



Agrarian Livelihood in Mokokchung District, Nagaland: A Socio-Economic Study

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ABSTRACT

The present paper attempts to examine the socio-economic status of the agrarian livelihood in Mokokchung district of Nagaland State. Along with parameter such as age, education, farm size etc the study covers area under different crops cultivation, crop diversification index, food security and poverty status of the agrarians in Mokokchung district.

KEYWORDS: Agrarian, crop diversification index, food security, poverty and MPI

I. INTRODUCTION

Nagaland is basically an agrarian economy employing about 60 percent of its population in agriculture and allied activities. Traditional Jhum cultivation is the common agricultural practice in the State, except for Angamis and Chakhesang's of the southern regions of the State practice terrace farming with minor irrigation techniques. During the last four years, food grain area has increased from 316.20 ha in 2014-15 to 337.20 ha in 2017-18. Simultaneously, the food grain production during the last four years was seen increased from 651.27 MT in 2014-15 to 727.11 MT in 2017-18 (*Directorate of Agriculture, 2018-19*).

During the last four years, net sown area increased from 383,851 ha in 2014-15 to 384,801 ha in 2017-18, and total cropped area increased from 500,073 ha in 2014-15 to 5,301,032 ha in 2017-18, respectively. During the same period net irrigated area and gross irrigated area increased by 18,650 ha and 16,890 ha respectively. The cropping intensity reported an increase from 130.28 percent during 2014-15 to about 137.75 percent in 2017-18.

During 2016-17 the area covered under fruits and vegetables was 39101 ha and 47161 ha, with the production of 384623.50 MT and 552186.50 MT, respectively. However, during 2017-18 a decline in both area and production was observed for fruits and vegetables. This may be due to increase in area under food grains and other commercial crops. Spices like ginger, large cardamom, red chilli, turmeric, garlic and red pepper are commonly cultivated across the State. Area under spices during 2016-17 increased from 11223 ha to 12045.50 ha in 2017-18. On the contrary, its production fell from 66250.50 MT during 2016-17 to 55352.20 MT in 2017-18. Moreover, productivity of overall spices declined from 5.9 MT/ha in 2016-17 to 4.90 MT/ha in 2017-18 (*Directorate of Agriculture, 2018-19*).

II. OBJECTIVES

The main intent of the study is to:

1. study key socio-economic features of the respondents
2. determine crop diversification index
3. examine agrarian income from diversification
4. assess poverty status

III. METHODOLOGY

Mokokchung district under Nagaland State was purposively selected for the present study. A multistage stratified random sampling technique was employed for the sample survey. Accordingly, 14 villages were selected and a total of 317 respondents were surveyed (Table 1). Further, Simpson Index of Diversification and Hirschman-Herfindahl Index were used to measure the diversification index.



Table 1: Summary of the study area and samples

District	Administrative Circles	Sample Village	Respondents (in No.)	
Mokokchung	Alongkima	Khar	22	
	Changtongya	Changtongya	23	
	Kupolong	Sungratsu		22
		Mopongchuket		22
		Longjang		22
	Lonchem	Yajang		23
	Mangkolemba	Changki		22
	Chuchuyimlang	Longkong		23
		Mongsenyimti		22
	Opangkong North	Longsa		23
		Mokokchung		22
	Opangkong South	Longkhum		24
		Chungtia		24
	Tuli	Merangkong		23
Total	9 circles	14 Villages	317	

SOCIO-ECONOMIC PROFILE

Socio-economic profile of the sample respondents by age, education, household and farm size, farm income, access to ration card, access to credit, dependency members and off-farm activities is presented in Table 2.

Age: The mean age of sample respondents was 51 years, spread within the minimum and maximum of 36 and 64 years. Further, it was found that 51.1% of the respondents were in the age group 51-60 years, followed by age group 41-50 years and below 40 years, respectively.

Education: It was found that 46% of the respondents had secondary education, 39.7% elementary, 11.4% higher secondary and 2.2% diploma and degrees. This shows that all the respondents have access to basic formal education.

