LIVELIHOOD STATUS OF BETEL LEAF CULTIVATORS IN TRIBAL AREAS OF WEST JAINTIA HILLS DISTRICTS, MEGHALAYA

Tripple Swer,
Ph.D Research Scholar in Rural Development (Full Time), Centre for Rural Development, Annamalai University.

Dr. P. Murugesan,
Assistant Professor, Centre for Rural Development, Annamalai University, Annamalai Nagar-608002.
Email ID: murugesancrd@gamil.com

Abstract

The word betel means 'climbing plant" of which leaves are chewed. It is known 2 as Nagavalli in the northeastern and western regions of the country. In many parts of the country, it is known as pan/paan. Betel vine is a perennial, evergreen climber which grows in tropics and subtropics. Betel leaf is mostly consumed in Asia and elsewhere in the world by some Asian emigrants. Today, betel is grown for local consumption and exports. Major betel leaf growing countries are Sri Lanka, India, Thailand and Bangladesh. In India, Betel leaf plays an important role since ancient culture. Its use in India dates back to 400 BC. As per ancient books of Ayurveda, Charaka, Sushruta Samhitas, and Kashyapa Bhojanakalpa, the practice of chewing Betel Leaf after meals became common between 75 AD and 300 AD. Toward the 13th century, European traveler Marco Polo recorded betel chewing among kings and nobles in India. Importance of Betel Leaf has been described in ancient books of Ayurveda. Use of Betel Leaf was known for centuries for its curative properties. In Chinese folk medicine betel leaves are used for the treatment of various disorders and claimed to have detoxification, antioxidation, and antimutation properties. There are number of research experiments on Betel Leaf, where the leaf extract, fractions, and purified compounds are found to play a role in oral hygiene, and to have various properties including anti-diabetic, cardiovascular, anti-flammatory/immunomodulatory, anti-ulcer, hepato-protective, anti-infective, etc., Patients were also awarded for some of the biological activities like anti-inflammatory, anti-cancer, and immunomodulatory associated with the leaf extracts and purified compounds. This research find and analysis the livelihood status of betel leaf cultivators in tribal areas of west jaintia hills districts, Meghalaya

***Keywords**: Betel Leaf,Cultivation, Cultivators,Living, Status, etc*

1. INTRODUCTION

In India, betel leaf is mostly grown in states of Assam, Andhra Pradesh, Bihar, Gujarat, Odisha, Karnataka, Madhya Pradesh, Rajasthan, West Bengal Maharashtra and even in Meghalaya. There are about 100 varieties of betel grown across the world, out of which about 40 cultivars are found in India and 30 in Meghalaya. In India betel vine is grown in over 50,000 ha area with estimated annual turnover of `1000 Crores. India exported 6,159.39 MT of betel leaves around the world worth of ` Rs. 26.18 Crores during 2020-21. India is the major exporter of betel leaves to countries like Afghanistan, Australia, Bangladesh, Canada, France, Germany, Hongkong, Kenya, Nepal, United Kingdom, UAE, Saudi Arabia, Oman, Pakistan, USA, Qatar, Yemen and United Kingdom. Betel leaves are cultivated in the states of Assam, Andhra Pradesh, Bihar, Gujarat, Odisha, Karnataka, Madhya Pradesh, Rajasthan, West Bengal, Maharashtra and even in Meghalaya. Betel leaves have been cultivated for its leaf since time immemorial in India but has assumed significant commercial importance in the last 20-25 years. The vast economic potential of the Betel farming can be adequately established by the fact that it is consumed by about 15-20 million people and can generate direct or indirect employment opportunities of about 20 million people in India. Besides employment creations, it also contributes to the nation in terms foreign exchange earnings. Betel leaves have good export potential and thus is most promising commercial leafy crop capable of attracting substantial amount of foreign exchange to the country. Besides having significant medicinal properties and nutritional values, betel leaf is widely used in social, cultural and religious occasions.

Meghalaya is basically an agricultural state with about 80% of its population depending entirely on agriculture for their livelihood. Nearly 10% of the geographical area of Meghalaya is under cultivation. Agriculture in the state is characterised by limited use of modern techniques, low yields, and low productivity. As a result, despite the vast majority of the population being engaged in agriculture, the contribution of agricultural production to the state's GDP is low, and most of the population engaged in agriculture remain poor. A portion of the cultivated area is under the traditional shifting agriculture known locally as Jhum cultivation. Meghalaya produced 230,000 tonnes of food grains in 2001. Rice is the dominant food grain crop accounting for over 80% of the food grain production in the state. Other important crops are betel leaf, short-staple cotton, jute, mesta, mustard and rapeseed, cropsmaize, wheat, and a few other cereals and pulses etc.. Besides, potato, ginger, turmeric, black pepper, areca nut, Bay leaf (Cinnamomumtamala). The southern part of Meghalaya consists of steep slopes which drop down to the plains of Bangladesh. Due to the topography and terrain, the farmers of these areas cannot cultivate agriculture crops like paddy but they earn their livelihood by cultivating horticulture crops. The soil condition and the climate condition of these areas is also very suitable for cultivation of horticulture crops like oranges, Betel leaf, Black peeper, Betel nut, etc. What is so special with the people of these areas is that they are very hard working and skillful. Their economic condition is much better compared to the farmers of other areas of the state because the crops that they grow are cash crops and of best quality which fetch a good price in the market. The farmers of these areas have learnt to irrigate their crops by drip irrigation system since time immemorial, perhaps long before drip irrigation system was invented. Irrigation has to be

