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# Horticulture Based Livelihood in Tripura: A case study of Baramura-Deutamura Hill Dwellers

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Traditionally shifting cultivation was once the major occupation of the tribes of Tripura. However with declining availability of land and consistent efforts of the government to reduce 'jhuming', alternative vocations like plantation, horticulture, animal husbandry, etc. are being pursued by many hill dwellers currently, with varying degrees of success. The argument in favour of horticulture cultivation is that the weather and climate in the state is conducive and these often being short duration crops fit well into the intensive cropping system providing favourable economic returns to the cultivators. The present study area was selected purposively from the Baramura-Deutamura village in Khowai district of Tripura. The paper examined that income returns from mature crops were highly significant towards ensuring sustainable rural livelihoods while income received from immature crops were insignificant for pursuing sustainability of tribals livelihood in the region perhaps it provides employment all round the year. The roles of intermediaries were learnt highly influencing local market thereby depriving the growers from getting full benefits out of selling.

**Keywords:** Tribes, Shifting Cultivation, Horticulture Cultivation, Livelihood Options, Economic Issues.

## Introduction

The Baramura-Deutamura hill located in the ranges between 91°36'51.39"E 22°55'41.55"N and 91°34'55.13"E 24°06'26.76"N (Das, et al. 2012). The range witnessed important state asset of Gas Thermal Project and Baramura Eco-Park located at about 37 km away from main city of Agartala. It is an area surrounded by sylvan green forest with a stream flowing through it. This is an ideal destination for eco-lovers inhabited by the indigenous peoples (Tripura Tourism Dept, 2015). The scheduled tribes of Tripura, living in the hilly area, have traditionally been practising jhum cultivation which was also called as swidden cultivation, as a system of mixed cropping since time immemorial (Das & Das, 2014). Abundant land provided them the opportunities to practice

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this mode of production and provided livings at subsistence levels and was pretty economically in terms of cost of production (Bhowmik, 2013). Their livelihoods depends on wage earnings and jhum cultivation, livestock's and handicrafts making provide them additional income, as does the collections of forest resources such as timber-woods, fuels, roots, medicinal herbs and fruits etc. However, due to demographic transition and the consequences of unavailability of virgin forest lands, the choice of land available for jhum has shrunk (Miah & Islam, 2007). Therefore, land ownership became a complex issue even in the hilly areas. The unavailability of lands, in turn, results into the shortening of the jhum cycle and repeated jhuming on the same land must have led to a lowering of soil fertility which further led to lowering jhum yields. Therefore, short fallow periods were no longer adequate to restore the soils productive capacity (FAO, 1984).

However, with modernisation and development occurring in all spheres of economy since independence there have been developmental interventions by the state government through successive rehabilitation programmes in the life and livelihood of the indigenous population living across the state. The programme includes land development measures, afforestation, animal husbandry and plantation cultivation (Das, 2006). An inclusive development through plantations opens income-earning opportunities for the small and marginal farmers on account of its high labour intensity and contributes towards sustainable livelihood of small growers (Joseph, 2014). Moreover, horticulture and plantation has also been used as alternative livelihood model for transition from shifting to permanent cultivation (Rasul & Thapa, 2003). The growth of plantations sector claims to have widely benefited to the poor and weaker sections of the society particularly scheduled tribes in terms of income and employment and has emerged as the main source of livelihood to the growers (Joseph, 2014). Therefore, the introduction of plantation and horticulture crops like rubber, coffee, tea, banana, cashew, black pepper, spice trees etc. on jhum fields in the sloppy terrains are considered as promising alternatives (Datta & Singh, 2012). Thus, horticulture crops cultivation in the hilly areas become their main sources of earning livelihood (Kumar & Reddy, 2010).

Furthermore, the horticulture crops were considered a better option for diversification of agriculture due to higher returns and also improving productivity of lands. Thus, the agro climate condition of this State offers immense potential for production of a number of tropical and sub tropical fruits and vegetables. The total area under horticulture crops cover was 60.14 ha and the production stood at 6.978 lakh MT (Economic Review, 2013-14). Moreover, horticulture sector has played a major role in ensuring livelihood security of marginal and resource-poor farmers (Rathore, et al., 2014). With agriculture and allied sectors finding alternate ways of increasing productivity of crops, horticulture as a sub-sector, is a revelation, showing remarkable signs of progress in term of occupation and employment generation among the small and marginal farmers. Therefore, horticulture induced development model used by the state government for rehabilitating landless jhumia have also attracted many private individuals' cultivators to investment on horticulture cultivation due to its short gestation period and quick returns of income from the field (Viswanathan, 2012). Since the income returns from horticulture crops were much more lucrative than non-horticulture crops. It also augments the rural economy and becomes a best option for sustainable livelihood (Kamei, 2013).

Although the initial setting of horticulture crops cultivation required heavy investment than non-horticulture cultivation but in the long-run the income returns was more profitable which start from the second year itself (Miah & Islam, 2007). Besides it also promote the fertility itatus of the soil of the area and prevent soil erosion because of the tree cover that is created on the hill slopes (Dasgupta, 1989). Nevertheless, the suitability climatic conditions of the state have favoured the cultivation of various horticulture crops in Tripura. In addition, horticulture sector is playing an important role in providing sustainable livelihood of marginal and resource poor farmers in the state (Economic Review, 2013-2014).

