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Rural livelihood system in Manipur with special reference to cultivation of king chilli

L. MALANGMEIH, G. DEY AND S.SAGOLSEM

Department of Agricultural Economics,
Bidhan Chandra Krishi Viswavidyalaya, Mohanpur, Nadia -741252, West Bengal

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ABSTRACT

This study was undertaken to examine role of king to the livelihood of the rural households in Manipur especially in terms of income and employment. Random Sampling without Replacement method was followed for the purpose of the study to get the ultimate unit of samples. Data was collected from fifty chilli growers thus selected from two blocks of the Tamenglong district during the agricultural year 2013-14. The study area was well endowed with both human capitals and land capitals. Highly diversified livelihood systems were observed in both hills and plains with the Simpson diversity index of 0.82 and minimum of 0.50 in plains and 0.54 in hills. Agricultural and allied group of activities provided 62.08 per cent of employment in terms of man days in hills and 50.50 per cent in plains and 50.64 per cent and 49.35 per cent of family annual income in hills and plains respectively. King chilli shared 53 per cent of agriculture income and 27 per cent of annual family income in hills and 43.9 per cent of agriculture income and 22 per cent of annual family income in plains. Lack of improved method of cultivation and crop management was found to be the most important constraints faced by the farmers followed by lack of extension services improper or lack of processing and storage facilities and susceptibility of the crop to various pests and diseases infestations and lack of control measures, problems in marketing and unpredictable climatic condition leading to price and income instability..

Keywords: Garrett ranking, income, king chilli, livelihood system

A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long term (Chambers and Conway, 1992). And a livelihood system is defined as the numerous bio-physical and socio-economic forces and factors that affect the family. In India, land-based livelihoods of small and marginal farmers are increasingly becoming unsustainable, since their land is no longer able to meet the requirements of food for the family and of fodder for their cattle (Hiremath, 2007). Consequently, rural households are compelled to seek out alternative livelihood strategies. According to a recent study by National Sample Survey Organization (NSSO), about 27 per cent of the farmers considered farming as an unprofitable enterprise and nearly 40 % farmers were willing to take up livelihood activities other than farming if they were given an opportunity. (Kumar *et al*., 2006). Moreover, rural livelihood is characterized by a highly unstable short-term equilibrium with family income roughly equals expenses or expense exceeds income leading to indebtedness. Any family may have some years when illness, natural disaster or tragedy forces it to spend more than its income and also draw down on its assets, for example, selling off livestock or land (Frankenberger, 1992). Families in fragile equilibrium, usually can meet most basic needs, but may require some outside assistance at some times of the year. For example, many villagers experience ''the hunger season'' for one to three months each year. This is the period before the first agricultural harvest of the year. Last year's food is gone and next year's is not ready to eat. During the hunger season, families develop coping strategies such as cutting back on the number of meals, reducing diet diversity and so on (Lindenberg, 2002).

The present study has been undertaken in Tamenglong district of Manipur since it is one of the backward states of India and the researcher's home state. With agriculture and allied activities the mainstay of the economy, 70 per cent of the population is dependent on it for livelihood (Economic Survey, Manipur 2010). Among the cash crops grown in the state, king chilli is one of the major crops of importance especially in the hill districts. Though official data cannot be provided in this paper, 'king chilli' has provided livelihood for many stake holders starting from growers, market intermediaries, and local processing enterprises to exporter in the state. The crop has contributed largely to the income basket of the farmers in the district. One chilli grower in Nagaland said, "Naga King Chilli (U morok) has immense potential for farmers. If it is cultivated on a commercially viable scale it can bring fabulous returns

Email: lungkudailiu.malangmei@gmail.com

to the farmers improving their livelihood phenomenally. More chilli means more peace, more happiness and more money for the rural farmers"(Ganguly, 2007). Thus, specific objectives of the study have been set as follows:

i. To examine the livelihood systems and extent of diversification followed in the study area,

ii. To assess the contribution of king chilli cultivation to the livelihood of the farmers in terms of income and employment.

iii. To identify the major constraints in taking up king chilli cultivation as a strategy for improving their livelihood.

MATERIALS AND METHODS

The study is restricted to Tamenglong district of Manipur for a few purposes such as, one of the backward district of the state, it is known for king chilli production and the researcher belongs to this district. Thus, the district was purposively selected. Again out of the five development blocks, one block representing hills *i.e.* Nungba and another block representing plain *viz.* Khoupum were purposefully selected for hill and plain comparison. From the hill region, two villages namely Puiluan and Luangba had been selected two villages; Gaidimjang and Thanaguang have been selected from plain with random selection. All the chili growers were identified and the ultimate samples of 25 chilli growers (households) were selected from each block, following the method of Sample Random Sampling without Replacement (SRSWOR).

