl district and 22.6 hectares in kolasib district) 19.65 hectares are under maize cultivation (8.98 hectares in Aizawl and 10.67 hectares in Kolasib district) which is 40.01 per cent of the Net Cultivated area (37.56 per cent in Aizawl district and 42.34 per cent in kolasib district).

For the Anthurium group, of the Net cultivated area of 41.4 hectares (18.8 hectares in Aizawl district and 21.48 hectares in kolasib district) 16.57 hectares are under maize cultivation (5.9 hectares in Aizawl and 9.2 hectares in Kolasib district) which is 30.08 per cent of the Net Cultivated area (19.74 per cent in Aizawl district and 37.29 per cent in kolasib district). The grand total area under maize is 84.78 hectares which is 104.2 per cent of the net cultivated area.

3.6.2 Area under Paddy:

For the Non-Anthurium group, of the Net cultivated area of 43.38 hectares (20.78 hectares in Aizawl district and 22.6 hectares in kolasib district) 18.58 hectares are under paddy cultivation (9.52 hectares in Aizawl and 9.06 hectares in Kolasib district) which is 37.83 per cent of the Net Cultivated area (22.82 per cent in Aizawl district and 35.95 per cent in kolasib district).

For the Anthurium group, of the Net cultivated area of 41.4 hectares (18.8 hectares in Aizawl district and 21.48 hectares in kolasib district) 24.79 hectares are under paddy cultivation (15.73 hectares in Aizawl and 5.9 hectares in Kolasib district) which is 45.00 per cent of the Net Cultivated area (52.63 per cent in Aizawl district and 23.92 per cent in kolasib district). The grand total area under paddy is 43.37 hectares which is 41.62 per cent of the net cultivated area.

3.6.3 Area under Other Crops:

For the Non-Anthurium group, of the Net cultivated area of 43.38 hectares (20.78 hectares in Aizawl district and 22.6 hectares in Kolasib district) 10.88 hectares are under other crops like beans, mustard leaf and tomato cultivation (5.41 hectares in Aizawl and 5.47 hectares in Kolasib district) which is 22.15 per cent of the Net Cultivated area (22.63 per cent in Aizawl district and 21.71 per cent in kolasib district).

For the Anthurium group, of the Net cultivated area of 41.4 hectares (18.8 hectares in Aizawl district and 21.48 hectares in kolasib district) 13.73 hectares are under other crops like beans, mustard leaf and tomato cultivation (8.26 hectares in Aizawl and 9.57 hectares in Kolasib district) which is 24.92 per cent of the Net Cultivated area (27.63 per cent in Aizawl district and 38.79 per cent in kolasib district). The grand total area under maize is 24.61 hectares which is 23.62 per cent of the net cultivated area.

3.7 Production and Marketed Surplus of Food Grains and Cash Crops:

3.7.1 Maize:

Information on the production, marketed value and percentage marketed and the total value of maize may be obtained from table 11.

Table 11: Production, marketed surplus and value of Maize

District	Group	Production maize (Q)	% to overall total production	Maize Marketed (Q)	% marketed	Total value maize (Rs)
Aizawl	Non-Anthurium	101.08	42.66	72.06	71.29	90972
Kolasib	Non-Anthurium	120.13	50.70	92.75	77.21	108117
Total	Non-Anthurium	221.21	93.37	164.81	74.50	199089
Aizawl	Anthurium	56.87	24.00	32.75	57.59	51185.25
Kolasib	Anthurium	90.025	38.00	75.25	83.38	81022.5
Total	Anthurium	146.898	62.00	108	73.52	132207.8
G. Total	All groups	236.923	-	183.25	77.35	213230.3

Source: Calculated on the basis of field survey, 2013

Production:

For the Non-Anthurium group the total production of Maize is 221.21 quintals (101.08 quintals in Aizawl district and 120.13 quintals in Kolasib district) which is 93 per cent of the total production from Maize (42.66 per cent in Aizawl district and 50.70 per cent in Kolasib district) where as for the Anthurium group the total production of Maize is 146.898 quintals (56.87 quintals in Aizawl district and 90.025 quintals in Kolasib district) which is 62 per cent of the total production from Maize (24 per cent in Aizawl district and 38 per cent in Kolasib district).

