Effect of Socio-personal Characteristics of Ecological Farmers in terms of Food Security in Nagaland

ABSTRACT

The present article focuses on the socio-personal characteristics of ecological farmers with food security in Nagaland. Phek and Wokha districts were selected randomly. Pfutsero and Wokha Sadar blocks were selected. Further four villages were selected randomly from each block. A sample of 120 farmers were selected from Phek and Wokha districts by random sampling method. Ex-Post facto research was used for the present study. A pre-tested interview schedule was used to collect data on various independent variables such as age, education, family size, landholding, family income, social participation, cropping pattern, and livestock possession, sources of irrigation, extension contact, risk preferences and farming experience from the farmers. The dependent variable food security was based on Likerts' Scale using 23-items in terms of four dimensions of food security like- Food availability, food access, food utilization and food stability. 55.83 per cent of the farmers had medium level of food security. The study found that age, education, land holding, family income, cropping pattern, livestock possession, extension contact, risk preferences and farming experience were the significant factors associated with farmers' food security status.

KEY WORDS**:** Food security, Ecological farmers, Nagaland, Socio-personal, Ex-Post facto.

INTRODUCTION

Nagaland is a hilly state in the North-Eastern part of our country, covering 16,579 square kilometers. The majority of the population i.e., around 73 percent are engaged in Jhum cultivation due to states topography and indigenous farming methods (Kuotsuo, 2014). In the current scenario, food production and consumption have been increasing to the top of the global, national agenda. India ranked 72nd position out of 113 countries in terms of the Global Food Security Index (GFSI). According to the 2020 Global Hunger Index (GHI), India ranks 94th out of 107 countries signifying severe hunger (Chaudhuri and Ghosh, 2020). According to the World food summit (1996), the food security as "All people at all times have physical and economic access to sufficient, safe and nutritious food to maintain their healthy and productive life". It is also based on dietary requirements and preferences of food. It includes four aspects:

Food availability: It involves the production, allocation and exchange of food.

Food access: It refers to the affordability and distribution of food, as well as individual preferences and households.

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Comment [Z2]: Redundancy of information. For example " in line two and "selected from Phek and Wokha districts by random sampling method". This might be considered as self-plagiarism which increases the volume your document.

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Food utilization: It is accomplished through nutritious food, safe drinking water, hygiene and medical care, which will meet all nutritional and physiological demands.

Food stability: The ability to obtain food over a long period of time.

Changes in climate and related concerns such as increasing temperature, water scarcity, harsh weather, soil degradation, and increased disease and pest outbreaks are easier to respond with ecological agriculture. Eco-Agriculture has the potential to assist the country's food security and productivity. Nagaland ranked 6th among small states in the State Food Safety Index (SFSI). The National Food Security Act (NFSA), 2013 which, aims to provide food security and nutrition to intended beneficiaries at reasonable cost, went into effect in the state from July 1, 2016, which started in Kohima and Dimapur districts. The priority household beneficiaries under the act would be provided 5 kilograms of foodgrains at Rs 3 per kilogram and wheat at Rs 2 per kilogram. Food security is decreasing due to various agricultural setbacks, poverty, rising food prices, unemployment, climate change and other factors. The main focus was on food security at the community level. The present paper attempts to analyze

i) The Socio-personal characteristics of ecological farmers and

ii) The relationship between socio-personal characteristics in terms of food security of ecological farmers in the Nagaland state.

