

## ASSESSMENT OF NON-FARM WORK AND FOOD SECURITY

Anuradha Paul<sup>1</sup> and V. Suthacini<sup>2</sup>

### ABSTRACT

Food is the basic needs for every human being. Food is always one of the main concerns all the time. The significance of food security at household level is identified as one of the important priorities globally. Nonfarm income generating activities played an important role in the income smoothing effects on the rural population and also helps to improve the food security status of rural residents. This study investigated the effect of non-farm activities on the food security status of rural households and the major factors that determine the non-farm income-generating activities. The study is based on primary data. This study was conducted in the Andaman and Nicobar Islands' North District. The study was carried out in Diglipur block in the North District of Andaman and Nicobar Islands in India. An Interview schedule was prepared for the collection of primary data in the study area with a total sample of 125 during July to August, 2023. Statistical tools like descriptive statistics and Chi square tests were used for the analysis of data. The result of the study revealed that nonfarm employment had a significant role in improving households' food security. Nonfarm income was the income derived from the sources other than farming, like petty trade, handicraft, daily labour, masonry etc., in the study area. It also showed that the majority of farmers were involved in nonfarm employments because they believed that agricultural income was not sufficient enough to attain households' food security. Results suggested that to confront food security in the study area, policy makers should improve efficiency of family planning programs to reduce family size, reforming education system to enable people to work in better employment and to increase income-generating activities to lower the household dependency ratio.

(Key words : Nonfarm employment, household income, food security)

### INTRODUCTION

Food security has emerged as a worldwide concern, beginning with the first World Food Conference in 1974. The Food and Agricultural Organisation (FAO) stated that all people should possess the right to healthy nutrition in Conference organised at Rome during 1996. The United Nations declared the reduction of hunger to half by the year 2015 as the primary Millennium Development Goal. World Food Summit during 1996 brought together 186 nations in Rome to discuss solutions to the problems of hunger and food insecurity, was a turning point in the history of food security worldwide. The significance of household food security has been observed as one of the most significant global concerns (Joanna *et al.*, 2016 and Narayanan, 2015).

Mostly people from all over the world rely on agriculture as a primary means of income. It contributes significantly to the growth of local economies, provides employment and meets the basic food subsistence needs of the majority of the population in the most of developing countries. Agriculture plays essential role in lowering hunger, poverty and food insecurity (Singh and Maibam, 2023). However, agriculture cannot solve the issues related

to food insecurity on its own due to low levels of agricultural productivity. The agricultural production of many developing nations is on declining trend because of unfavourable climate change combined with long-term factors (technological, environmental and institutional), degraded soil, ineffective government policies, restricted access to essential agricultural inputs and the exploitation of mineral resources (Pawlak and Ko<sup>3</sup>odziejczak, 2020, Lelimo, 2021 and Barrett *et al.*, 2001).

Non-farm income generating activities have played an essential role in breaking the vicious cycle of poverty by smoothing the rural population's income assisting to improve the food security situation of people living in rural areas. The majority of farmers in emerging nations have adopted non-farm occupations as one of their primary methods for diversifying their income. Activities that generate income those are not related to agriculture activities are referred to as non-farm income in rural regions. It involves trade, building, rural tourism, manufacturing, marketing, transportation, maintenance and extraction activities etc. Nonfarm employment increases household income and it improves food sufficiency, housing, health care and education for children. It has observed that off-farm earnings play a significant role in the impoverished people's way of life. Food security and nutrition are improved by non-farm

1. Ph.D. Research Scholar, Dept. of Agricultural Economics, School of Economics, Madurai Kamaraj University, Madurai

2. Asst. Professor & Head, Dept. of Agricultural Economics, School of Economics, Madurai Kamaraj University, Madurai

income (Endiris *et al.*, 2021, Sani *et al.*, 2014 and Tesfaye and Nayak, 2022).