Household Size: It was observed that 54.9% of the respondents were in the household size group of 3-4 members with a mean household size of 4.5, spread within the minimum and maximum of 3 and 7 members.

Farm Income: Table 2 shows that 48.6% of the respondents fall in the annual income group of Rs.1.50-2.0 lakhs with only 1% of the respondents having annual income above Rs.3.0 lakhs.

Area: It was found that 48.3% of the respondents had cropped area less than 2 acres and 45.5% 2.1-3.0 acres. Only 6.3% had cropped area more than 3 acres. The mean cropped area was 2.38, spread within the minimum and maximum of 1.5 and 4.5 acres.

Access to Ration Card: It was found that 45.4% of the respondents had access to ration card while 54.6% do not have access to ration card.

Access to Credit: Further it was found that only 7.9% of the respondents had access to credit. This was due to non-availability, lack of financial knowledge and complexities involved in availing institutional credit.

Dependency: Household with dependency members was about 23.7% (see Table 2).

Off-farm Activities: Only 10.7% of the sample respondents were found engaged in off-farm activities.

SHARE OF CROPS TO TOTAL CROPPED AREA

From Table 3 it is evident that paddy occupied 37.98% of the total cropped area followed by vegetables (15.33%), pulses (11.81%) and spices (11.6%). This indicates dominance of paddy while cash crops like tea and fruits assumed least importance. This further implies that for agrarians, meeting household food requirement is the primary factor that determines their cropping pattern or acreage allocation of crops.

INCOME FROM DIVERSIFICATION

From Table 4 it is observed that 71% of the respondents take up diversification for income reason while 29% of the respondents take up diversification for other reasons i.e. additional food availability. Across sample villages, percentage of diversification for income reason was highest in Mokokchung village (81.8%) while percentage for other reasons was found highest in Changki village (50%). The high income reason for diversification of Mokokchung village was due to their easy access to daily market whereas for Changki village, it was



due to their opportunity to low land wet rice cultivation. Relatively, it was observed that respondents in Changki village were in the low income groups (>Rs.1 lakhs) compared to other sample villages. 13% of the respondents at Yajang village were in the high income group of Rs.2-3 lakhs followed by Longkhum (8.3%) and Changtongya (4.3%) village.

Total income from diversification was Rs.211,68,300 of which Yajang shared the maximum proportion (13.63%). This was primarily due to their intensive commercial farming. It was followed by Longkhum (10.49%) and Longsa (8.32%) villages, respectively. The major source of income of Longkhum village was from cultivation of vegetables (tomato, cabbage and broccoli) whereas for Longsa village was through spices farming (chilli, ginger).

CROP DIVERSIFICATION INDEX

Crop Diversification Index¹ is shown in Table 5. The overall Simpson Index of Diversification (SID) was 0.79. This indicates that agrarian households were gradually diversifying towards high-valued crops particularly vegetables and fruits. Across sample villages, Yajang and Longjang village showed high diversification index while Changki village showed low diversification index. Low diversification index of Changki village was due to specialization in rice cultivation. Further, it was found that 62.5% of the households were diversified and 37.5% less diversified. This implies that about 63% of the households have taken up crop diversification. The percentage of diversified households was found highest in Mokokchung village followed by Longsa (78.3%) and Chungtia (75%) villages, respectively.

FOOD SECURITY

¹ Crop Diversification Index (CDI) was calculated by Simpson Index of Diversification (SID) and Herfindahl-Hirschman Index (HHI). The two measures were used to categorize between 'Diversified' and 'Less Diversified' households. HHI value greater than 2500 and SID value of less than 0.75 were categorized as Less Diversified whereas HHI of less than 2500 and SID of greater than 0.75 were categorized as Diversified households, respectively. Since, both measures presents the same result therefore, in the present analysis either SID or HHI were used in explaining the CDI.

The status of agrarian food security², poverty and MPI deprivation scores is shown in Table 6. It was found that 84.5% of the households were food secure and 15.5% were food insecure households of which 11.7% were mild food insecure and 3.8% were chronically food insecure. This indicates that about 85% of the agrarian households were food secure in Mokokchung district.