Thus, this paper aimed to study the socio-economic features of the horticulture growers among the sample households and the sustainability of livelihoods through horticulture cultivation based on samples taken from Baramura-Deutamura hills dwellers. The study area Khamting Bari, Panchayat of Mandai Rural Development Block in Khowai district of Tripura was purposively selected because of the following reasons- a) the area witnessed most of the scheduled tribes of the hill dwellers who were practising heterogeneous horticulture crops cultivation unlike others hill areas; b) the Panchayat is solely administered by the scheduled tribes; and c) State Government prohibited jhum cultivation nearby National Highway. Interestingly, National Highway No.44 is running in the middle of the study area which is also the lifeline and gateway of Tripura peoples. The current study was based on primary data and was collected randomly through structures scheduled questionnaires by interviewing 60 families of horticulture crop cultivators during December 2014. During surveyed village walk, plantations site observations, discussions with Panchayat secretary and village older peoples were conducted. The study was, therefore, exploratory in nature and an attempt to reveal society interest on horticulture cultivation as a whole. Thus, the present study was structured in five sections including introduction in Section I. And, Section II was characterized by sample households data analysis based on present author field survey obtained from various field trips while Section III deals with cropping pattern and followed by economic issues in Section IV and conclusion in Section V.

**Section II – Data Analysis**

In this section, an attempt was made to analyse the socio-economic characteristics of the hill dwellers for deeper insights of the nature of the peoples residing in hilly areas across the state in general and the selected area in particular.

**Descriptions of Study Area**

A brief profile of Khamting Bari Panchayat was displayed where the present study was conducted. The Panchayat is located in Mandai Tehsil of Khowai district. The village has two types of roads system. Within the village the road system was unmetalled on the one side and on the other side National Highway No.44 run throughout the village and becomes the corridor of Tripura connecting Assam and Meghalaya.

Table 1 provides information about the study area. Khamting Bari ADC village is a small village having total area of 4530.99 acres in which there were 375 households and with total population of 1686 including both male and female population. The socio-

Table 1: Basic Profile of Local Panchayat

| | |
|---|---|
| Total Area (in Acres) | 4530.99 |
| Households | 375 |
| Population | 1686 |
| Male | 832 |
| Female | 854 |
| APL | 125 |
| BPL | 140 |
| Antadaya | 100 |
| Annapurna | 13 |
| Primary Health Centre | 1 |
| ADC School | 1 |
| ICDS Centre | 9 |
| JB School | 3 |

Source: Local Panchayat, 2013-2014

economic conditions of the peoples based on their ration cards holding were categorized into various groups such as APL ration cards holder were 125 families and was followed by 140 families of having BPL ration cards while there were 100 families of Antadaya card holders as well as13 families of Annapurna respectively. Moreover, there was 1 primary health centre as well as 1 Autonomous District Council (ADC) School. In addition, there were 9 Integrated Child Development Services Centre and 3 Junior Basic School in the area as a whole.

**The profile of respondents**

The estimated households and population of the samples were 60 and 275 respectively in 2014. This was 16 % of the total households under the Panchayat. In the study area, agriculture allied activities was the major source of livelihoods for majority of the population. The socio-economic characteristics of sample households may be determined by various factors such as education levels, occupations, economic status, housing patterns, and sources of drinking water. The following table represents the basic features of the sample households observed during various field trips made on December 2014 in the selected area.

Table 2 represents the characteristics of sample households drawn from the study area. From the study, it was revealed that male households head accounts 95% while female accounts 5% among the samples respectively. Education level is another important variable in determining social welfare. Thus, in the table, it was found that 50% was contributed by the illiterate category which was followed by elementary 33.33%. So, the percentage of illiteracy rate was so large which in turn hurdles development process and activities in the area. Hence, the desire was that the illiteracy rate should fall and the rate literacy must increase in order to accelerate social development. Moreover, their housing patterns also indicate the living condition experienced by the peoples. In the study area, semi-concrete type of house was most popular which accounts for 38.34% and was

followed by bamboo-house 23.33% while Kancha was 23.33% respectively. Interestingly, it was also observed concrete house type which formed 5% of the housing pattern. Hence, affording better housing and facilities required a good source of income, perhaps, among the samples their housing conditions were found to be normally standard.