METHODOLOGY

The present study was carried out in Nagaland state of the North-Eastern region of India. Myanmar bounds Nagaland on the East, Arunachal Pradesh on the North, Assam on the West, and Manipur on the South. The state's soils are dominated by inceptisols, followed by ultisols, entisols, and alfisols, covering a total of 16.6 million hectares. Major crops grown in this region are – rice, potato, sugarcane, pulses, corn, millets, oilseeds (rapeseed, mustard, and jute, etc.). The study was conducted in Phek and Wokha districts of Nagaland and from each of the districts, Pfutsero and Wokha Sadar blocks were selected, respectively. Further, four villages, namely Pfutseromi, Zapami, Lekromi and Lasumi under Pfutsero block and Wokha village, Longsa, Longsachung and Niroyo under Wokha Sadar were selected randomly from each of the blocks. Fifteen farmers were selected randomly from each of the villages. A total of 120 farmers were selected for the present study by using the random sampling method. Ex-post facto research was used for the study. Twelve independent variables such as age, education, family size, land holding, family income, social participation, cropping pattern, livestock possession, sources of irrigation, extension contact, risk preference and farming experience were used and scores were assigned. The dependent variable food security which was based on Likerts scale using 23-items in terms of food availability (seven items), Food access (five items), Food utilization (six items), and Food stability (five items). The scale consists of very low: 1, low: 2, average: 3, high: 4, and very high: 5. The dependent variable was used to find the relationship with independent variables using a correlation coefficient. The data were collected through

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The problem is not well stated in terms of severity, risk factors, existing policies, strategies and program interventions.

The study is not well justified and should consider what has been done on the topic? What remains to be done or the gap authors identified? And finally which gap will be filled by the study?

You have to high light the significance of the study focusing on who are the beneficiaries, what are the benefits and how the benefits can be utilized.

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a pre-tested interview schedule and were tabulated and analyzed using appropriate statistical tools such as mean, frequency, percentage, standard deviation and correlation coefficient.

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What is the source and study population?

What about the inclusion and exclusion criteria?

How maintain the quality of the dtata?

What about the data analysis issues?

Where is the ethical issues addressed?

RESULTS AND DISCUSSION

Table 1: Socio-personal characteristics of ecological farmers

Sl. No.	Characteristics	Farmers (n= 120)	
		Frequency	Percentage
1	Age		
	Young (Upto 30 years)	24	20.00
	Middle (31 to 56 years)	68	56.67
	Old (57 years & above)	28	23.33
2	Education		
	Illiterate	28	23.34
	Read and write only	9	7.50
	Primary school	42	35.00
	Secondary school	19	15.83
	High school	16	13.33
	Graduate and above	6	5.00
3	Family size		
	Small (upto 3 members)	44	36.67
	Medium (4 to 6 members)	59	49.16
	Large (7 members & above)	17	14.17
4	Land holding		
	Marginal (<1 ha)	53	44.17
	Small (1 to 2 ha)	36	30.00
	Medium (3 to 4 ha)	26	21.67
	Large (> 4 ha)	5	4.16
5	Family income		
	Low (<1,14,732)	22	18.33
	Medium (1,14,733 to 2,87,068)	79	65.83
	High (> 2,87,068)	19	15.84
6	Social participation		
	Member of one organization	84	70.00
	Member of more than one organization	19	15.83
	Office bearers	13	10.83
	Distinctive features	4	3.34
7	Cropping pattern		
	Poor (< 10.31)	27	22.50
	Fair (10.32 to 19.57)	70	58.33
	Good (> 19.58)	23	19.17
8	Livestock Possession		
	Low (< 4.50)	8	6.67

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Comment [Z11]: Any base for family size classification?

	Medium (4.51 to 8.72)	97	80.83
	High (> 8.72)	15	12.50
9	Sources of irrigation		
	No source	108	90.00
	River	12	10.00
10	Extension Contact		
	Low (upto 3)	63	52.50
	Medium (4 to 7)	49	40.83
	High (8 & above)	8	6.67
11	Risk preferences		
	Low (< 18.75)	21	17.50
	Medium (18.76 to 22.03)	82	68.33
	High (> 22.03)	17	14.17
12	Farming Experience		
	Low (< 5 years)	18	15.00
	Medium (6 to 18 years)	76	63.33
	High (19 years and above)	26	21.67

Table 1 reveals that the socio-personal characteristics of ecological farmers were of middle aged (56.67 per cent), had primary school level of education (35 per cent), medium family members (49.16 per cent), marginal land holding (44.17), medium family income (65.83 per cent), were member of one organization (70 per cent), fair cropping pattern (58.33 per cent), medium number of livestock (40.83 per cent), no source of irrigation (90 per cent), low extension contact (52.50 per cent), medium risk preference (68.33 per cent) and medium level of farming experience (63.33 per cent).