provided only in the dry season. In this traditional method of drip irrigation practiced by the farmers of these areas, the farmers constructed temporary earthen bunds across streams to divert the water for long distance through earthen channels to their areas. This water is then conveyed through bamboos used as main delivery line to bamboos split in halves which are used as laterals criss-crossing the area under cultivation to ultimately end at the root zone of each plant. At this end point small strips of bamboos are cut into pieces which are fixed to the lateral bamboos in such a way that they function as emitters and water is supplied to the plan drop by drop. As discharge in the streams is less during the dry season, the farmers distribute the water on rotation basis.

2. REVIEW OF LITERATURE

SamiranDas and ManjariBhattacharji (2023) It focuses on Coastal area; Climate change of Betel leaf cultivation as it is a function of temperature and precipitation. Any change in these parameters, above and below the threshold value, will affect photosynthesis and transpiration in the crops, leading to an overall negative impact on agriculture, threatening global food security. Underdeveloped and developing worlds are most likely to be affected due to this situation because more than 80% of the population in this area is economically dependent on agriculture. With this background in mind, the present study attempts to delve into the impact of climate change on betel leaf cultivation in the study area because it forms the backbone of the local economy. The sensitivity of betel leaf to minor fluctuations in climatic parameters and its economic importance in the selected study area justifies the theme of enquiry. Given the sensitivity of betel leaf to such changes, an adverse impact on its production seems inevitable. However, the impacts are not entirely escapable.

Team TNJ (2022) It shows how betel are being name by different languages in the Northeast state and its kind culture. The Khasi people of Meghalaya named it kwai. It is gue for the Garos who enjoy it with equal zeal. It is known as tamul in Assam and Nagaland, and Kua and kuhva in Manipur and Mizoram, respectively. There are various names for each state's relationship with betel nuts, but one word best describes it is passion.arecanut (Areca catechu), often known as betel nut, is thought to have originated in the Philippines or Malaysia and has been widely farmed in China, India, Bangladesh, Sri Lanka, and other countries. Meghalaya ranks fifth in Areca nut output, accounting for 3.3% of total Areca nut production in India.It's fascinating how betel nut has come to hold such importance in the Northeast. So much so that tourists to Shillong may wonder why the Khasis are perpetually red-mouthed. It is tradition to serve betel nut when someone visits their homes.

Avdhoot Pandit(2022) Betel leaf (Piper betle) is a well-known medicinal plant found in Asia. Betel leaf has many properties as anti-fungal, anti-septic, anti-microbial, anti-cancer, anti-diabetic, anti-allergic, antifertility, anti-filarial, wound healing and anti-dermatophytic. It also prevents gastrointestinal infections due to its immunomodulatory effect. It may be useful in the treatment of diabetes by maintaining the blood sugar levels. Traditionally it is used in the religious ceremonies to celebrate the events. Betel leaf is widely used for chewing practices in most countries after commencement of the meal to improve digestion. Ayurveda suggests consuming betel leaf after the commencement of meal is wholesome as it promotes digestion, cleanses mouth, removes excessive cough and maintains weight.

Kumar Gupta (2022) Betel leaf is a traditional nutritional and medicinal food plant known as Paan. Paan is the name given to the vivid green fresh leaves of the betel vine. The scientific information of betel leaf (Piper betle L) nutrition values and health benefits are crucial for raising betel leaf consumption in daily life. *Piper betle* L is also known as a Neglected Green Gold of India with a higher nutritional and dietary value such as fiber, vitamins, and minerals. Regarding the nutritional and therapeutic properties of betel leaf, around 15–20 million people in India take it regularly. Furthermore, several phytochemicals and nutritional components are found in the betel leaf, which is recognized as a bioactivecompound.

Arnab Roy andProshanta Guha (2021) Betel leaf is a commercial crop, which is traditionally consumed in the raw state as a mouth freshener and stimulant in SoutheastAsia since antiquity. It possesses various functional and medicinal properties, such as antimicrobial, antioxidant, anti-diabetic, anti-carcinogenicetc. The leaf contains essential oil, which has a unique aroma contributing flavour and fragrance. This essential oil is a mixture of concentratedphytochemicals, among which the major components are estragole, chavicol, chavibetol, s-cubebene, andcaryophyllene. In different scientificresearches, betel leaf extracts or essential oil were described for its numerous beneficial functional properties, contributed by these bioactivecompounds. However, some health hazards may occur, when the leaf is consumed along withareca nut and tobacco. This review article providesan overview of the current status of betel leaf and its essential oil for its utilization as a bioactive ingredient in the food system.

3. RESEARCH METHODOLOGY

Objectives of the Study

1. To study the Socio-Economic Characteristics of Betel leaf cultivators in the study area.
2. To analysis the various activities of betel leaf cultivation in the study area.
3. To suggest suitable policy measure, improve the betel leaf cultivation in the study area.

Hypotheses

There is a significant relationship between respondents Betel leaf cultivation process and demographic variables.