Primary data has been collected from the sample farmers during the period 2013-14 based on the structured questionnaires with information such as age, education, assets and capital (physical, human, financial, social), sources of employment and income, size of the family, house type, health and sanitation, drinking water sources and accessibility, cost of cultivation, returns from various crop enterprises and so on.

The data was analysed using statistical measures like averages and percentages to compare the socio-economic parameters like age, size of the family, labour composition, average year of education, and so on. To find out the extent of diversification of livelihood, Simpson index of diversification has been used. The formula for Simpson index is given by

$$S.I \quad 1 \quad \sum_{i\ 1}^{n} P_1^2$$

where, n is the total number of livelihood activities and Pi represents proportion of the ith activity. Its value lies between 0 and 1. The value of the index is zero when there is a complete specialization and approaches one as the level of diversification increases.

For determining the constraints from taking up king chilli as an alternative livelihood strategy, garrett ranking method has been followed. In this method, the respondents were asked to rank the problems and constraints based on the severity according to them. The formula is given by;

$$\text{Percentage position} \quad \frac{100 \ R_{ij} \quad 0.50}{N_j}$$

where,

Rij = Rank given for the i^{th} item by the j^{th} individual

Nj = Number of items ranked by the jth individual.

The percentage position of each rank was converted into scores using Garrett table. For each constraint, scores of individual respondents were added together and were divided by total number of respondents for whom scores were added. Thus, mean score for each constraint was ranked by arranging them in the descending order.

Description of variables used and their description

LDI	:	Livelihood Diversification Index (Simpson Index of Diversification)
Age	:	Age of the head of the household in years completed
Education	:	Average years of education of the adult members of the households
Size of the family	:	Total number of the members(adult equivalent) of household based on Oxford's scale which assigns 1 to the first household member, 0.7 to the additional adult and 0.5 to a child
Asset value	:	Estimated of all the physical assets(except land) owned by the household (rupees)
Land-man ratio	:	Cultivable land per member of the household (acre)
Distance	:	Distance from the nearest town(km)
Membership	:	Whether a household is a member of any social organization like SHG, village committee
Debt	:	Credit/loan taken by a household during the survey year(in rupees)

RESULTS AND DISCUSSIONS

Systems of livelihood identified in the study area are presented in table 1. It can be clearly visible that agricultural and allied activities occupied the topmost position. The main activities under this group are crop production, livestock rearing and activities involving forest resources. Major crops grown were paddy, maize, king chilli, some vegetables such as ash gourd, pumpkin, brinjal *etc.* Gathering of non wood forest products such as barks, roots, broom plants *etc* were commonly found. Manufacturing works such as carpentry and weaving were common in the area both in plains and hilly region. Construction of road was mainly under the scheme of MGNREGA. Other construction works include masonry, stone cutting and breaking for building, railway line construction *etc.* in some households, educated members migrated to other cities such as Delhi, Kolkata, Mumbai and Bangalore for various works such as BPO jobs, as a nurse in private hospitals, sales person in malls, and other private companies in search of better livelihood and earning.

Livelihood systems

Human capital was the predominant asset in the study area. Seventy per cent of the sample households consisted of 3-6 family members with an average number of workers as 2.8 per households. The quality of human capital in terms of educational attainment of the workers was moderate. More than 50 per cent households had 5-10 average years of schooling and 22 per cent had average years of education more than 10. The households were well endowed with land capital with land-man ratio of more than one for 76 per cent households as shown in table 2. The accumulation of physical assets were observed to be still low as only 34 per cent of the households had value of physical assets more than 30000 Rupees. Sixty four per cent of the households still live in kutcha house while the remaining households had semi pucca house. Semi pucca house in this study referred to those houses with cemented floor, half wall with bricks or cemented wall with GI sheet as roof. Some houses had mud as wall materials with the cemented floor. Most of the households used firewood as cooking fuel as it is easily available to them. Distance from the nearest town was more than 50 km in case of the plain block (Khoupum) and there was no access to highway. The villages were connected to town with a mud road. The hilly block (Nungba) is situated in national highway 53 and the distance to the nearest town was less than 50 km. Social participation within the village or the surrounding villages were quite encouraging as 68 % of the households in both the blocks were member of SHGs and village committees and other social organizations. An encouraging trend was that all the self help group members were female. But the representation of women to the village committee and other bigger organizations were almost nil. Every household had their own toilet even though the conditions of the toilet structure were not very standard. Drinking water was also available at easy access to most of the households *i.e* 26 per cent of the household had water in their own house through pipelines and cemented water tank or syntax as storage structures, 52 per cent of the households had access