Bringing together the pull and push aspects results in the transition away from agriculture. Pull factors occur by increasing agricultural production, which allows households to progressively shift into non-farm sectors. Insufficient factor returns from labour and land cause farmers to push into non-agricultural economic pursuits when agriculture is stagnating (Hagblade *et al.*, 2010 and Agarkar *et al.* (2023). Access to more and better food varieties is facilitated by higher income. Non-farm income lowers the risk of intra-year food availability while simultaneously increasing purchasing power. However, shifting away from agriculture means that households are more dependent on markets to buy food, which leaves them vulnerable to price swings and undermine their food security (Rahman and Mishra, 2020 and Walsh and Rooyen, 2015).

The beneficial impact of nonfarm activities on enhancing household food security is a topic of discussion and does not get much attention in earlier studies. Study has been reported the nonfarm activities contribute to household income, wealth and poverty reduction. Furthermore, even though rural households typically engage in these kinds of activities to meet their needs, it seems that their involvement is limited by capital assets Zerai (2011) and numerous studies examine the financial effects of rural households' involvement in non-farm pursuits on their food security as measured by household spending. Additionally, some research use a propensity score matching approach instead of counterfactual instances to account for selection bias and evaluate the true association between household food security and non-farm participation (Owusu *et al.*, 2011, Yousaf *et al.*, 2018 and Mishra and Khanal, 2017).

This research attempted to fill that gap by identify factors that influence rural households' involvement in non-farm activities and to investigate the effect of non-farm activities on household income and food security status of rural households. Therefore, improving the food security of households in the study area requires an understanding of the factors that motivate rural households to participate in non-farm activities. There has been a notable shift of labour from agriculture to nonfarm occupations, despite India's structural reform process being gradual in terms of reducing the agricultural workforce. In addition to their primary occupations in agriculture and related fields, the majority of rural households also engage in non-farm economic activities (Rahman and Mishra, 2020 and Chand *et al.*, 2015).

## MATERIALS AND METHODS

There was lack of empirical evidence in the study area regarding the involvement of rural households in non-farm activities and their impact on food security. This study was conducted in the Andaman and Nicobar Islands' North District. The study was carried out in Diglipur block in the

North District of Andaman and Nicobar Islands in India. An Interview schedule was prepared for the collection of primary data in the study area with total samples of 125. The study based on primary data through simple random techniques. Data collected during the period of July to August, 2023. Information was gathered on socio-economic characteristics such as age, education, occupation and monthly income of the rural households. Information regarding nonfarm work and food security included as types of nonfarm activities, reasons for participated in non-farm work, perception of food habit, livelihood changed and constraints. The collected quantitative data was codified, categorised and calculated. Statistical tools such as descriptive statistics and chi square were employed. Chi-square test was used to determine the relationship among socioeconomic variables and effect of non-farm activities on household food security.

### Chi square Test

The Chi-square test was used to investigate the study's objectives to analyses whether there is relationship between socioeconomic variables and effect of non-farm activities on household food security. The formula below was used to compute it:

The chi-square was denoted by  $\chi^2$ .

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

Where

O = Observed Frequency

E = Expected Frequency

Degrees of Freedom = (r-1) (c-1)

### Hypothesis:

There was no relationship between nonfarm work, food security and socio-economic variables. In order to study the nonfarm work, food security and socio-economic variables in the study area chi-square test was used.

## RESULTS AND DISCUSSION

The Table 1 explains the age of the households. In the study area 37% of the respondents were belonged to the age group of 45 to 55 years, 29% of the respondent were belonged to the age group of 35 to 45 years, 16% of the respondent were belonged to the age group 25 to 35years, 12% of the respondent belonged to the age group of above 55 years and 6% of the respondent belonged to the age group of below 25 years. Bahiru *et al.* (2022) observed that the food security status of households was influenced by age. According to the survey results of Zerai (2011) the age of sample respondents' ranged from 25 to 71 years old, with an average age of 44.53 years. Data described that gender of the households, 95% of the respondents were male and 5% of the respondents were female in the rural area. Bahiru *et al.* (2022) stated that 20.7% were headed by women and 77.3% by men. The results of the survey showed that 16.1% of families with female heads were food insecure