Sample Design

Multistage stratified random sampling technique will be applied in the present study. A sample of 344 farmers will be collected from four different categorize namely Marginal Farmers (86) Small Farmers (86), Medium Farmers (86) and Large Farmers (86). In this study will be concentrated Amlarem Blocks in West Jaintia Hills District. There are 344 samples to be collected from Amlarem Blocks. It comprises that there are 43 villages were selected for the present study. Therefore, Amlarem Blocks consist of 344 samples consider the present study area.

Sample Size

The West Jaintia Hills District in Meghalaya consisted of 3 blocks. This study was carried out in Amlarem C&R.D Block only. Because this block Highly cultivated in Betal Leaf and other two block very megre cultivation. From the above mention blocks 43village

panchayats from the selected block is being selected. Further, 8 households have been identified from each village and the total numbers of samples for the present study are 344 as detailed below, by using multi-stage random sampling.

Data and Tools of Analysis

Statistical Package for Social Science (SPSS) have been used to insert the survey data after review and coding. Frequency tables were initially created to help explain the data's nature, and then analysis and tabulation utilising the appropriate research procedures were done. Frequency analysis, cross tabulation, descriptive analysis, correlation analysis and co-efficient variations aanalysis have also been carried out on the data, among other statistical methods used for data analysis and interpretation.

4. RESEARCH AND DISCUSSION

Table 4.1: Age Group and Type of farmers Percentage wise Distribution of Sample Respondents

S.No.	Age Group	Type of Farmers				Total
		Small Farmers (n=86)	Medium Farmers (n=86)	Marginal Farmers (n=86)	Large Farmers (n=86)	
1.	20-30 years	20 (23.3%)	17 (19.8%)	13 (15.1%)	16 (18.6%)	66 (19.2%)
2.	31-40 years	38 (44.2%)	45 (52.3%)	47 (54.7%)	46 (53.5%)	176 (51.2%)
3.	41-50 years	17 (19.8%)	15 (17.4%)	12 (14.0%)	14 (16.3%)	58 (16.9%)
4.	Above 50 years	11 (12.8%)	9 (10.5%)	14 (16.3%)	10 (11.6%)	44 (12.8%)
	Total	86 (100.0%)	86 (100.0%)	86 (100.0%)	86 (100.0%)	344 (100.0%)

Source: Computed

The above tables reveals that the age groups of small farmers, Out of 86 Age wise distribution of sample respondents, 23.3% of them belong to the 20-30 years age group, 44.2% of the respondents are 31 to 40 years age group, 19.8% of the respondents are 41 to 50 years age group and 12.8% of the respondents are above 50 years age group. It is understood from the results that small farmers group are dominated 44.2% of the sample group of respondents about 31-40 years of age. It is the least to the tune of 12.8 percent for the small farmers group of respondents about above 50 years of age. Therefore higher percentage of the respondents is in the age group of 31-40 years and medium farmers, Out of 86 Age wise distribution of sample respondents, 19.8% of them belong to the 20-30 years age group, 52.3% of the respondents are 31 to 40 years age group, 17.4% of the respondents are 41 to 50 years age group and 10.5% of the respondents are above 50 years age group. It is understood from the results that small farmers group are dominated 52.3% of the sample group of

respondents about 31-40 years of age. It is the least to the tune of 10.5 percent for the medium farmers group of respondents about above 50 years of age. Therefore higher percentage of the respondents is in the age group of 31-40 years. Further marginal farmers, Out of 86 Age wise distribution of sample respondents, 15.1% of them belong to the 20-30 years age group, 54.7% of the respondents are 31 to 40 years age group, 14.0% of the respondents are 41 to 50 years age group and 16.3% of the respondents are above 50 years age group. It is understood from the results that small farmers group are dominated 54.7% of the sample group of respondents about 31-40 years of age.It is the least to the tune of 14.0 percent for the medium farmers group of respondents about 41-50 years of age. Therefore higher percentage of the respondents is in the age group of 31-40 years. Also the large farmers, Out of 86 Age wise distribution of sample respondents, 18.6% of them belong to the 20-30 years age group, 53.5% of the respondents are 31 to 40 years age group, 16.3% of the respondents are 41 to 50 years age group and 11.6% of the respondents are above 50 years age group. It is understood from the results that small farmers group are dominated 53.5% of the sample group of respondents about 31-40 years of age.It is the least to the tune of 11.6 percent for the large farmers group of respondents about above 50 years of age. Therefore higher percentage of the respondents is in the age group of 31-40 years. On the whole, it is understood from the results that marginal farmers group is dominant in the sample group of respondents about 31-40 years of age. It is the least to the tune of 10.5 percent for the medium farmers group of respondents about above 50 years of age.