Moreover, the socio-economic status was categorised on the basis of ration card holdings which is universal because it became easy to identify whether a household is rich or poor. Thus, the table shows that APL card holders accounts for 45% constituting the maximum %age and was followed by BPL card holders accounting to 36.67% while18.33% was contributed by Antadaya card holders respectively. However, the ration card holding itself may not be a true measure for socio-economic welfare since it was observed during field surveyed that there were certain family whose house-roofs were made of thatch as well as without electricity but holding APL ration card. In the age of post modernism, it is not thinkable even one night without electricity but this was the real situation revealed from the study area among the target people. Thus, the study also revealed that such family was categorised as opposition political party. Therefore, it was found that the selection criteria was biased which may not limelight the real picture of the socio-economic characteristics of the families. In the meantime, self help group played important role among the households, therefore, contributing 31.67% of the total samples household. Water, another essential part of human life, was found to be easily accessible for the households despite the location is hilly in nature. The study revealed that water supply accounts for 53.33% of the total drinking water sources and became the major source of drinking water for the hill dwellers. Moreover, there were some families drawing water from both sources of well and water supply which constitutes to 21.67% and playing important role in supplying domestic water requirements. In addition, there were also other sources of water to the households such as well formed 20%, 3.33% from spring and tanker accounts for 1.67% respectively. These water sources formed the major source of irrigation to the cultivators particularly during hot summer season to provide water to new young horticulture plants.

**Facilities owned by the households**

Assets available to the sample households were given in Table 3. The simplest way to measure whether a household is better-off or worse-off is the possession of assets particularly in the rural area because a household is believed to have greater role in village affairs against the holding of assets.

Table 3 represents the possession of assets by the households in the selected area. Of the asset holdings, a mobile handset accounts for 86.67% which was owned by almost every household heads becoming essential part of their life used for communication. This indicates mobile was an important component of social asset helping them to carry and implement economic activities and sharing information in their day to day life. Moreover, other valuable assets like bike accounts for 13.33% and bike and car combination share 1.67% respectively. Hence, the study found that there was different person holding different forms of assets depending upon the price and prestige of the asset .The higher the value of asset the lesser was the numbers of persons holding because of modern assets are not affordable for the poor cultivators due to less income. And also, an

Table 2: Basic Profile of Sample Households

| Details | Numbers | Percentages |
|---|---|---|
| Sample Size | | |
| Male | 57 | 95 |
| Female | 3 | 5 |
| Total | 60 | 100 |
| Education Levels | | |
| Illiteracy | 30 | 50 |
| Primary | 3 | 5 |
| Elementary | 20 | 33.33 |
| Secondary | 7 | 11.67 |
| Total | 60 | 100 |
| Housing Pattern | | |
| Bamboo-house | 14 | 23.33 |
| Kancha | 14 | 23.33 |
| Tin | 6 | 10 |
| Semi-concrete | 23 | 38.34 |
| Concrete | 3 | 5 |
| Total | 60 | 100 |
| Economic Status | | |
| APL | 27 | 45 |
| BPL | 22 | 36.67 |
| Antadaya | 11 | 18.33 |
| Total | 60 | 100 |
| Self Help Group | 19 | 31.67 |
| Sources of Drinking Water | | |
| Spring | 2 | 3.33 |
| Well | 12 | 20 |
| Water Supply | 32 | 53.33 |
| Tanker | 1 | 1.67 |
| Well & Water Supply | 13 | 21.67 |
| Total | 60 | 100 |

Source: Author Survey Data, 2014

electricity connection in the present day is a vital infrastructure in the path of development process. So, the study revealed that non-bill paid electricity accounts for 55% among the respondents while bill paid electricity accounts for 43.33% respectively. It should be noted that electricity connections were provided by the state government as a part of subsidies to the hill dwellers. This is why, the percentage of non-bill paid households among the hill dwellers were high as compared to bill paid consumers vis-à-vis.

In fact, without electricity formed 1.67% which means spending life without electricity in this modern age of development despite there was a provision of rural development in all phases of Five Years Plan, Republic India. Therefore, kerosene-fueled lamp is the only hope for them after the sun sets. This could be because of hilly topography

Table 3: Facilities Possessed by Sample Households

| Items | Numbers | Percentages |
|---|---|---|
| Mobile | 52 | 86.67 |
| Vehicles | | |
| Bike | 8 | 13.33 |
| Bike&Car | 1 | 1.67 |
| Total | 9 | 15 |
| Electricity Connection | | |
| Bill-Paid | 26 | 43.33 |
| Non-bill Paid | 33 | 55 |
| No Electricity | 1 | 1.67 |
| Total | 60 | 100 |

Source: Author Survey Data, 2014

and scatter settlement in the area for carrying their economic activity in interior part of the area.

**Nature of land ownerships and utilisations**

Land ownership and its utilisation depend upon the degree of agriculture practice. The agricultural patterns also depend upon the topography characteristics of the local area and the cultural background of the inhabitant's. Thus, land based activities becomes the major source of livelihood for the sample households because they all were engaged in agriculture activities, thus, forming the essential mainstay of the rural peoples. Table 4 represents the ownership of land and its utilisation in the selected area. It revealed that the size of land holding was highest between 11-20 acres consisting 17 households Patta holder while inherited households accounts for 10 respectively. Meanwhile land utilisation was highest in case of plantation constituting 60 households having different degrees of plantation areas followed by the barren land 49 households and lowest in agriculture land which comprised 2 households. Thus, there was large chunk of barren lands in the study area owned by the samples which could be put into further economic activities through the expansion of public and private individual's investment would directly boost to rural economy by generating employment and subsistence income. However, the households were collecting others natural forest resources, like fire woods, timber and fodder at the same time collecting honey and fruits etc in these lands.