and 5.6% were food secure. Food insecurity affected 54.5% of male-headed households, while food security affected 23.8% of families. Tibesigwa and Visser (2016) and Modirwa and Oladele (2012) observed that households headed by men experienced greater food security than those headed by women. Compared to urban regions, rural areas had a greater disparity in household food security between households headed by men and households headed by women. Male-headed households accounted for 78% of the respondent women leading the rest of the households. However, households headed by males appear too had engaged in nonfarm employment at a higher rate than those headed by women (Zerai, 2011). It is evident from the data indicates that 16% of respondents were illiterate, 55% of the respondents completed primary school, 14% had completed secondary school, 10% of the respondents had completed higher secondary, 5% of the respondent had completed graduation and other. This data revealed that majority of the respondents were primary school educated. Bahiru *et al.* (2022) observed that vital element of the nonfarm community's access to non-agricultural information was education. It significantly affected the uptake of enhanced production processes and new technology. It was directly related to a level of household food security. According to the findings, 54.5% of the participants were illiterate, with 43.3% of them falling into the food insecurity categories. It was observed from the data that 44% of the respondents were earning income above rupees 15,000, 30% of the respondents were earning income rupees 10,000 to 15000, 19% of the respondents were earning income rupees 5000 to 10,000 and 7% of the respondent were earning income below rupees 5000 in the rural area. Yousaf *et al.* (2018) reported that income improved non-farmer households' food security. The level of food security was influenced by the household heads' income. Analysis of the income received by rural households revealed that the majority of respondents (56%) earned between \$80,000 and \$119,000 a month (Fausat and Yelwa, 2014). Nonfarm employment income was essential for reducing poverty and ensuring food security in rural areas of developing nations (Owusu *et al.*, 2011).

Nonfarm income was money earned from sources apart from agriculture, such as daily labour, masonry, handicrafts and tiny trade. From data majority of farmers were involved in nonfarm employments because they believed that agricultural income was not sufficient enough to meet their household's food security. It is evident from the data that 32% of the respondents worked as daily labour, 28% of the respondents run petty trade (like Brewery, tea and food, kiosks, wood and charcoal, grain trading and other), 20% of the respondents were engaged in carpentry work, 13% of the respondents were engaged in masonry work, The remaining 7% of the respondents were engaged in other nonfarm activities for enhancement their farm income. Non-farm networks and opportunities were a measure of the number of non-farm activities at the community level, with a high percentage of nonfarm networks and opportunities in each village (Bui and Hoang,

2021). Trading, public service, commercial motorcycling and artisanship were the most prevalent non-farm activities; commercial motorcycling was the least profitable. It also showed that the level of food security in rural households was significantly influenced by non-farm income (Ojeleye *et al.*, 2014). Zerai (2011) suggested over half of the respondents were worked in nonfarm occupations. The respondents worked in masonry, daily labour, tiny trade (such as brewing, tea and food, kiosks, wood and charcoal, grain trading, and others), tannery, carpentry, blacksmithing, and pottery. A smaller percentage of farmers supplemented their farm income by working in other nonfarm jobs.

It is evident from the data that 30% of the respondents involved in nonfarm employment for faced problems in farming activities such as shocks (rain failure, short rainy season, pests swarm, flood, etc.), 19% of the respondents involved in nonfarm employment for high price of fertilizer and pesticide in agriculture practices, 16% of the respondents involved in nonfarm employment for possession of special skill such as masonry and handicrafts, etc., 12% of the respondents involved in nonfarm employment for seasonal nature of agricultural labour, while 10% of the respondents involved in nonfarm employment for demand of goods/services of manufacturing industries, 6% of the respondents involved in nonfarm employment for decline land size, soil fertility or productivity, 5% of the respondents involved in nonfarm employment for insufficiency of income from agriculture and only 3% of the respondent involved in nonfarm employment for growing family size in the study area. Zerai (2011) stated that farming was the main source of household income, many farmers also engaged in nonfarm pursuits to augment their earnings. Income obtained from sources other than farming, such as masonry, daily labour, handicrafts and tiny trade was referred to as non-farm income. According to the data, the majority of farmers worked outside the farm because they feel that their income from farming was insufficient to support their families' food security. Insufficient income from agriculture was the main driving force for the majority of respondents' involvement in nonfarm work. This indicated that farmers in the region primarily participated as a result of a push factor. Although it was observed from the study that farmers engaged in nonfarm activities during the slack or dry period.