Table 4.2 Marital Status Group and type of farmers Percentage Distribution of Sample Respondents

S.No.	Marital Status Group	Type of Farmers				Total
		Small Farmers (n=86)	Medium Farmers (n=86)	Marginal Farmers (n=86)	Large Farmers (n=86)	
1.	Married	70 (81.4%)	79 (91.9%)	80 (93.0%)	78 (90.7%)	307 (89.2%)
2.	Unmarried	16 (18.6%)	7 (8.1%)	6 (7.0%)	8 (9.3%)	37 (10.8%)
	Total	86 (100.0%)	86 (100.0%)	86 (100.0%)	86 (100.0%)	344 (100.0%)

Source: Computed

Table 4.2 shows that the marital status of small farmers, Out of 86Marital Status wise distribution of sample respondents, 81.4% of them are married group and 18.6% of the respondents are unmarried group. It is understood from the results that small farmers group are dominated 81.4% of the sample group of respondents are married. It is the least to the tune of 18.6 percent for the small farmers group of respondents are unmarried. Therefore higher percent group of the respondents are married. Further medium farmers, Out of 86Marital Status wise distribution of sample respondents, 91.9% of them are married group

and 8.1% of the respondents are unmarried group. It is understood from the results that medium farmers group are dominated 91.9% of the sample group of respondents are married. It is the least to the tune of 8.1 percent for the medium farmers group of respondents are unmarried. Therefore higher percent group of the respondents are married. Also marginal farmers, Out of 86Marital Status wise distribution of sample respondents, 93.0% of them are married group and 7.0% of the respondents are unmarried group. It is understood from the results that marginal farmers group are dominated 93.0% of the sample group of respondents are married. It is the least to the tune of 7.0 percent for the marginal farmers group of respondents are unmarried. Therefore higher percent group of the respondents are married. Further large farmers, Out of 86Marital Status wise distribution of sample respondents, 90.7% of them are married group and 9.3% of the respondents are unmarried group. It is understood from the results that large farmers group are dominated 90.7% of the sample group of respondents are married. It is the least to the tune of 9.3 percent for the large farmers group of respondents are unmarried. Therefore higher percent group of the respondents are married. On the whole, it is understood from the results that marginal farmers group is dominant in the sample group of respondents are married. It is the least to the tune of 7.0 percent for the marginal farmers group of respondents are unmarried.

Table 4.3 Educational qualification Group and type of farmers Percentage Distribution of Sample Respondents

S.No.	Educational Qualification Group	Type of Farmers				Total
		Small Farmers (n=86)	Medium Farmers (n=86)	Marginal Farmers (n=86)	Large Farmers (n=86)	
1.	Illiterate	30 (34.9%)	21 (24.4%)	34 (39.5%)	25 (29.1%)	110 (32.0%)
2.	School Level	37 (43.0%)	44 (51.2%)	31 (36.0%)	38 (44.2%)	150 (43.6%)
3.	UG Degree	14 (16.3%)	17 (19.8%)	16 (18.6%)	16 (18.6%)	63 (18.3%)
4.	PG Degree	5 (5.8%)	4 (4.7%)	5 (5.8%)	7 (8.1%)	21 (6.1%)
	Total	86 (100.0%)	86 (100.0%)	86 (100.0%)	86 (100.0%)	344 (100.0%)

Source: Computed

The above table shows that the Educational status wise distribution of sample respondents, 34.9% of them are Illiterate, 43.0% of the respondents have to study School Level, 16.3% of the respondents are studying UG Degree and 5.8% of the respondents are studying PG Degree. It is understood from the results that Small farmers group is dominated by 43.0% in the sample group of respondents about school level. It is the least to the tune of 5.8 percent for the small farmers group of respondents about qualified PG Degree. So therefore a maximum of the respondents are school level. Also, in the case of respondents in

medium Farmers, Out of 86 Educational status wise distribution of sample respondents, 24.4% of them are Illiterate, 51.2% of the respondents have to study School Level, 19.8% of the respondents are studying UG Degree and 4.7% of the respondents are studying PG Degree. It is understood from the results that medium farmers group is dominated by 51.2% in the sample group of respondents about school level. It is the least to the tune of 4.7 percent for the medium farmers group of respondents about qualified PG Degree. So therefore a maximum of the respondents are school level. Further, in the case of respondents in marginal Farmers, Out of 86 Educational status wise distribution of sample respondents, 39.5% of them are Illiterate, 36.0% of the respondents have to study School Level, 18.6% of the respondents are studying UG Degree and 5.8% of the respondents are studying PG Degree. It is understood from the results that marginal farmers group is dominated by 39.5% in the sample group of respondents about illiterate. It is the least to the tune of 5.8 percent for the marginal farmers group of respondents about qualified PG Degree. So therefore a maximum of the respondents are illiterate. Also, in the case of respondents in large Farmers, Out of 86 Educational status wise distribution of sample respondents, 29.1% of them are Illiterate, 44.2% of the respondents have to study School Level, 18.6% of the respondents are studying UG Degree and 8.1% of the respondents are studying PG Degree. It is understood from the results that large farmers group is dominated by 44.2% in the sample group of respondents about school level. It is the least to the tune of 8.1 percent for the large farmers group of respondents about qualified PG Degree. So therefore a maximum of the respondents are school level. On the whole, it is understood from the results that medium farmers groups dominated the sample group of respondents about school level groups. It is the least to the tune of 4.7 percent for the medium farmers group of respondents about studying in PG Degree groups.