The average size of land holdings under Patta was the largest which accounts for 17.9 acres while smallest in case of purchased land which was 4.3 acres respectively. Since, in the past, no land ownership prevail among the hill dwellers because they were practising shifting cultivation moving every after one year from one place to another area in searched of Jhum land. It was cleared from the values of Range suggested that the different size of land holdings. Thus, the highest land holding was observed in Patta land which constituted to 28 acres followed by inherited land of 24.5 acres while the lowest was observed in the category of agriculture land constituting 1.5 acres. This is because plain land cultivation was not possible in the hilly area alternatively they have to practised shifting cultivation which was determined by the geographical landscape. Of the

Table 4: Size of Land Holdings by Sample Households in Baramura- Deutamura (in Acre)

| Items | Ownership | | | Utilisation | | |
|---|---|---|---|---|---|---|
| Land Size | Inherited | Patta | Purchased | Agri. Land | Barren | Plantation |
| = 2.5 | 3 | 1 | 2 | | 1 | 11 |
| 2.5-5 | 6 | 1 | 6 | 2 | 5 | 20 |
| 6-10 | 4 | 6 | 2 | | 16 | 22 |
| 11-20 | 10 | 17 | | | 20 | 7 |
| 20 = | 1 | 16 | | | 7 | |
| Total | 24 | 41 | 10 | 2 | 49 | 60 |
| Average | 8.89 | 17.9 | 4.3 | 4.25 | 12.36 | 5.52 |
| Min | 0.5 | 2 | 1 | 3.5 | 2 | 1 |
| Max | 25 | 30 | 10 | 5 | 27 | 15 |
| Range | 24.5 | 28 | 9 | 1.5 | 25 | 14 |

Source: Author Survey Data, 2014

total area of Patta 28 acres, only small size of land is used for planting horticulture crops. It should be noted that Patta land was allotted by the State government to those indigenous peoples.

**Sources of money availed by the respondents**

Money income play important role en masse in carrying economic activities in the process of economic development. Table 5 represents the sources of money income to the households. The interest for saving behaviour among peoples constitutes 68.33% out of total respondents. However, they also borrowed money for different purposes to mitigate their present needs. Meanwhile the degrees of necessity of borrowing differ from person to person. Thus, borrowing from broker constitutes 13.33% was the largest which was followed by borrowing from relatives 6.67% respectively. Interestingly, it was observed that borrowing from money lenders which was believed to be the main source of borrowing among the target groups but recorded the lowest percentage constituting 1.67%. Hence, the percentage of saving behaviour among the respondents was much higher than the percentages of borrowing. This shows the unique social characteristics of self subsistence as well as socially cohesion among the tribal peoples. The present study also revealed that indigenous peoples were now motivated for mobilising their resources through saving rather than opt for conspicuous consumption.

**Physical Resources Available to Sample Households**

The physical resources available to the respondents were mainly in the forms of livestock's, deadstocks, vegetables, fruits and various types of trees abundant surrounding to their homestead. Among the tribal's, livestock rearing is intrinsically related to their way of life.

Table 5: Households various sources of Money

| Forms | No of households | Percentages |
|---|---|---|
| 1. Saving | 41 | 68.33 |
| 2. Borrowing | | |
| 2a. Money Lenders | 1 | 1.67 |
| 2b. Brokers | 8 | 13.33 |
| 2c. Relatives | 4 | 6.67 |
| 2d. Brokers & Relatives | 2 | 3.33 |
| 2e. Others | 3 | 5 |
| Total | 16 | 30 |

Source: Author Survey Data, 2014

Table 6: Various forms of Households Physical Resources

| **Household Assets** | No of Households | Percentages |
|---|---|---|
| Gold | 4 | 6.67 |
| Livestock | 20 | 33.33 |
| Livestock&Gold | 9 | 15 |
| Vegetable&Livestock | 2 | 3.33 |
| Fruit&Livestock | 1 | 1.67 |
| Gold,Livestock,Deadstock,Vegetable | 1 | 1.67 |
| Livestock&Deadstock | 3 | 5 |
| Livestock,Deadstock&Vegetable | 4 | 6.66 |
| Gold,Livestock&Deadstock | 2 | 3.33 |
| Gold& Deadstock | 1 | 1.67 |
| Other | 1 | 1.67 |
| Total | 48 | 80.00 |
| **Forms of Tree** | | |
| Fruit | 8 | 13.33 |
| Flower&Fuel | 1 | 1.67 |
| Timber | 3 | 5 |
| Fuel | 2 | 3.33 |
| Timber,Fruit&Fuel | 5 | 8.33 |
| Fruit,Flower&Timber | 9 | 15 |
| Fruit&Timber | 12 | 20 |
| Fruit&Flower | 2 | 3.33 |
| Fruit,Flower&Fuel | 2 | 3.33 |
| Fruit&Fuel | 3 | 5 |
| Timber&Fuel | 1 | 1.67 |
| Fruit,Flower,Timber&Fuel | 1 | 1.67 |
| Flower&Timber | 1 | 1.67 |
| Total | 50 | 83.33 |