Food security

i) Food availability

Table 2: Distribution of respondents according to food availability

Sl. No.	Items	Frequency (%)				
		Very low	Low	Medium	High	Very high
1	Organic agricultural production rate	4 (3.33)	22 (18.33)	83 (69.17)	11 (9.17)	0 (0.00)

2	Arable land under cultivation of organic products	32 (26.67)	46 (38.33)	41 (34.17)	1 (0.83)	0 (0.00)
3	Productivity in the production of organic products (the revenue than expenses)	3 (2.50)	10 (8.33)	94 (78.33)	13 (10.83)	0 (0.00)
4	Usage rate of scientific principles in organic products (Using mulch, natural pesticides, green manure, compost, crop rotation)	7 (5.83)	17 (14.17)	66 (55.00)	16 (13.33)	14 (11.67)
5	Participation rate in the courses of cultivation of organic products	8 (6.67)	14 (11.67)	52 (43.33)	18 (15.00)	28 (23.33)
6	Annual lose rate of organic products at planting, harvesting and processing stage (Due to pests and diseases, untimely rainfall, non-normative harvest)	15 (12.50)	42 (35.00)	61 (50.83)	2 (1.67)	0 (0.00)
7	Annual rate loss of organic products in producing stage due to inadequate transport, non-normative relocation of products, etc.)	27 (22.50)	44 (36.67)	49 (40.83)	0 (0.00)	0 (0.00)

Note: Figure in Parenthesis denotes percentage to their relative total

ii) Food access

Table 3: Distribution of respondents according to food access

Sl. No.	Items	Frequency (%)				
		Very low	Low	Medium	High	Very high
1	Income level of producing organic products	4 (3.33)	12 (10.00)	96 (80.00)	8 (6.67)	0 (0.00)
2	Purchasing power rate in the result of producing organic products	4 (3.33)	32 (26.67)	80 (66.67)	4 (3.33)	0 (0.00)
3	The transport system quality for organic products transfer	10 (8.33)	23 (19.17)	80 (66.67)	7 (5.83)	0 (0.00)
4	Credit facilities allocated for producing organic products	5 (4.17)	57 (47.50)	54 (45.00)	4 (3.33)	0 (0.00)
5	Allocated subsidies for producing organic products	6 (5.00)	75 (62.50)	31 (25.83)	8 (6.67)	0 (0.00)

Note: Figure in Parenthesis denotes percentage to their relative total

iii) Food utilization

Table 4: Distribution of respondents according to food utilization

Sl. No.	Items	Frequency (%)				
		Very low	Low	Medium	High	Very high
1	The use of organic products	5 (4.17)	23 (19.17)	81 (67.50)	11 (9.17)	0 (0.00)
2	Reducing malnutrition rate by using own organic products	17 (14.17)	34 (28.33)	63 (52.50)	6 (5.00)	0 (0.00)

3	Health status rate	13 (10.83)	7 (5.83)	89 (74.17)	11 (9.17)	0 (0.00)
4	The quality of health and nutritional education services to family	9 (7.50)	41 (34.17)	63 (52.50)	7 (5.83)	0 (0.00)
5	The rate of intake of quality food by family	25 (20.83)	8 (6.67)	70 (58.33)	14 (11.67)	3 (2.50)
6	Food safety status in family	38 (31.67)	7 (5.83)	58 (48.33)	13 (10.83)	4 (3.33)