POVERTY

The World Bank's international poverty line definition based on purchasing power parity basis at \$1.25 per day (Chen & Ravallion, 2013; Alkire & Sumner, 2013) was used to determine the poverty threshold in the present study. It was found that 86.8% of the respondents were living above the poverty threshold, while 13.2% were living below the poverty threshold (see Table 6). This indicates that about 87% of the agrarian households in Mokokchung district are living above the poverty threshold. Across sample villages, Longkhum village showed remarkable results with 91.7% of the respondents living above poverty threshold. This was followed by Changtongya (91.3%) and Longjang (90.9%) villages, respectively. On the other hand, respondents living below poverty threshold were found high in Sungratsu village and Longkong village.

MULTIDIMENSIONAL POVERTY INDEX

Multidimensional Poverty Index (MPI) is the product of the multidimensional poverty head (i.e. share of people who are multidimensionally poor) and the average number of deprivations each multidimensionally poor household experiences (i.e. intensity of their poverty). It was measured in three dimensions – Health, Education and Standard of

² There is no "clinical assessment" for food security at the household level (Vaitla et. al., 2017), and the differing views about the measuring food security resulted in contradicting findings. In the present analysis, a simple food security response was designed to investigate in determining the household food security status. If the respondents responded 'No' to all of the designed responses, they were considered as 'food secure' while if they responded 'Yes' to one or more of the designed responses, they were considered as 'food insecure'. To know the intensity of food security, it was further categorized into 'mild' and 'chronically' food insecure households. If the responds to 'Yes' was less than two, households were considered to be mild food insecure. If the responds to 'Yes' was more than three, households were considered to be chronically food insecure.



living which are reflected in 10 indicators (Alkire & Jahan, 2018). The education and health dimensions have two indicators each, so that each component is worth $\frac{5}{3}$ or 16.7%. The standard of living dimension has six indicators, so that each component is worth $\frac{5}{9}$ or 5.6%. To identify the multidimensionally poor a cut-off of 33.3%, which is the equivalent of one-third of the weighted indicators, is used to distinguished between the poor and non-poor³.

From Tables 6 it is observed that 16.7% of the respondents were multi-dimensionally poor i.e. about 4 times greater than by the estimated poverty index. This shows that poverty is not one-dimensional, rather it is multidimensional. It does not just depend on one's income but may lack several basic needs like education, health and sanitation etc. (Montoya & Teixeira, 2017). Across sample villages, rate of deprivation was found highest among respondents in Longjang (22.7%) and Yajang (21.7%) while it was observed the least in Changtongya (13%).

Table 7 shows that 18.5% live in poor households and 21.4% of the households were deprived of the weighted indicators. It was further found that 3.9% of the agrarian households were suffering from multidimensional poverty. Across sample villages, multidimensional poverty index was found highest in Merangkong (0.056) and Khar (0.054), and lowest in Longkhum (0.024) village. This means that about 6% of the households in Merangkong and Khar villages suffer from multidimensional poverty as compared to other villages.

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³ If the household deprivation score is greater than 33.3%, that household is multidimensionally poor. As seen from Table 3.12, 16.7% of the household were multidimensionally poor in the district. Of this, 13.6% of the households were severely multidimensionally poor (deprivation score >50%), and 11.2% of the households were at risk of becoming multidimensionally poor (deprivation score $\geq 20\%$) though it is not been presented in the Table 6.