Marketed Surplus:

For the Non-Anthurium group the total marketed surplus is 164.81 quintals (72.06 quintals in Aizawl district and 92.75 quintals in Kolasib district) which is 74.50 per cent of the total production (71.29 per cent in Aizawl district 77.21 per cent in kolasib district) whereas for the Anthurium group the total marketed surplus is 108 quintals (32.75 quintala in Aizawl district and 75.25 quintals in Kolasib district) which is 73.52 per cent of the total production (57.59 per cent in Aizawl district 83.38 per cent in kolasib district). The overall marketed surplus of Maize of both group and both district is 183.25 quintals which is 77.35 per cent of the total agricultural crop production.

Value of Production:

For the Non-Anthurium group, the total value of production is Rs. 199089/- (Rs. 90972/- in Aizawl district and Rs. 108117/- in Kolasib district) whereas for the Anthurium group, the total production is Rs. 132207.8/- (Rs. 51185.25/- in Aizawl district and Rs. 81022.5/- in Kolasib district. And the overall production value of Maize of both groups and both district is Rs. 213230.3/-.

3.7.2 Paddy:

Information on the production, marketed value and percentage marketed and the total value of maize may be obtained from table 12.

Table 12: Production, marketed surplus and value of Paddy

District	Group	Production of paddy (Q)	% Production	Paddy marketed (Q)	% marketed	Total value paddy (Rs)
Aizawl	Non-Anthu	18.464	40.53	3.25	17.84	166176
Kolasib	Non-Anthu	11.555	25.36	1.25	11.21	103995
Total	Non-Anthu	30.019	65.89	4.5	14.99	270171
Aizawl	Anthurium	13.005	28.54	1.4	10.77	117045
Kolasib	Anthurium	4.55	9.99	0.6	13.04	40950
Total	Anthurium	17.555	38.53	2	11.39	157995
Grand Total	All groups	45.56	-	6.5	14.26	198945

Source: Calculated on the basis of field survey, 2013

Production:

For the Non-Anthurium group the total production of Paddy is 30.109 quintals (18.464 quintals in Aizawl district and 11.555 quintals in Kolasib district) which is 65.89 per cent of the total production from Paddy (40.53 per cent in Aizawl district and 25.36 per cent in Kolasib district) where as for the Anthurium group the total production of Paddy is 17.555 quintals (13.005 in Aizawl district and 4.55 in Kolasib district) which is 38.53 per cent of the total production from Paddy (9.9 per cent in Aizawl district and 38.53per cent in Kolasib district). The overall production of Paddy for both groups of the both the district is 45.56 quintals.

Marketed Surplus:

For the Non-Anthurium group the total marketed surplus is 4.5 quintals (3.25 quintals in Aizawl district and 1.25 quintals in Kolasib district) which is 14.99 per cent of the total production (17.84 per cent in Aizawl district 11.21 per cent in kolasib district) whereas for the Anthurium group the total marketed surplus is 2 quintals (1.4 quintals in Aizawl district and 0.6 quintals in Kolasib district) which is 11.39 per cent of the total production (10.77 per cent in Aizawl district 13.04 per cent in kolasib district). The overall marketed surplus of Paddy of both group and both district is 5.6 quintals which is 14.26 per cent of the total agricultural crop production.

Value of Production:

For the Non-Anthurium group, the total value of production is Rs. 270171 (Rs. 166176/- in Aizawl district and Rs. 103995/- in Kolasib district) whereas for the Anthurium group, the total production is Rs. 157995/- (Rs. 117045/- in Aizawl district and Rs. 40950/- in Kolasib district. And the overall production value of Paddy of both groups and both district is Rs. 198945/-.

3.7.3 Other Crops

For the study of production, mareketd surplus and value of production, crops like Maize, Paddy, Beans, Mustard Leaf and Tomato are taken. However, in the above table Beans, Mustard Leaf and Tomato are clubbed as the Other Crops. Table 13 shows the production, marketed surplus, percentage marketed and total value of Other Crops.