Respondents were asked about perception of food habit change after participation in nonfarm activities. It was observed from the data that 69% of the respondents said that there should be improvement in food habit. While 26% of the respondents said there had no change and about 6% of the respondents perceived as deteriorating in food habit change after participation in nonfarm activities. The majority of respondents concurred that engaging in nonfarm activities improved their situation in regarded to food security. Therefore, it was obvious that nonfarm work can enhance households' food security situation (Zerai, 2011).

The involvement in the nonfarm activities it was indicated improvement in farmers' livelihood. It was

observed from the data that 24% of the respondents mentioned that their households' daily food sufficiency improved after participation in nonfarm activities, 22% of the respondents improved housing facilities after participation in nonfarm activities, 19% of the respondents improved schooling of children after participation in nonfarm activities, 16% of the respondents reduced borrowing after participation in nonfarm activities, 14% of the respondents stated that involvement in nonfarm activities increased confidence of the people and 4% of the respondents stated no change in their livelihoods. Zerai (2011) stated that nonfarm employment was shown to enhance farmers' standard of living. While a smaller percentage of respondents reported no change, farmers engaged non-farm work indicated it advances in daily food self-sufficiency, housing, children's education, confidence and independence and decreased borrowing.

It was evident that 34% of the respondents mentioned that lack of employment opportunities was one of the major constraints in accessing nonfarm activities, 18% of the respondents had lack of skill in participating nonfarm activities, 17% of the respondents faced problem

due to poor condition of road in participating nonfarm activities, 16% of the respondents had no lack of nearby towns in participating nonfarm activities, 8% of the respondents had lack of credit in participating nonfarm activities and 8% of the respondents stated that aged, health problems and time constraints participated in nonfarm activities in the study area.

The estimated result shows that the value of Chi-Square was significant for all the socio economic variables such as age, educational level, gender and income of the rural households in the research area at a significance level of 5%. Therefore, the null hypothesis was rejected. i.e., there was association between nonfarm work, food security and socio economic variables such as age, educational level, gender and income. Owusu *et al.* (2011) observed that household income and food security status were positively and significantly affected by non-farm employment. Dary (2012) evident that a number of factors, including sex, age, marital status, years of education, vocational training, group membership (a proxy for social network) and location, significantly affected nonfarm economic activities participation in the study area.

**Table 1. Socio economic profile**

Sl.No.	Characteristics	Category	No. of Respondents	Percentage
1	<b>Age</b>	Below 25 Years	8	6
		25 to 35 Years	20	16
		35 to 45 Years	36	29
		45 to 55 Years	46	37
		Above 55	15	12
		<b>Total</b>	<b>125</b>	<b>100</b>
2	<b>Gender</b>	Male	119	95
		Female	6	5
		<b>Total</b>	<b>125</b>	<b>100</b>
3	<b>Education</b>	Illiterate	20	16
		Primary school	69	55
		Secondary school	17	14
		Higher secondary school	12	10
		Graduation and other	7	5
		<b>Total</b>	<b>125</b>	<b>100</b>
4	<b>Income</b>	Below Rs 5,000	9	7
		Rs 5,000- Rs10,000	24	19
		Rs 10,000- Rs 15,000	37	30
		Above Rs 15,000	55	44
		<b>Total</b>	<b>125</b>	<b>100</b>

Source: Primary data

**Table 2. Types of nonfarm activities**

Sl.No.	Nonfarm activities	No. of respondents	Percentage
1	Daily labour	40	32
2	Carpentry	25	20
3	Masonry	16	13
4	Petty trade	35	28
5	Other Activities (such as stone & mild selling, transportation etc.)	9	7
	<b>Total</b>	<b>125</b>	<b>100</b>