Table 4. 4 Community Group and type of farmers Percentage Distribution of Sample Respondents

S.No.	Community Group	Type of Farmers				Total
		Small Farmers (n=86)	Medium Farmers (n=86)	Marginal Farmers (n=86)	Large Farmers (n=86)	
1.	SC/ST	83 (96.5%)	80 (93.0%)	81 (94.2%)	84 (97.7%)	328 (95.3%)
2.	General	3 (3.5%)	6 (7.0%)	5 (5.8%)	2 (2.3%)	16 (4.7%)
	Total	86 (100.0%)	86 (100.0%)	86 (100.0%)	86 (100.0%)	344 (100.0%)

Source: Computed

Table 4.4 reveals that the community wise distribution of small farmers 96.5% are from the SC/ST and 3.5% are from the General case of small farmers respondents. The findings show that in small farmers the group that dominates is SC/ST responders, with 96.5% of the total. The General response rate is the lowest at 3.5 percent. As a result, the

SC/ST community makes up the majority of respondents. Further, out of 270 sample medium farmers respondents, distributed according to community, 93.0% are from the SC/ST and 7.0% are from the General case of medium farmers respondents. The findings show that in medium farmers the group that dominates is SC/ST responders, with 93.0% of the total. The General response rate is the lowest at 7.0 percent. As a result, the SC/ST community makes up the majority of respondents. Also, out of 270 sample marginal farmers respondents, distributed according to community, 94.2% are from the SC/ST and 5.8% are from the General case of marginal farmers respondents. The findings show that in marginal farmers the group that dominates is SC/ST responders, with 94.2% of the total. The General response rate is the lowest at 5.8 percent. As a result, the SC/ST community makes up the majority of respondents. Further also, out of 270 sample large farmers respondents, distributed according to community, 97.7% are from the SC/ST and 2.3% are from the General case of marginal farmers respondents. The findings show that in large farmers the group that dominates is SC/ST responders, with 97.7% of the total. The General response rate is the lowest at 2.3 percent. As a result, the SC/ST community makes up the majority of respondents. On the whole, it is understood from the results that large farmers group is dominant in the sample group of respondents of SC/ST groups. It is the least to the tune of 2.3 percent for the large farmers group of respondents about General groups.

Table 4. 5 Religion Group and type of farmers Percentage Distribution of Sample Respondents

S.No.	Religion Group	Type of Farmers				Total
		Small Farmers (n=86)	Medium Farmers (n=86)	Marginal Farmers (n=86)	Large Farmers (n=86)	
1.	Christian	58 (67.4%)	57 (66.3%)	64 (74.4%)	71 (82.6%)	250 (72.7%)
2.	Hindu (Local)	28 (32.6%)	29 (33.7%)	22 (25.6%)	15 (17.4%)	94 (27.3%)
	Total	86 (100.0%)	86 (100.0%)	86 (100.0%)	86 (100.0%)	344 (100.0%)

Source: Computed

The above table shows that the religion wise distribution of the respondents 67.4% are Christian and 32.6% are Hindu (Local)in the religion of the small farmers respondents. The findings show that the small farmers group dominates the sample group of respondents about Christian with a 67.4% rate. For the small farmers group of respondents, Hindu (Local) has the lowest response rate at 32.6 percent. As a result, the Christian group makes up a larger share of responders. Further, medium farmers,86 respondents in the sample who identified their religion, 66.3% are Christianand 33.7% are Hindu (Local)in the religion of the medium farmers respondents. The findings show that the medium farmers group dominates the sample group of respondents about Christian with a 66.3% rate. For the medium farmers

group of respondents, Hindu (Local) has the lowest response rate at 33.7 percent. As a result, the Christian group makes up a larger share of responders also in the case of respondents who live in marginal farmers,86 respondents in the sample who identified their religion, 74.4% are Christianand 25.6% are Hindu (Local)in the religion of the marginal farmers respondents. The findings show that the marginal farmers group dominates the sample group of respondents about Christian with a 74.4% rate. For the marginal farmers group of respondents, Hindu (Local) has the lowest response rate at 25.6 percent. As a result, the Christian group makes up a larger share of responders. Further, large farmers,86 respondents in the sample who identified their religion, 82.6% are Christianand 17.4% are Hindu (Local)in the religion of the large farmers respondents. The findings show that the large farmers group dominates the sample group of respondents about Christian with a82.6% rate. For the large farmers group of respondents, Hindu (Local) has the lowest response rate at 17.4 percent. As a result, the Christian group makes up a larger share of responders. So, it is understood from the results that marginal farmers group is dominant in the sample group of respondents who are Christian and had the lowest percentage regarding Hindu (Local) at 17.4 percent.

Table 4.6 House type and Type of farmers Percentage Distribution ofSample Respondents

S.No.	House type	Type of farmers				Total
		Small Farmers (n=86)	Medium Farmers (n=86)	Marginal Farmers (n=86)	Large Farmers (n=86)	
1.	Thatched	19 (22.1%)	21 (24.4%)	29 (33.7%)	36 (41.9%)	105 (30.5%)
2.	Tiled	20 (23.3%)	14 (16.3%)	10 (11.6%)	3 (3.5%)	47 (13.7%)
3.	Terraced	9 (10.5%)	8 (9.3%)	12 (13.9%)	10 (11.6%)	39 (11.3%)
4.	RCC	38 (44.2%)	43 (50.0%)	35 (40.7%)	37 (43.0%)	153 (44.5%)
	Total	86 (100.0%)	86 (100.0%)	86 (100.0%)	86 (100.0%)	344 (100.0%)