Source: Author Survey Data, 2014

Table 6 shows the details account of households' physical resources. It was revealed that households reared domestic animals as it provides them income on the one hand and on the other end providing meats for family consumption. Thus, it was seen as profitable economic activity, providing them additional income and generating employment which in turns improves their economic conditions. Therefore, the contribution of only livestock's was 33.33% which was significantly higher than other physical resources and was followed by the combination of livestock and gold accounting to 15% of the household assets. Similarly, deadstocks and vegetables were other important sources of money for the farmers owing to the nature of hoard-able and saleable in time of emergency. So is the case of fruits. One of the most precious jewels is gold in modern time. So, there were certain households possessing gold which was purchased from their income as a means of demonstration effect. This was another form of saving income. Out of 60 samples 48 families were having one or the other form of household assets does forming 80% of the total households assets owned by the respondents.

Other important natural resources owned by the respondents were different types of trees. They planted trees surrounding their houses and in their garden for it has a versatile uses to meet the demand for wood in the forms of house constructions, fuel-woods, fodder for animals and as a means of getting income by selling it. It has high economic value in the present day due to shortage of forest land in the state particularly.

Thus, it was found that fruit and timber type trees constitutes 20% and was the major form of tree possessed by the households which was followed by fruits, flowers and timbers 15% in mixed proportion and fruit trees accounts for 13.33% respectively. It should be kept in mind that some individual households owned single type of a tree as well as some in mixed types of tree. Interestingly, about 83% of the sample respondents in the area were having trees. This was primarily because of geographically hilly area to prevent themselves from cyclones and landslides. Thus, various forms of trees play important roles in moderating against soil erosion and ecological degradation. This shows that the hill dwellers were having deep regards for ecological balance as well as showing themselves as nature loving peoples.

**Annual per capita expenditure**

Expenditure is another important part of economic activity for mobilising and allocation of resources. The annual per capita expenditure of the households varies depending upon the occupations and level of income. Itemwise annual per capita expenditure observed from the study was shown in order to depict the spending behaviour of the respondents.

A look at Table 7 could be clearly understood about the annual per capita expenditure of the samples household item-wise. The per capita expenditure for food was Rs.7840.36 thereby forming the highest expenditures account head among the respondents. Similarly, the annual per capita expenditure for housing was Rs.4236.36 constituting the second highest in the expenditure components. However, it was customary for the rural masses that the expenditure for their children's education was often found to be neglected in the rural area. Hence, the education expenditure among the sample households was revealed as Rs.1981.82 annually. As a result, due to low investment on child education human resources could not be improved which in turn failed to increase labour skills and efficiency, therefore, impeding the development of the local area.

Table 7: Item wise Annual per Capita Expenditure of the Individuals Sample

| Expenditure Items | Annual Per Capita Expenditure (in Rs) |
|---|---|
| Food | 7840.36 |
| Fuel | 526.32 |
| Transport Cost | 801.93 |
| Clothing | 1557.82 |
| House | 4236.36 |
| Education | 1981.82 |
| Health | 1314.18 |
| Entertainment | 702.88 |
| Agriculture | 1525.45 |
| Others | 339.2 |
| Total | 20826.33 |

Source: Author Survey Data, 2014

Likewise, it was also observed that although agriculture sector was their major occupation but the annual per capita expenditure for agriculture purpose was pretty low which accounts for Rs.1525.45 annually. As a result, retarding agriculture development and lowering production. But it should be kept in mind that the farmers were small and marginal holders who were economically backward and poor. They often failed to meet the basic requirements for implementing agriculture cultivation because of less income earned by them. Nevertheless, the annual per capita expenditures for fuel, entertainment, transport and others remained below rupees thousand; the main reason could be low income but also fuel (gas and kerosene) has available alternative source of firewood in their surroundings. For transport cost and entertainment, the study revealed that sample households visit local market normally once or twice in a week. Henceforth, the smaller the frequency of visiting market the lower was the expenditure for entertainment. Others category, of course includes having fun with friends, drinks and smoking accounts for the lowest which was Rs 339.2 annually. Thus, the general per capita expenditure constitutes Rs.20826.33 annually for all items for each individual's.

**Section III: Cropping pattern**

In this section we shall analyse the cropping pattern of the households. In fact, the area was sloppy and hilly topography in nature which was incalculably good for the cultivation of horticulture crops. The climatic conditions and humidity per se is also another advantage point of horticulture cultivation in the local area.

**Areas under horticulture cultivation**

Land is an important factor of production where agriculture and allied activities are carried out. The size of holding, therefore, is an important variable for determining the economic scale of cultivation for agriculture development. Table 8 shows crop-wise total land area for the selected sample respondents. It was observed that crop diversification occupies significant economic activities practised by them. In the table, the number of households cultivating lemon accounts for 68.33% was observed to be the most culti-

vated horticulture crop thereby covering total area of 47.2 acres. Moreover, arecanut cultivation occupied the second largest plantation cultivation thereby contributing 61.67% and having total land area under crop cultivation was 38 acres and was followed by banana cultivation which was 38.33% and making the third largest among the crops cultivated covering total land area of 22 acres under cultivation.