Table 1: Livelihood systems identified in the study area

Sl. No	Category of livelihood activities	Description
1	Agriculture and allied activities	Crop production, Animal husbandry, poultry, logging(timber), bamboo plantation, silviculture, fishing, gathering of forest non wood products, hunting/trapping and related activities
2	Manufacturing	Sawing, making alcohol beverages, weaving, cane, bamboo and woodworks, furniture making
3	Construction	Construction of buildings, roads and railways, other construction works
4	Wholesale & Retail Trade	Agricultural raw materials, live animals and birds, food/beverages and tobacco, household goods, stalls, markets and other retail trades
5	Transportation	Drivers, handy man etc in land transport
6	Accommodations and Food Service activities	Food and lodging hotels, tea vendors, rented houses, fast food centers etc
7	Services including government employment	Government sector, self employed, private companies and migrated part time jobs, railway company guards, BRTF labourers, private school teachers, etc
8	Others	Politics, social works, contractors and unspecified activities etc

Table 2: Characteristics of the sample households

Items	Categories	Number of households	% of households
Age	<30	5	10
	30-50	16	32
	>50	29	58
Education	<5	11	22
	5-10	28	56
	>10	11	22
Size of the family	<3	7	14
	3-6	35	70
	>6	8	16
Land-man ratio	<1	12	24
	>1	38	76
Assets value	<10000	6	12
	10001-30000	27	54
	>30000	17	34
Distance	<50	25	50
	>50	25	50
Membership	SHGs	34	68
	Village Commmitee	13	26
	Others	17	34
Debt	0	23	46
	<5000	12	24
	>5000	15	30
House type	Kutcha	32	64
	Semi Pucca	18	36
Drinking Water	At home	13	26
	within 1 km	26	52
	>1km	11	22
Toilet	Open field	0	0
	Ordinary	37	74
	Cemented with kummoth	13	26
Distance from PHC	<10 km	25	50
	>10km	25	50

Table 3 : Number of days employed by various group of livelihood activities: plains and hills comparison during 2013-14 (Annual average man days household^{-1})

Activities	Hills		Plains		Total	
	No. of days	Percentage	No. of days	Percentage	No. of days	Percentage
Agriculture and allied activities	171.50	62.08	138.55	50.50	155.03	56.31
Manufacturing	24.57	8.89	53.68	19.56	39.12	14.21
Construction	35.50	12.85	32.00	11.66	33.75	12.26
Wholesale & Retail Trade	12.43	4.50	15.35	5.59	13.89	5.05
Transportation	0.00	0.00	8.20	2.99	4.10	1.49
Others	32.24	11.67	26.60	9.69	29.42	10.69
Total	276.24	100.00	274.38	100.00	275.31	100.00

within 1 kilometer distance from the public water storage. The water sources were from fresh river water.

Livelihood strategies

Households use their capital endowments in different ways to make a living. Table 3 revealed the average number of days employed by different livelihood activities. The dominant source of livelihood was agriculture and allied activities mainly farming in both plain and hilly region which constituted 62.08 per cent of employment in terms of man days in hills and 50.50 per cent in plains. A slight difference in the two regions can be explained by the method of farming as in plain. The hill block followed shifting cultivation in which the agricultural operation *viz* clearing forests started from the January itself and it continued till the month of September/ October for finishing the harvesting of all the crops. Some farm families continued till December as they continue with the crop residues though the labour requirement varies in different seasons. Whereas in plain, farming is done in a fixed plot of land. Land preparation started in the early monsoon and harvesting ends by the month of October/November. Labour requirement was high only during land preparation, transplanting and harvesting. Other activities under agriculture included working in plantation crops such as beetal vine, tezpata, tea plant, bamboo farms *etc,* gathering of non wood forest products such as barks, leaves, roots and other economical and medicinal products. During the off season, women engaged in weaving of traditional clothes and thus manufacturing occupies second place in terms of labour days employed in plains. Some male workers engaged in other manufacturing works especially sawing and carpentry. Some workers also engaged in construction of inter-village roads under government project, construction of buildings *etc.* Thus, construction provided 12.85 per cent of days employed in hills where as manufacturing provided 19.56 per cent of days employed in plains. Other activities included small business of raw agricultural commodities and other household goods, some women opened tea stalls in the morning and evening when there were more people in the public places. Thus there was slight difference in livelihood strategies in plains and hills as observed in the table. As mentioned earlier, the villages in hills had better access to market as they were situated in the highway. Women farmers brought their own farm products to the local markets. Other difference was seen in terms of construction works as the railway companies are stationed in the hilly blocks.