Source: Computed

Table 4.6 reveals that the religious wise occupy of small farmers, Out of 86House type wise distribution of sample respondents, 22.1% of them are living in Thatched, 23.3% of them are living in Titled, 10.5% of them are living in Terraced and 44.2% of the respondents are living in RCC. It is understood from the results that small farmers group are dominated 44.2% in the sample group of respondents about living in RCC. It is the least to the tune of 10.5 percentages for the small farmer group of respondents about living in Terraced. Therefore higher percentage of the respondents is the RCC house group. Further, in the case of respondents occupy at medium farmers, Out of 86 House type wise distribution of sample

respondents, 24.4% of them are living in Thatched, 16.3% of them are living in Titled, 9.3% of them are living in Terraced and 50.0% of the respondents are living in RCC. It is understood from the results that medium farmers group are dominated 50.0% in the sample group of respondents about living in RCC. It is the least to the tune of 9.3 percentages for the medium farmer group of respondents about living in Terraced. Therefore higher percentage of the respondents is the RCC house group. Also, in the case of respondents occupy at marginal farmers, Out of 86 House type wise distribution of sample respondents, 33.7% of them are living in Thatched, 11.6% of them are living in Titled, 13.9% of them are living in Terraced and 40.7% of the respondents are living in RCC. It is understood from the results that marginal farmers group are dominated 40.7% in the sample group of respondents about living in RCC. It is the least to the tune of 11.6 percentages for the marginal farmer group of respondents about living in Tiled. Therefore higher percentage of the respondents is the RCC house group. Further, in the case of respondents occupy at large farmers, Out of 86 House type wise distribution of sample respondents, 41.9% of them are living in Thatched, 3.5% of them are living in Titled, 11.6% of them are living in Terraced and 43.0% of the respondents are living in RCC. It is understood from the results that large farmers group are dominated 43.0% in the sample group of respondents about living in RCC. It is the least to the tune of 3.5 percentages for the large farmer group of respondents about living in Tiled. Therefore higher percentage of the respondents is the RCC house group. On the whole, it is understood from the results that medium farmers groups dominated the sample group of respondents about living in RCC house groups. It is the least to the tune of 3.5 percent for the large farmers group of respondents about living in Tiled house groups.

Table 4.7 Main occupation and type of farmers Percentage Distribution ofSample Respondents

S.No.	Main occupation	Type of farmers				Total
		Small Farmers (n=86)	Medium Farmers (n=86)	Marginal Farmers (n=86)	Large Farmers (n=86)	
1.	Agriculture Labour	28 (32.6%)	31 (36.0%)	20 (23.3%)	25 (29.1%)	104 (30.2%)
2.	Government Employee	11 (12.8%)	10 (11.6%)	12 (14.0%)	11 (12.8%)	44 (12.8%)
3.	Industrial Labour	8 (9.3%)	11 (12.8%)	10 (11.6%)	4 (4.7%)	33 (9.6%)
4.	Construction works	5 (5.8%)	4 (4.7%)	14 (16.3%)	10 (11.6%)	33 (9.6%)
5.	Agriculture	34 (39.5%)	30 (34.9%)	30 (34.9%)	36 (41.9%)	130 (37.8%)
	Total	86 (100.0%)	86 (100.0%)	86 (100.0%)	86 (100.0%)	344 (100.0%)

Source: Primary data

The above table shows that the occupation wise distribution of Small farmers, Out of 86 Main occupation wise distribution of sample respondents, 32.6% of them are Agriculture Labour, 12.8% of them are Government Employee, 9.3% of them are Industrial Labour, 5.8% of the respondents are Construction works and 39.5% of the respondents are Agriculture Main occupation. It is understood from the results that small farmers group are dominated 39.5% in the sample group of respondents about Agriculture Main occupation. It is the least to the tune of 5.8 percentages for the small farmers group of respondents about Construction works Main occupation. Therefore higher percentage of the respondents is the Agriculture Main occupation group. Further, in the case of respondents at medium farmers, Out of 86 Main occupation wise distribution of sample respondents, 36.0% of them are Agriculture Labour, 11.6% of them are Government Employee, 12.8% of them are Industrial Labour, 4.7% of the respondents are Construction works and 34.9% of the respondents are Agriculture Main occupation. It is understood from the results that medium farmers group are dominated 36.0% in the sample group of respondents about Agriculture Labour Main occupation. It is the least to the tune of 4.7 percentages for the medium farmers group of respondents about Construction works Main occupation. Therefore higher percentage of the respondents is the Agriculture labour Main occupation group also, in the case of respondents at marginal farmers, Out of 86 Main occupation wise distribution of sample respondents, 23.3% of them are Agriculture Labour, 14.0% of them are Government Employee, 11.6% of them are Industrial Labour, 16.3% of the respondents are Construction works and 34.9% of the respondents are Agriculture Main occupation. It is understood from the results that marginal farmers group are dominated 34.9% in the sample group of respondents about Agriculture Main occupation. It is the least to the tune of 11.6 percentages for the medium farmers group of respondents about Industrial LabourMain occupation. Therefore higher percentage of the respondents is the Agriculture Main occupation group. Further, in the case of respondents at large farmers, Out of 86 Main occupation wise distribution of sample respondents, 29.1% of them are Agriculture Labour, 12.8% of them are Government Employee, 4.7% of them are Industrial Labour, 11.6% of the respondents are Construction works and 41.9% of the respondents are Agriculture Main occupation. It is understood from the results that large farmers group are dominated 41.9% in the sample group of respondents about Agriculture Main occupation. It is the least to the tune of 4.7 percentages for the large farmers group of respondents about Industrial LabourMain occupation. Therefore higher percentage of the respondents is the Agriculture Main occupation group. On the whole, it is understood from the results that large farmers groups dominated the sample group of respondents about Agriculture Main occupation groups. It is the least to the tune of 4.7 percent for the medium farmers group of respondents about Construction works Main occupation groups. On the whole, it is understood from the results that large farmers groups dominated the sample group of respondents about below 4 family size groups. It is the least to the tune of 8.1 percent for the medium farmers group of respondents about above 7 family size groups.