Table 8: Area under Various Crops (in acre)

| Crops | Numbers | Percentages | Total Area |
|---|---|---|---|
| Lemon | 41 | 68.33 | 47.2 |
| Banana | 23 | 38.33 | 22 |
| Arecanut | 37 | 61.67 | 38 |
| Musambi | 5 | 8.33 | 4.8 |
| Litchi | 2 | 3.33 | 5.6 |
| Pineapple | 5 | 8.33 | 7.8 |
| Mango | 1 | 1.67 | 0.6 |
| Bamboo | 1 | 1.67 | 2 |
| Total | | | 128 |

Source: Author Survey Data, 2014

Meanwhile, the percentage of land utilisation under mango was the smallest which account only 0.6 acres which was followed by bamboo cultivation of 2 acres respectively. There were also others horticulture crops cultivated having various degrees of areas viz., under Musambi was 4.8 acres, 5.6 acres of Litchi, and 7.8 acres of pineapple. Thus, making total areas under different crops cultivation were found to be 128 acres among the respondents in the study area.

**Nature of labour used**

Labour is another important variable inputs of production. As a matter of fact, horticulture cultivation depends upon the availability of labourer because it is labour-intensive in nature. Since all the works involved physical activities does raised the demand for labour. From the Table 9, it was revealed that different forms of labour utilisation such as self, family and hired performing the core economic agents for carrying agriculture activities. Here, family and hired forms of labour combinations constituted 40 units[1] was maximum labour force available in the area which was followed by family based labour of 31 units. It was also observed that other forms of labour such as self and hired combinations formed 22 units; self alone accounts for 19 units and hired constituted for 6 units. The reasons for high contribution of family form of labour was that horticulture farming could be family based farming at the same time the availability of family labour who do not find others alternative works opportunity in the local area worked as family labour. However, as the economic scale of cultivation got expands it was not possible to manage by the household alone. Therefore, the demand for hired labour arises in the area forming another important source of labour supply. Hence, the practice of horticulture cultivation provides employment all around the year to the cultivators.

Table 9: Labour Usage by the Sample Households

| | Nature of Labour | | | | | |
|---|---|---|---|---|---|---|
| Crops | Self | Family | Hired | Self&Hired | Family&Hired | Total |
| Lemon | 7 | 12 | 2 | 7 | 16 | 44 |
| Banana | 6 | 7 | | 5 | 5 | 23 |
| Arecanut | 6 | 10 | 1 | 6 | 14 | 37 |
| Musambi | | | 1 | 1 | 3 | 5 |
| Litchi | | 2 | | | | 2 |
| Bamboo | | | | 1 | | 1 |
| Pineapple | | | 2 | 2 | 1 | 5 |
| Mango | | | | | 1 | 1 |
| Total | 19 | 31 | 6 | 22 | 40 | 118 |

Source: Author Survey Data, 2014

As the contribution of family labour was very prominent among the respondents, therefore, the cost of cultivation incurred by them was minimal, thus, giving them a good opportunity to earn from the farm. From the table it was found that the largest labour usages was observed in lemon cultivation which accounts for 44 labour units which was followed by arecanut cultivation of 37 labour units and banana of 23 labour units. And others labour usages were also observed such as musambi of 5 labour units, for litchi was 2 labour units, for bamboo was 1 labour unit, pineapple of 5 labour units and for mango was 1 labour unit. The total labour requirements for all crops cultivation was found to be 118 labour units contributed by the selected sample households.

**Section IV: Economic issues**

In this section, we shall try to find out the benefits obtained from the crops sold out as well as checking whether it was commensurate with costs incurred on the horticulture crops cultivation. And others form of economic issues will be discussed such as production and marketing behaviour of the producers. Thus, this will enable us to judge the worthwhileness of the crops cultivation from the social point of view.

**Supports based**

In the past and present, shifting cultivation occupied an important occupation among the hill dwellers in the study area for earning subsistence livelihood. Hence, they were economically poor and required others alternative occupation to maintain sustainable livelihood based. Table 10 highlights the participation of various government agents in assisting the hill dwellers through distributing planting materials and other implements. A look at Table 10 represents various kinds of support received by the hill dwellers from different government agents. Here, Agriculture Department plays a leading and active role among the government agents in supporting planting materials to 18 households. The Department also provides training to 1 household head considered the most crucial one. Moreover, Panchayat also provides planting materials to 5 households while Forest Department also distributes planting materials to 4 households respectively. However, it was observed that the roles of Tribal Welfare Department, Primitive Group Programme, Autonomous District Council, and Horticulture Department were very insignificant to-

wards distributing planting materials as well as other incentives. It was discovered that training programme which is crucial part of crop cultivation was found to be neglected by all agencies. Consequently, they have to adopt traditional mode of cultivation which they were familiar since time immemorial with arduous labouring but low production. So, training programme needs to be emphasized dynamically and vibrantly which may enables them to adopt new technology and does automatically raise production.