Livelihood diversification

A highly diversified livelihood system was observed in both the regions as shown in fig.1. Simpson's Index of diversification was used to find out the extent of livelihood diversification adopted by each household as a strategy of to cope with the increasing needs of their family needs. The maximum diversity in both the hills and plains were observed with Simpson Index .82 and the lowest was found to be .50 in plains and .54 in hills. The maximum diversity was found to correspond with the maximum number of workers in the households. The more the number of workers, the higher was the scope to engage in more diverse activities.

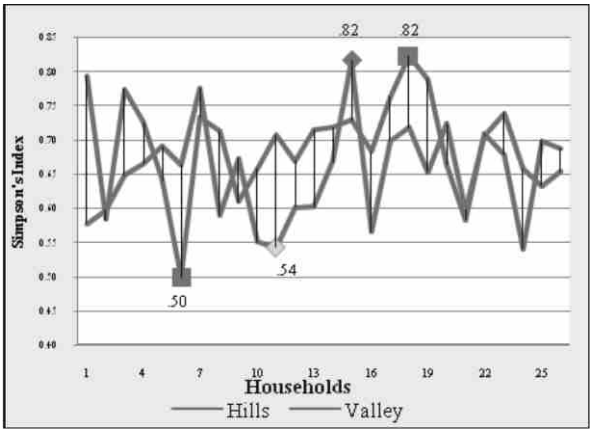

Fig. 1: Livelihood diversification

Livelihood outcomes

The average income of the household during the survey year was found to be rupees 67736.67 in hills and rupees 56150.00 in plains. The difference in the income between the two groups arose from the difference in income from agricultural source. This could be credited to the accessibility to road and market as the hilly block is situated in the highway 53 as mentioned earlier. Whatever the farmers produce went to the market. Especially the plantation crops such as beetal vine, tezpata, banana and forest products were always in demand in the hilly blocks where as the non accessibility in road and market made it comparatively difficult for the products to reach the Imphal market. In both the region, agriculture and allied group contributed highest to the income basket of the farmers with 50.64 per cent and 49.35 per cent in hills and plains respectively. Next to agriculture was the construction sector in hills and manufacturing sector in plain with 21.08 per cent and 17.35% respectively. In hills block, the ongoing Eastern Railway project had contributed significantly to the income. The farmers engaged in various construction works for daily wage during the off agriculture season,

agriculture being the main occupation. The trends were observed that the proportion of male workers in agricultural activities were much lower than that of female workers. In case of plains, income from manufacturing sector mainly came from weaving by female workers. Other significant sources of income were petty business and others as revealed in table 4. This level of income was not adequate to meet all the household needs and this was reflected on the presence of indebtedness in table 2.

Table 4 : Income from various groups of livelihood activities for the year 2013-14 (Average annual income household^{-1})

Activities	Hills		Plains		Total	
	Amount in rupees	Percentage	Amount in rupees	Percentage	Amount in rupees	Percentage
Agriculture and allied activities	34300.00	50.64	27710.00	49.35	31005.00	50.05
Manufacturing	4913.33	7.25	9740.00	17.35	7326.67	11.83
Construction	14280.00	21.08	4500.00	8.01	9390.00	15.16
Wholesale & Retail Trade	4493.33	6.63	4070.00	7.25	4281.67	6.91
Transportation	0.00	0.00	1640.00	2.92	820.00	1.32
Others	9750.00	14.39	8490.00	15.12	9120.00	14.72
Total	**67736.67**	**100.00**	**56150.00**	**100.00**	**61943.33**	**100.00**

Table 5 : Break-up of agricultural income to various agricultural and allied items

Sl. No	Various Agricultural and allied items	Hills		Plains		Total	
		Amount in rupees	Percent	Amount in rupees	Percent	Amount in rupees	Percent
A	**Crop production**						
1	Cereals(paddy)	9836.51	28.68	12788.52	46.15	11312.52	36.49
2	Vegetables	1233.12	3.60	534.76	1.93	883.94	2.85
3	Oilseeds	453.34	1.32	152.56	0.55	302.95	0.98
4	King chilli	18179.00	53.00	12169.17	43.92	15174.09	48.94
5	Other crops	1235.35	3.60	233.77	0.84	734.56	2.37
B	Plantation crops	920.24	2.68	346.34	1.25	633.29	2.04
C	Livestock	1766.21	5.15	1268.43	4.58	1517.32	4.89
D	Forest Sources	676.23	1.97	216.45	0.78	446.34	1.44
	Total	**34300.00**	**100.00**	**27710.00**	**100.00**	**31005.00**	**100.00**