Table 4.8 Best season for more income of betel leaf business and type of farmers Percentage Distribution ofSample Respondents

S.No.	Best season for more income of betel leaf business	Type of farmers				Total
		Small Farmers (n=86)	Medium Farmers (n=86)	Marginal Farmers (n=86)	Large Farmers (n=86)	
1.	Winter season	13 (15.1%)	13 (15.1%)	14 (16.3%)	8 (9.3%)	48 (54.9%)
2.	Autumn season	14 (16.3%)	16 (18.6%)	12 (14.0%)	22 (25.6%)	64 (18.6%)
3.	Summer season	46 (53.5%)	48 (55.8%)	51 (59.3%)	44 (51.2%)	189 (14.0%)
4.	Spring season	13 (15.1%)	9 (10.5%)	9 (10.5%)	12 (14.0%)	43 (12.5%)
	Total	86 (100.0%)	86 (100.0%)	86 (100.0%)	86 (100.0%)	344 (100.0%)

Source: Primary data

The above tables shows that the Best season for more income of betel leaf business of Small farmers, Out of 86 Best season for more income of betel leaf business wise distribution of sample respondents, 15.1% of them are prefer Winter season, 16.3% of the respondents are prefer Autumn season, 53.5% of them are prefer Summer season and 15.1% of the respondents are prefer Spring season of Best season for more income of betel leaf business. It is understood from the results that small farmers group are dominated 53.5% in the sample group of respondents are prefer Summer season of Best season for more income of betel leaf business. It is the least to the tune of 15.1 percentages for the small farmers groups of respondents are prefer Spring season of Best season for more income of betel leaf business. Therefore majority of the respondents are prefer Summer season of Best season for more income of betel leaf business. Further, in the case of respondents at medium farmers, Out of 86 Best season for more income of betel leaf business wise distribution of sample respondents, 15.1% of them are prefer Winter season, 18.6% of the respondents are prefer Autumn season, 55.8% of them are prefer Summer season and 10.5% of the respondents are prefer Spring season of Best season for more income of betel leaf business. Out of 86 Best season for more income of betel leaf business wise distribution of sample respondents, 16.3% of them are prefer Winter season, 14.0% of the respondents are prefer Autumn season, 59.3% of them are prefer Summer season and 10.5% of the respondents are prefer Spring season of Best season for more income of betel leaf business. It is understood from the results that marginal farmers group are dominated 59.3% in the sample group of respondents are prefer Summer season of Best season for more income of betel leaf business. It is the least to the tune of 10.5 percentages for the marginal farmers groups of respondents are prefer Spring season of Best season for more income of betel leaf business. Therefore majority of the respondents are prefer Summer season of Best season for more income of betel leaf business and large farmers, Out of 86 Best season for more income of betel leaf business wise

distribution of sample respondents, 9.3% of them are prefer Winter season, 25.6% of the respondents are prefer Autumn season, 51.2% of them are prefer Summer season and 14.0% of the respondents are prefer Spring season of Best season for more income of betel leaf business. It is understood from the results that marginal farmers group are dominated 51.2% in the sample group of respondents are prefer Summer season of Best season for more income of betel leaf business. It is the least to the tune of 9.3 percentages for the large farmers groups of respondents are prefer Winter season of Best season for more income of betel leaf business. Therefore majority of the respondents are prefer Summer season of Best season for more income of betel leaf business. On the whole, it is understood from the results that marginal farmers groups dominated the sample group of respondents are prefer Summer season of Best season for more income of betel leaf business. It is the least to the tune of 10.5 percent for the medium farmers groups of respondents are prefer Spring season of Best season for more income of betel leaf business groups.

Table 4.9 Co-Efficient of Correlation between respondent Betel leaf cultivation process and demographic variables

Demographic variables	N	Betel leaf cultivation process
Age	344	0.284**
Marital Status	344	0.266**
Educational Qualification	344	0.247**
Occupation	344	0.339**
Community	344	0.284**
Religion	344	0.249**
Type of family	344	0.288**
Status of Living House	344	0.277**
House type	344	0.320**

**. Correlation at 0.01 level (2-tailed)

Hypothesis: There is a significant relationship between respondents Betel leaf cultivation process and demographic variables.

Table shows, the co-efficient of correlation between respondents Betel leaf cultivation process and demographic variables and is found to be N=344, Age (r=0.284), Marital Status(r=0.266), Educational Qualification (r=0.247), Occupation(r=0.339), Community(r=0.284), Religion(r=0.249), Type of family (r=0.288), Status of Living House (r=0.277) and House type(r=0.320) at 0.01 level which indicates that there is correlation between respondents Betel leaf cultivation process and demographic variables. Therefore the stated hypothesis is accepted and it is concluded that there is positive and significant relationship between respondents Betel leaf cultivation process and demographic variables.