Table 10: Kind of Supports Provided by

| Agency/ Items | Agri Dept | Sci&Tech, Environ. Dept | Panchayat | Tribal Wel.Dept | PGP | Forest Dept | ADC | TSR | Horti. Dept |
|---|---|---|---|---|---|---|---|---|---|
| Sapling | 18 | 3 | 5 | 1 | 1 | 4 | 1 | 3 | 1 |
| Fertiliser | 6 | | | | | 1 | | | |
| Pesticide | 3 | | | | | 1 | | | |
| Land | | | | | | 4 | | | |
| Machinery | 1 | | | | | | | | |
| Vehicle Exp. | 1 | 1 | | | | | | | |
| Fencing | 3 | | | | | | | | |
| Trained | 1 | | | | | | | | |

Source: Author Survey Data, 2014

Moreover, it was learnt that planting materials were distributed unseasonally as well as immature with low grade sapling as compared to local sapling does causing crops failure said the cultivators. This was nothing but passive and negligence role played by the lines department of the government agencies which needed to be tackle urgently for the interest of the cultivators.

**Crops production**

Here, crop production means the final production produced by the cultivators. Production of different crops will be analysed. But all the productions were used partly for domestic consumption as well as for sale.

Table 11: Average Seasonal Realisation

| Crops | Total Average Production | Total Average Sold Out | Average Price (in Rs) |
|---|---|---|---|
| Lemon | 9721.724 | 9332.222 | 1.65/Piece |
| Raw Arecanut | 11.63 | 10.56 | 764/Sack |
| Dry Arecanut | 19.833 | 16 | 250/Kg |
| Banana | 154.956 | 143.3 | 46/Bunch |
| Litchi | 80000 | 70000 | 0.40/Piece |
| Pineapple | 810 | 750 | 9/Piece |

Source: Author Survey Data, 2014

Table 11 shows average production and average price for each crop. It was revealed that the average price based on per piece for each crops were such as for lemon was Rs.1.65,

for litchi was 0.40 Paise and for pineapple was Rs.9. However, for arecanut it was revealed that raw arecanut was sold in term of per sack while dry arecanut was disposed as per kilogram. It should be kept in mind that one sack of raw arecanut is equivalent to 5 kg of dry arecanut. Thus, raw arecanut was sold at the rate of Rs.764 per sack while for dried arecanut it was disposed at the rate of Rs.250 per kg. Moreover, banana was sold at Rs.46 per bunch. Thus, from the study it was observable that the production for all crops was found to be low as compared to the cultivated crops areas. As we know, income is the function of quantity produced and market price. So, if to increase cultivators' income level the production should be increased which may require additional expenditure for purchasing chemical fertiliser and others inputs. This in turn will results into higher production and better quality and fetching better price. Thus, automatically boosting hill economy as well as increasing maximization of social welfare.

**Marketing system**

Here, we shall analyse the marketing behaviour of the study area. The marketing mechanism will include places of selling, buyers and frequency of selling the produces. The nature of production on the basis of maturity and perishability highly influence local market mechanism.

Table 12: Marketing Behaviour of the Samples Household

| | Numbers | Percentages |
|---|---|---|
| Sold to | | |
| Local Trader | 48 | 88.9 |
| Local Buyer | 3 | 5.55 |
| Consumer | 2 | 3.7 |
| Local Tr.& Con | 1 | 1.85 |
| Total | 54 | 100 |
| Sold by | | |
| Self | 30 | 55.56 |
| Contract | 18 | 33.33 |
| Both | 6 | 11.11 |
| Total | 54 | 100 |
| Frequency of Selling | | |
| Daily | 2 | 3.7 |
| Weekly | 47 | 87.04 |
| Monthly | 4 | 7.41 |
| Weekly & Monthly | 1 | 1.85 |
| Total | 54 | 100 |

Source: Author Survey Data, 2014

Table 12 depicts the marketing nature of the sample households which shows that 88.9% of the respondents were selling their products to the local traders. The local traders were the intermediaries who were involved in the marketing system. The high rate of involvement by intermediaries reveals that the cultivators disposed their products in the local area at the lower price than the market price. Thus, the cultivators could not avail full

price of the products, therefore, the cultivators need to form Cooperative organization to sale their products in bulky. This will automatically empower the cultivators as well as help them to receive remunerative price for their produces. Moreover, here, local buyer means shopkeeper who purchased the products for sale in his own shop from the cultivators. Thus, this channel contributed to 5.55% in buying the local produces. At the same time, other forms of buyers were revealed such as consumer 3.7% and local trader and consumer combination formed 1.85% respectively. In fact, almost all the products were disposed by self which accounts for 55.56% and contract basis formed 33.33% vis-a-vis. Notwithstanding, 11.11% of horticulture products were disposed through both which was the combination of self and contract.