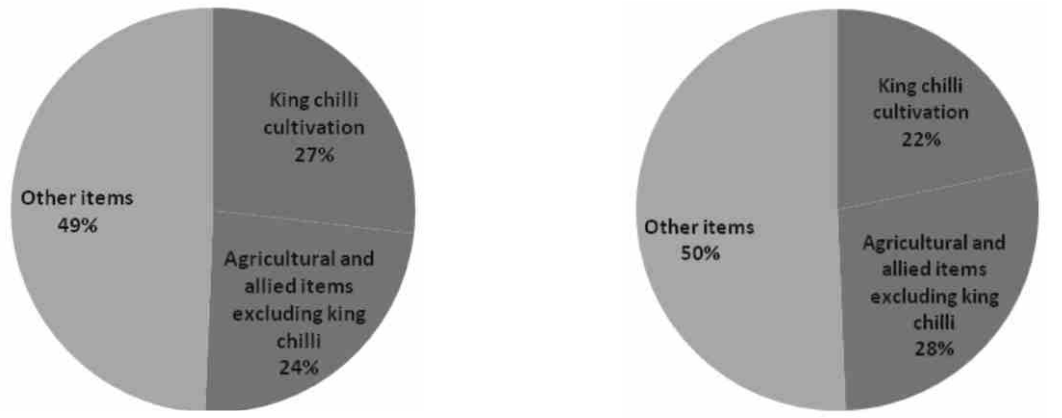

Fig 2: Contribution of king chilli to income of the farmers

Contribution of king chilli to the income of the households

The break-up of income from agricultural sources is depicted in table 5 to find out the per centage share of king chilli cultivation to the agriculture income and the average total annual income of the households. From the table, it can be seen that cereals and king chilli topped the other items from agricultural income sources. In hilly block, king chilli contributed 53 per cent share of the agricultural income followed by paddy with 28.68 per cent share of contribution. Whereas, in plains, cereals (paddy) shared 46.15 per cent of the agricultural income followed by king chilli which gave 43.92 per cent share of the agricultural income. Other items were found to be not so significant compare to these two items. The contribution of the king chilli to total income cam also be seen from fig.2 which showed that king chilli shared 27 per cent of the average annual income of the households in hills and 22 per cent in case of plains. The difference is due to the fact that the area under paddy in the plains were fixed and the production was stable and also area under king chilli was higher in case of hills. Moreover, market and road accessibility in hilly block played a positive role.

Constraints and problems in taking up king chilli as an alternate livelihood strategy

Showing that king chilli had contributed significantly to the growers in the past few years, farmers were asked to rank the problems or constraints in shifting to this crop as an alternative strategy in their opinion. The assigned rank is then converted to per centage position which is subsequently converted into Garrett score using Garrett's table. For each constraint, scores of individual respondents are added together and then divided by total number of respondents. Thus, mean score for each constraint has been ranked by arranging them in descending order. According to them, the constraints are listed in the descending order in table 6. Thus, it is shown in the table that the most important constraint was lack of improved method of cultivation and crop management followed by lack of extension service when they needed advice for better management. Other constraints were lack of processing and storage facilities, susceptibility of the crop to pests and diseases, problems related to marketing, dependent on climatic condition and its erratic nature. Consequently, all the other constraints together lead to income instability. Thus farmers always needed to have a backup plan and they always preferred mixed cropping.

Table 6: Garrett ranking score for constraints ranking

Sl. No.	Problems and constraints	Garrett score	Rank
1	Lack of improved method of cultivation and crop management	38.72	**I**
2	Lack of extension services	32.54	**II**
3	Improper or lack of processing and storage facilities	26.5	**III**
4	Heavy pest and disease infestations and lack of control measures	21.34	**IV**
5	Problems in marketing	18.92	**V**
6	Unpredictable climatic condition	15.67	**VI**
7	Price and income instability	12.5	**VII**

King chilli had played a major role in livelihood systems of the farmers in terms of employment and income as evident from the results of the study. In the past few years, some farmers have almost given up farming as it was less enumerative. The shift in occupation pattern had been observed in the recent years though the paper could not provide a statistical data. Further, there had been increasing demand for this crop and had consistently contributed to the income basket of the farmers which had encouraged the farmers to increase the area under chilli cultivation. But the crop is pure dependent on climatic condition of the year, highly susceptible to the pests and disease infestations, highly perishable and there was no extension service to help farmers solve these problems. Farmers were very eager to adopt any improved method of cultivation if provided. Thus, the crop has a high potential in lifting the livelihood systems of the farmers if proper research and extension services and better infrastructures were provided.

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