Note: Figure in Parenthesis denotes percentage to their relative total

iv) Food stability

Table 5: Distribution of respondents according to food stability

Sl. No.	Items	Frequency (%)				
		Very low	Low	Medium	High	Very high
1	Damage rates which are caused by unstable climates	14 (11.67)	26 (21.67)	70 (58.33)	8 (6.67)	2 (1.67)
2	The rate of incidence of pests and diseases to organic products	21 (17.50)	15 (12.50)	52 (43.33)	12 (10.00)	20 (16.67)
3	The rate of use of biological methods to sustain sources	16 (13.33)	12 (10.00)	78 (65.00)	11 (9.17)	3 (2.50)
4	The possibility of lack of food access because of periodic events in family	9 (7.50)	17 (14.17)	76 (63.33)	17 (14.17)	1 (0.83)
5	The organic products ability in securing food for future generation by considering the least negative impact on the environment	15 (12.50)	15 (12.50)	60 (50.00)	16 (13.33)	14 (11.67)

Note: Figure in Parenthesis denotes percentage to their relative total

Table 6: Distribution of respondents according to household level food security of the farmers

Sl. No.	Food security	Respondents (N=120)	
		Frequency	Percentage (%)
1	Very low (23-40)	13	10.83
2	Low (41-59)	26	21.67
3	Medium (60-78)	67	55.83
4	High (79-97)	10	8.33
5	Very High (98-115)	4	3.34
	Total	**120**	**100**

The results mentioned in the Table 6 indicates that 55.83 per cent of the farmers had medium level of food security, 21.67 per cent had low level of food security, 10.83 per cent had very low level of food security, 8.33 percent had high level of food security and rest (3.34 per cent) had very high level of household food security.

This finding is in line with the findings of Morshedi et al. (2017).

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Relationship between socio-personal characteristics in terms of food security of ecological farmers in the Nagaland state.

The correlation coefficient of the relationship between profile of farmers with food security were summarized in the Table 7.

Table 7: Relationship between profile of farmers with food security

Sl. No.	Independent variables	Correlation coefficient (r)
1	Age	0.197*
2	Education	0.225*
3	Family size	-0.164 NS
4	Land holding	0.224*
5	Family income	0.266**
6	Social participation	-0.246**
7	Cropping pattern	0.289**
8	Livestock possession	0.257**
9	Sources of irrigation	-0.082 NS
10	Extension contact	0.237**
11	Risk Preference	0.263**
12	Farming experience	0.193*

(** Significant at the 0.01 level of probability)
(*Significant at the 0.05 level of probability, NS = Non Significant)

Table 7 indicates that the correlation coefficient (r) of independent variable such as family income (0.266**), cropping pattern (0.289**), livestock possession (0.257**), extension contact (0.237**) and risk preference (0.263**) showed positive and significant correlation at 0.01 level of probability. Whereas age (0.197*), education (0.225*), land holding (0.224*), and farming experience (0.193*) were positive and significant at 0.05 level of probability. This indicates that food security is more likely to be high to the farmers having higher age, more education, high cropping pattern, family income and possessing more number of livestock. This agrees with the work of Ada-Okungbowa and Edemhanria (2016), Bashir *et al.* (2013), Haddabi *et al.* (2019) and Shinde (2020).

On the other hand, family size (-0.164 NS) and sources of irrigation (-0.082 NS) were found to be negative and non-significant. These findings were in line with Hazarika (2019). The social participation (-0.246**) was negative and significant at a 0.01 level of probability. This shows that when family size, sources of irrigation and social participation increases, the level of food security of the farmers decreases or vice-versa.

CONCLUSION

The food security status of ecological farmers of Nagaland was strongly associated with higher age, education, cropping pattern, family income, livestock possession, land holding, extension contact and risk preferences. On the contrary, food security status was found to be low, when family size, sources of irrigation and social participation increased or vice-versa.

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