Table 2: Socio-economic profile

Variables	Freq	Percentage	Min(Max)	Mean(SD)
Age			36(64)	51.3(6.71)
• Below 40	32	10.1		
• 41-50	105	33.1		
• 51-60	162	51.1		
• Above 61	18	5.7		
	317	100		
Education			3(14)	8(2.45)
• Elementary	126	39.7		
• Secondary	148	46.7		
• Higher secondary	36	11.4		
• Degree	7	2.2		
	317	100		
Household size			3(7)	4.45(0.83)
• 3-4	174	54.9		
• 5-6	112	35.5		
• 7-8	31	9.8		
	317	100		
Farm Income			1.15E5(3.24E5)	1.9877E5(4.0784E4)
• 100000-150000	44	13.9		
• 150001-200000	154	48.6		
• 200001-250000	88	27.8		
• 250001-300000	28	8.8		
• 300001-350000	3	0.9		
	317	100		
Area			1.50(4.50)	2.38(0.58)
• < 2 acre	153	48.3		
• 2.1-3 acre	144	45.4		
• > 3.1 acre	20	6.3		
	317	100		
Access to ration card				
• No	173	54.6		
• Yes	144	45.4		
	317	100		
Access to credit				
• No	292	92.1		
• Yes	25	7.9		
	317	100		
Dependency				
• No	242	76.3		
• Yes	75	23.7		
	317	100		
Off-farm activities				
• No	283	89.3		
• Yes	34	10.7		
	317	100		

Source: Field Survey, 2018



Table 3: Percentage share of different crops in total cropped area

Village/Crops	Paddy	Maize	Tuber	Veg.	Spice	Pulses	Fruits	Tea	Total (acre)
Changki	47.88	8.41	3.14	12.52	9.51	9.73	4.82	3.98	56.5 (100.0)
Changtongya	37.19	11.01	3.38	13.95	8.95	12.11	8.77	4.65	57.0 (100.0)
Chungtia	36.38	13.72	5.92	21.65	10.69	10.05	1.61	-	54.5 (100.0)
Khar	40.52	9.91	3.31	15.36	12.68	13.09	3.61	1.55	48.5 (100.0)
Longjang	37.59	10.51	4.31	15.09	6.94	13.89	10.28	1.39	54.0 (100.0)
Longkhum	37.66	11.26	3.74	28.56	6.67	9.41	0.91	1.80	55.5 (100.0)
Longkong	41.13	9.91	3.41	15.85	9.72	15.0	0.66	4.34	53.0 (100.0)
Longsa	33.48	12.21	4.41	11.03	25.29	9.41	1.42	2.75	51.0 (100.0)
Merangkong	38.71	10.27	2.47	13.23	15.48	11.45	4.73	3.66	46.5 (100.0)
Mokokchung	37.5	9.13	4.71	14.90	14.76	11.39	5.91	1.68	52.0 (100.0)
Mongsenyimti	37.84	13.25	3.81	14.28	11.91	15.52	-	3.40	48.5 (100.0)
Mopongchuket	37.64	10.19	3.35	13.77	14.06	11.84	0.47	8.68	53.0 (100.0)
Sungratsu	36.97	10.46	2.89	15.83	13.30	14.31	6.24	-	54.5 (100.0)
Yajang	32.46	10.11	4.38	9.35	5.94	9.42	20.14	8.19	69.0 (100.0)
Overall	37.98	10.71	3.82	15.33	11.60	11.82	5.35	3.39	753.5 (100.0)

Source: Field Survey, 2018

Table 4: Reasons for Crop diversification and Income from diversification (in %)

Particulars	Overall	Changki	Changtongya	Chungtia	Khar	Longkong	Longkhum	Longkong	Longsa	Merangkong	Mokokchung	Mongsenyimti	Mopongchuket	Sungratsu	Yajang
Reasons for crop diversification															
• Others	29.0	50.0	34.8	25.0	30.4	31.8	25.0	30.4	21.7	30.4	18.2	27.3	27.3	22.7	30.4
• Income	71.0	50.0	65.2	75.0	69.6	68.2	75.0	69.6	78.3	69.6	81.8	72.7	72.7	77.3	69.6
	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Income from Diversification (Rs.)															
• Below 10000	29.0	50.0	34.8	25.0	30.4	31.8	25.0	30.4	21.7	30.4	18.2	27.3	27.3	22.7	30.4
• 10001-100000	48.9	50.0	39.1	66.7	65.2	45.5	33.3	56.5	52.2	60.9	63.6	63.6	36.4	50.0	4.3
• 100001-200000	20.2	-	21.7	8.3	4.3	22.7	33.3	13.0	26.1	8.7	18.2	9.1	36.4	27.3	52.2
• 200001-300000	1.9	-	4.3	-	-	-	8.3	-	-	-	-	-	-	-	13.0
	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Total Income from Diversification (%)	21,168,300 (100)	2.76	7.32	5.33	3.94	6.80	10.49	6.45	8.32	5.94	7.75	5.48	8.08	7.71	13.63