SUMMARY OF THE FINDINGS

The marginal farmers group is dominant in the sample group of respondents about 31-40 years of age. It is the least to the tune of 10.5 percent for the medium farmers group of respondents about above 50 years of age. The results that marginal farmers group is dominant in the sample group of respondents are married. It is the least to the tune of 7.0 percent for the marginal farmers group of respondents are unmarried. On the whole, it is understood from the results that medium farmers groups dominated the sample group of respondents about school level groups. It is the least to the tune of 4.7 percent for the medium farmers group of respondents about studying in PG Degree groups. As a result, the SC/ST community makes up the majority of respondents. On the whole, it is understood from the results that large farmers group is dominant in the sample group of respondents of SC/ST groups. It is the least to the tune of 2.3 percent for the large farmers group of respondents about General groups. So, it is understood from the results that marginal farmers group is dominant in the sample group of respondents who are Christian and had the lowest percentage regarding Hindu (Local) at 17.4 percent. Therefore higher percentage of the respondents is the RCC house group. On the whole, it is understood from the results that medium farmers groups dominated the sample group of respondents about living in RCC house groups. It is the least to the tune of 3.5 percent for the large farmers group of respondents about living in Tiled house groups. Therefore higher percentage of the respondents is the Agriculture Main occupation group. On the whole, it is understood from the results that large farmers groups dominated the sample group of respondents about Agriculture Main occupation groups. It is the least to the tune of 4.7 percent for the medium farmers group of respondents about Construction works Main occupation groups. On the whole, it is understood from the results that large farmers groups dominated the sample group of respondents about below 4 family size groups. It is the least to the tune of 8.1 percent for the medium farmers group of respondents about above 7 family size groups. Therefore majority of the respondents are prefer Summer season of Best season for more income of betel leaf business. On the whole, it is understood from the results that marginal farmers groups dominated the sample group of respondents are prefer Summer season of Best season for more income of betel leaf business. It is the least to the tune of 10.5 percent for the medium farmers groups of respondents are prefer Spring season of Best season for more income of betel leaf business groups.

CONCLUSION

The marginal farmers group is dominant in the sample group of respondents about 31-40 years of age. It is the least to the tune of 10.5 percent for the medium farmers group of respondents about above 50 years of age and 7.0 percent for the marginal farmers group of respondents are unmarried. Medium farmers group 4.7 percent the of respondents studying in PG Degree groups. The large farmers group is dominant in the sample group of respondents of SC/ST groups. The marginal farmers group is dominant in the sample group of respondents who are Christian and had the lowest percentage regarding Hindu (Local) at 17.4 percent. On the whole, it is understood from the results that medium farmers groups dominated the sample group of respondents about living in RCC house groups. The large farmers group 3.5 percent of the respondents living in Tiled house groups. Status of Living House ($r=0.277$) and House type($r=0.320$) at 0.01 level which indicates that there is

correlation between respondents Betel leaf cultivation process and demographic variables. Therefore the stated hypothesis is accepted and it is concluded that there is positive and significant relationship between respondents Betel leaf cultivation process and demographic variables.

REFERENCES

1. **Depisakinah, et, al, (2020)** Review of Traditional Use, Phytochemical and Pharmacological Activity of Piper betleL, Galore International Journal of Health Sciences and Research Vol.5; Issue: 3
2. **EndangSupraptiahet,al**, **(2021)** Utilization Of Green Betel Leaves (Piper Betle L) Extract As An Additive Material On Paper Soap Production, Atlantis Press, Atlantis Highlights In Engineering, Volume 95 Th FIRST T1 T2 2021 International Conference
3. **Moumita Nath and Pradip Debnath (2021)** Chemistry behind the Betel Leaves and Betel Quid: Their Health Benefits and Adverse Health Effect-a Review, Insights in Chemistry and Biochemistry ISSN: 2694-1708
4. **Dr. Dhirendra Kumar Jena (2021)**Betelvine Farming in Agricultural Economy: A Study of Bhograi Block in Odisha, IAR Journal of Humanities and Social Science *IAR J Huma Soc Sci*; Vol-2,
5. **HoihnuHauzel (2022)***The betel nut is an integral part of life in many north-eastern states,*Published: Monday 30 November -0001.
6. **Avdhoot Pandit, Prof. Dr. Abhijit Joshi (2022)**A Short Overview on Significance of Betel Leaf (Piper betle) And Its Applications, International Journal of Health Sciences and Research Vol.12; Issue: 11
7. **Dipak Nath (2022)** Involvement of tribal farm women in agricultural development in Meghalaya, The Pharma Innovation Journal 2022; SP-11(6): 2571-2573, www.thepharmajournal.com
8. **Team TNJ (2022)** What Makes Betel Nuts So Popular in the Northeast, The Northeast Journal
9. **Sangeetha Karunanithiet al. (2022)** A Review on Piper betle L.: Antioxidant, Antimicrobial, Extraction and Application in Food Product Development, Acta Scientific Nutritional Health, Volume 7 Issue 1.
10. **Samiran Das and ManjariBhattacharji (2023)** Climate Change and Agriculture in a Coastal Region: A Case Study of Betel Leaf Cultivation in Sagar Island, Kakdwip, South 24 Parganas