Table 13: Production, marketed surplus and value of other crops

District	Groups	Total value Others (Rs)	Others marketed (Rs)	% marketed
Aizawl	Non-Anthu	48997.8	19933.38	40.68
Kolasib	Non-Anthu	90809.3	36992.39	40.74
Total	Non-Anthu	139807.1	56925.77	40.72
Aizawl	Anthurium	87750	24077.5	27.44
Kolasib	Anthurium	94500	19478.25	20.61
Total	Anthurium	182250	43555.75	23.89
G. Total	All Groups	276750	63034	22.77

Source: Calculated on the basis of field survey, 2013

Production:

The Other crops include Beans, Mustard Leaf and Tomato, However the production of each crops is not given separately but the total value of production is given together.

Marketed Surplus:

The marketed surplus of other crops is calculated directly on monetary value and the quantity of each crop is not given separately.

For the Non-Anthurium group the total marketed surplus is Rs. 56,925.77/- (Rs. 19,933.38/- in Aizawl district and Rs. 36,992.39/- in Kolasib district) which is 40.72 per cent of the total production (40.68 per cent in Aizawl district 40.74 per cent in kolasib district) whereas for the Anthurium group the total marketed surplus is Rs. 43,555.75/- (Rs. 24,077.5/- in Aizawl district and Rs. 19,478.25/- in Kolasib district) which is 23.89 per cent of the total production (27.44 per cent in Aizawl district 20.61 per cent in kolasib district). The overall marketed surplus of Other Crops of both group and both district is Rs. 63034/- which is 22.77 per cent of the total production. The overall value of Production of Other crop of both group and both district is Rs. 276750/-.

Value of Production of Other Crops:

For the Non-Anthurium group the total marketed surplus is Rs. 1,39,807.1/- (Rs. 48,997.8/- in Aizawl district and Rs. 90,809.3/- in Kolasib district) whereas for the Anthurium group the total marketed surplus is Rs. 1,82,250/- (Rs. 87,750/- in Aizawl district and Rs. 94,500/- in Kolasib district). The overall value of production of Other crops of both group and both district is Rs. 2,76,750/-.

3.8. Gross Production and Marketed Value:

Table 14 shows the gross value of production by sample groups, gross value marketed and percentage marketed to the gross value of production of maize, paddy and other crops for which data is given below.

Table 14: Gross production and market value.

District	Group	Gross Value of Production (Rs)	Gross Value of Maize marketed (Rs)	% of Maize marketed to GVP	Gross Value of Paddy marketed (Rs)	% of Paddy marketed to GVP	Gross Value of Other Crops (Rs)	% of Other Crops marketed to GVP
Aizawl	Non-Anthu	295759.8	648.54	0.22	29250.0	9.89	19933.4	6.74
Kolasib	Non-Anthu	302921.3	834.75	0.28	11250	3.71	36992.39	12.21
Total	**Non-Anthu**	**598681.1**	**1483.29**	**0.25**	**40500.0**	**6.76**	**56925.8**	**9.50**
Aizawl	Anthurium	255980.3	294.75	0.12	12600	4.92	24077.5	9.41
Kolasib	Anthurium	216472.5	677.25	0.31	5400	2.49	19478.25	9.00
Total	**Anthurium**	**472452.8**	**972**	**0.21**	**18000**	**3.80**	**43555.75**	**9.21**
G. total	All Group	1071134	2455.29	0.22	58500.0	5.5	100481.5	9.38
Gross Agricultural Crop Production value (Rs)								1071134
Gross Surplus Marketed Value (Rs)								161436.8
% of Gross Marketed Surplus Value to the Gross Agricultural Crop Production Value								15.07

Source: Calculated on the basis of field survey, 2013

3.8.1 Gross Value of Agricultural Crops:

For Non-Anthurium group, the Gross Agricultural Crop Production Value of is Rs. 5,98,681.1/- (2,95,759.8/- for Aizawl district and Rs. 3,02,921.3/-) whereas for the Anthurium group the Gross Agricultural Crop Production Value is Rs. 4,72,452.8/- (Rs. 2,55,980.3/- and Rs. 2,16,472.5/-). The overall Gross Agricultural Crop Production Value is Rs. 10,71,134/-.