Source: Field survey, 2018

Table 5: Crop Diversification Index (in %)

Particulars	SID	HHI	Less Diversified	Diversified
Changki	0.73	2754	59.1	40.9
Changtongya	0.79	2035	39.1	60.9
Chungtia	0.78	2233	25.0	75.0
Khar	0.77	2335	34.8	65.2
Longjang	0.80	1918	50.0	50.0
Longkhum	0.75	2512	45.8	54.2
Longkong	0.76	2392	52.2	47.8
Longsa	0.79	2149	21.7	78.3
Merangkong	0.78	2192	39.1	60.9
Mokokchung	0.79	2119	18.2	81.8
Mongsenyimti	0.78	2220	40.9	59.1
Mopongchuket	0.79	2135	40.9	59.1



Sungratsu	0.77	2156	27.3	72.7
Yajang	0.81	1859	30.4	69.6
Overall	0.79	2121	37.5	62.5

Source: Field Survey, 2018-19

Table 6: Food Security, Poverty and MPI score of the respondents (in %)

Variables	Overall	Changki	Changtongya	Chungtia	Khar	Longjang	Longkhum	Longkong	Longsa	Merangkong	Mokokchung	Mongsenyimti	Mopongchuket	Sungratsu	Yajang
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Food Security															
• Food Insecure	15.5	13.6	13.0	16.7	13.6	18.2	16.7	17.4	13.0	17.4	13.6	13.6	13.6	18.2	17.4
• Food Secure	84.5	86.4	87.0	83.3	86.4	81.8	83.3	82.6	87.0	82.6	86.4	86.4	86.4	81.8	82.6
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Intensity of Food Insecurity															
• Mild Food Insecure	11.7	9.1	8.7	12.5	4.5	18.2	12.5	17.4	8.7	8.7	13.6	13.6	9.1	13.6	13.0
• Chronic Food Insecure	3.8	4.5	4.3	4.2	9.1	-	4.2	-	4.3	8.7	-	-	4.5	4.5	4.3
Poverty															
• Below Poverty Threshold	13.2	13.6	8.7	16.7	13.6	9.1	8.3	17.4	13.0	13.0	13.6	13.6	13.6	18.2	13.0
• Above Poverty Threshold	86.8	86.4	91.3	83.3	86.4	90.9	91.7	82.6	87.0	87.0	86.4	86.4	86.4	81.8	87.0
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
MPI Deprivation Score															
• Deprivation	16.7	13.6	13.0	16.7	18.2	22.7	16.7	17.4	17.4	17.4	13.6	13.6	13.6	18.2	21.7
• Non-deprivation	83.3	86.4	87.0	83.3	81.8	77.3	83.3	72.6	82.6	82.6	86.4	86.4	86.4	81.8	78.3
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Field Survey, 2018

Table 7: Multidimensional Poverty Index

Sample Village	Head Count Index	Intensity of Deprivation	MPI
Changki	0.153	0.21	0.032
Changtongya	0.126	0.335	0.042
Chungtia	0.177	0.27	0.048
Khar	0.207	0.262	0.054
Longjang	0.228	0.143	0.033
Longkhum	0.20	0.119	0.024
Longkong	0.169	0.227	0.038
Longsa	0.202	0.237	0.048
Merangkong	0.206	0.273	0.056
Mokokchung	0.165	0.234	0.039
Mongsenyimti	0.163	0.189	0.031
Mopongchuket	0.146	0.224	0.033
Sungratsu	0.212	0.186	0.039
Yajang	0.238	0.169	0.041
Overall	0.185	0.214	0.039

Source: Field Survey, 2018