The selling frequency may also be determined by the income stability of the cultivators. The better the financial condition they are; the later they dispose their products. They hoard it, for future sale at higher price than on-season price. The table shows that weekly selling frequency was the largest selling behaviour practiced by the cultivators which constitute to 87.04% of the total mode of selling. Because horticulture products were highly perishable by nature and the fruit season was too short which required quick disposal. However, others mode of selling were also observed but very insignificant.

**Realisation of net income from various crops**

Net income was derived by deducting total costs from total income obtained by the cultivators. It was used for measuring the viability and profitability of horticulture cultivation in the study area on the basis of per Kani[1] land area.

Table 13: Average Net Income Received by the Cultivators (in Rs)

| Name of the Crops | Average Income/ Kani | Average Cost/Kani | Average Net Income |
|---|---|---|---|
| Lemon | 13623 | 7355 | 6268 |
| Banana | 6086 | 6333 | - 247 |
| Arecanut | 11122 | 5344 | 5778 |
| Musambi | 0 | 9334 | |
| Litchi | 14312 | 1844 | 12468 |
| Bamboo | 0 | 4050 | |
| Pineapple | 5366 | 5743 | - 377 |
| Mango | 0 | 4200 | |

Source: Field Survey, 2014

The net income received by the cultivators was shown in Table 13. The average net income realised from litchi Rs 12468 was the highest, and the second highest net income was obtained from lemon which was Rs 6268 while net income realised from arecanut was Rs 5778 and does hold at third level of positive net income returns. However, it was also found that the cultivators were experiencing negative net income returns in respect to pineapple Rs – 377 and banana Rs - 247 respectively. Because most of the pineapple growers were having immature plantation while in case of banana the plantation gardens were mostly old and the problems of wild animals results in producing small bunches

thereby fetching low prices in the market. In addition, musambi, bamboo and mango were recently planted in the study area; the crops were in immature stage. These crops were encouraged to plant as they were non-fascinated by the wild animals but highly conducive in the hilly topography area yielding high production as well as become a part of agro-forestry. Thus, the cultivation of horticulture crops in the present study area play a vital role towards ensuring rural livelihoods as well as acts as important role in generating rural employment throughout the year. Henceforth, horticulture cultivation in the hilly area is considered to be significant for it can boost rural economy by providing handsome amount of income returns from mature plantation crops.

**Section V: Conclusion**

In conclusion it can be said that the local economy was based on agrarian economy whereby the male households head play active role in agriculture works, it might be due to low level of literacy achieved by them, therefore, education promotion is the need of the hour in order to uplift them from their social backwardness this will in turn results into positive responds toward implementing any developmental activities. In order to enhance agriculture activities the government has also distributed different forms of supports to them but the crucial part of training has been ignored. The sloppy hill terrain of the area was highly conducive for horticulture cultivation owing to the originality of soil fertility the farmers does not used modern chemical fertilisers, pesticides and insecticides. In fact, they were practising traditional mode of agriculture production with low capital investment and highly labour intensive used.

Moreover, it was also revealed that although their major income were derived from selling horticulture outputs but they were also earning additional income from selling livestock's including pigs, local hens, cow and goats. Perhaps, deadstocks also formed another major source of income to them during emergency. Here, deadstock means hoarding of any harvested crops from their farms land. Similarly, the possession of various trees by the scheduled tribes shows their love for nature in one side and on the other side as a means of earning income by selling fire wood. They have these trees nearby surrounding houses as a means of environmental purpose, fire wood, fuels and house constructions. Thus, the household per capita expenditure on house construction formed the second largest expenditure accounts among the sample households. Of course, food expenditure constitutes the maximum annual per capita expenditure account head among the respondents. Thus, the main occupation was found in agriculture sector particularly horticulture cultivation where lemon cultivation constitutes the largest plantation areas which was followed by arecanut and banana cultivation respectively. Hence, this sector generates employment all round the year to the cultivators; because this sector requires large labour supply which were abundant in the rural area at a lower wage.

The production of horticulture crops could have been increased provided they spend more investment on the plantation crops for buying chemical fertiliser, insecticides, pesticides and other implements. It should be noted that the horticulture cultivation was practised based on traditional knowledge with less used of modern inputs; the modern inputs used by them were solely provided by the line of the government departments.

Notwithstanding, the cultivation of litchi, lemon and arecanut were worthy and sust-

ainable towards ensuring rural livelihood in the sense that they provides significant average net income returns from the cultivation to the farmers while banana and pineapple shows negative returns income returns respectively. In fact, these plantations were too old and consisting large areas of immature gardens. Therefore, in the near future when the plantations get mature the income will outweigh the expenditure incurred on the plantation. But to have good income from banana will be very difficult because of the constraints imposed by the wild animals such as monkey, wild boars and others. It may be due to its high employment potentiality and significant income returns from the horticulture cultivation new entrants who were small and marginal farmers started to cultivate musambi, bamboo and mango. Meanwhile, the state government should ensures step required for making the production without wastages and the role of intermediaries should be curbed immediately so that the farmers themselves receive the original price prevail in the market. This will provides more incentive for horticulture cultivation. Thus, the study shows the need of the hour to form cooperative organisation among the cultivators in order to empower themselves against the intermediaries.

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