Source: Primary data

**Table 3. Reasons for participate in nonfarm employment**

Sl.No.	Reasons	No. of respondents	Percentage
1	Insufficiency of income from agriculture	6	5
2	Growing family size	4	3
3	Decline land size, soil fertility or productivity	7	6
4	demand of goods/services	12	10
5	Seasonal nature of agricultural labour	15	12
6	Shocks (rain failure, short rainy season, pests swarm, flood, etc.)	37	30
7	Possession of special skill such as masonry, handcrafts, etc	20	16
8	High price of fertilizer and pesticide	24	19
	<b>Total</b>	<b>125</b>	<b>100</b>

Source: Primary data

**Table 4. Perception of food habit after participation**

Sl.No	Perception of food habit change after participation in nonfarm activities	No. of respondents	Percentage
1	Improved	86	69
2	Unchanged	32	26
3	Deteriorated	7	6
	<b>Total</b>	<b>125</b>	<b>100</b>

Source: Primary data

**Table 5. Nonfarm participation and livelihood change**

Sl.No.	Nonfarm participation and livelihood change	No. of respondents	Percentage
1	food self sufficiency	30	24
2	reduced borrowing	20	16
3	improved housing	24	22
4	increase confidence & independence	18	14
5	schooling of children	28	19
6	no change	5	4
	<b>Total</b>	<b>125</b>	<b>100</b>

Source: Primary data

**Table 6. Constraints of nonfarm employment**

Sl.No.	Constraints in accessing nonfarm activities	No. of respondents	Percentage
1	Lack of employment opportunities	42	34
2	Lack of skill	22	18
3	Lack of nearby towns	20	16
4	Lack of credit	10	8
5	Other (being aged, health problems and time constraints)		8
6	Poor condition of road	21	17
	<b>Total</b>	<b>125</b>	<b>100</b>

Source: Primary data

**Table 7. Association between nonfarm work, food security and Socio-economic variables**

Variable	Pearson	Chi-square	df	Asymp.	Sig (2- sided)
Age	23.635		16	0.098	
Gender	10.498		4	0.033	
Education qualification	31.105		20	0.054	
Income	19.653		12	0.074	
Nonfarm work	48.532		36	0.079	
Food security	28.788		20	0.092	

Based on findings, nonfarm work generated more income that allowed farmers to utilise more on necessities like food, education, housing and healthcare. At household level, food security was maintained either by adequate production or earning sufficient income that enables households to purchase the required food. Nonfarm income was the income derived from source other than farming, like petty trade, handicraft, daily labour, masonry etc. in the study area. The result of the study revealed that nonfarm

employment had a significant role in improved households' food security. The majority of farmers were involved in nonfarm employments because they believed that agricultural income was not sufficient enough to stand households food security. The perception of food habit improved after participation in nonfarm activities in the study area. According to Dary (2012), a number of factors, including sex, age, marital status, years of education, vocational training, group membership (a proxy for social

network) and location, significantly affected non farming economic participation in the study area. Results suggested that to confront food security in the study area, policy makers interested in improved efficiency of family planning programs to reduce family size, reforming education system to enable people to work in better employment and to increase income-generating activities to lower the household dependency ratio.

Based on the analysis conducted for this study, following recommendations were made for improving food security. One important factor influencing the food security status of farm households was the level of education of the family head. Therefore, it is necessary to encourage formal education as a way to improve food security since it gives farm households additional options to earn money, particularly in the non-farm sector. Household size significantly and negatively impacted respondents' levels of food security. Therefore, policy initiatives aimed at improving family planning should receive sufficient priority and attention from the government. Heads of households should get enough education about the value of birth control and family planning. The majority of households own small farms, therefore it could be challenging to acquire additional farmland for agriculture in the city. In order to maximise the amount of land that is accessible and to increase income, people should be encouraged to diversify their sources of income more. This will improve food security for households.

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