3.8.2 Gross Marketed Value of Maize:

For Non-Anthurium group the gross value of Maize marketed is Rs. 1,483.29/- (Rs.648.54/- in Aizawl district and

Rs. 834.75/- in Kolasib district) which is .25 per cent of the gross production (.22 per cent in Aizawl district and .28 per cent in kolasib district) whereas for the Anthurium group the gross value of maize marketed is Rs. 972/- (Rs. 294.75/- in Aizawl district and Rs.677.25/- in Kolasib district) which is .21per cent of the gross production (.12 per cent in Aizawl district and .31 per cent in kolasib district). The overall gross value of Maize market is Rs. 2455.29/- which is .22 per cent of the gross production of agricultural crops.

3.8.3 Gross Marketed Value of Paddy:

For Non-Anthurium group the gross value of Paddy marketed is Rs. 40,500.0/-(Rs.29,250.0/- in Aizawl district and Rs. 11,250/- in Kolasib district) which is 6.76 per cent of the gross production (9.89 per cent in Aizawl district and 3.71 per cent in kolasib district) whereas for the Anthurium group the gross value of Paddy marketed is Rs. 18,000/- (Rs. 12,600/- in Aizawl district and Rs. 5,400/- in Kolasib district) which is 3.80 per cent of the gross production (4.92 per cent in Aizawl district and 2.49 per cent in kolasib district). The overall gross value of Paddy market is Rs. 58,500.0/- which is 5.5 per cent of the gross production of agricultural crops.

Gross Marketed Value of Other Crops:

For Non-Anthurium group the gross value of Other crops marketed is Rs. 56,925.8/-(Rs.19,933.4/- in Aizawl district and Rs. 36,992.39/- in Kolasib district) which is 9.50 per cent of the gross production (6.74 per cent in Aizawl district and 12.21 per cent in kolasib district) whereas for the Anthurium group the gross value of Other crops marketed is Rs. 43,555.75/- (Rs. 24,077.5/- in Aizawl district and Rs. 19,478.25/- in Kolasib district) which is 9.21per cent of the gross production (9.41per cent in Aizawl district and 9.0 per cent in kolasib district). The overall gross value of Other crops market is Rs. 1,00,481.5/- which is 9.38 per cent of the gross production of agricultural crops.

The Gross Agricultural Crop Production value (Rs). 10,71,134/-. The Gross Surplus Marketed Value (Rs). 1,61,436.8/- which is 15.07% of Gross Marketed Surplus Value to the Gross Agricultural Crop Production.

4. Conclusion

From the above results and discussion, following conclusion may be drawn:

It was observed that the Non-Anthurium groups earned their livelihood more on agriculture and wage labour whereas the Anthurium group depends on service, smalltrade and pensions in addition to agriculture, the Anthurium groups are having more diversifiedsource of occupation The average income per household of Anthurium group in Aizawl district is fairly high which is Rs. 1,29,923/- whereas in Kolasib district it is Rs. 47,366/- which is muchlower than Aizawl district with a difference of Rs. 82,557/- only and the overall average income of the Anthurium group is Rs. 92,772/-. In Aizawl district Anthurium production is in the peak production having high yield resulting in higher level of income whereas inkolasibdistrict Anthurium plant is still in the tender stage so the production is still in the initial stages therefore the production is not so high as compared to the Aizawl district. Due to more diversified form of occupation of the Anthurium group, they are having relatively higher income than the Non Anthurium groups who have not diversified their occupation.

Anthurium alone contributes 61 per cent of the total income of the sample households. They have more diversified occupation and are better off in terms of education and literacy, house type etc. Economically, the Anthurium groups derived more income than the Non-Anthurium Group due to more diversified agriculture to Floriculture which has assured market for export. So, diversification of agriculture provides better opportunity for exporting their produced.

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