COMMERCIALIZATION OF AGRICULTURE IN PHEK DISTRICT, NAGALAND: A CASE STUDY OF CHAKHESANG TRIBE

A THESIS SUBMITTED TO NAGALAND UNIVERSITY IN FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF DOCTOR OF PHILOSOPHY

By

NEIKOLO PURO

Ph.D. Regd. No: PhD/SOC/00055

Under the Supervision of

DR. YAMSANI SRIKANTH

DEPARTMENT OF SOCIOLOGY

SCHOOL OF SOCIAL SCIENCES

NAGALAND UNIVERSITY

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(A Central University established by an Act of Parliament No.35 of 1989)
मुख्यालय : लुमामी, जुन्हेबोटो (नागालैण्ड), पनि कोड – 798627
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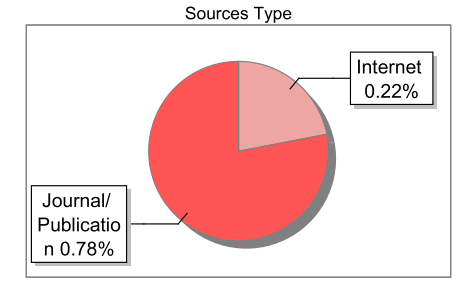

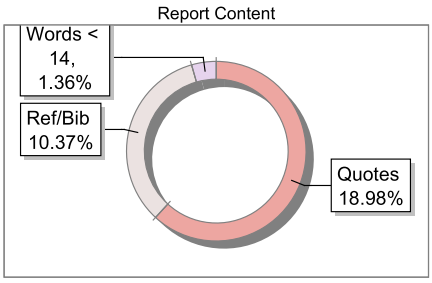

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(A Central University established by an Act of Parliament No.35 of 1989)
हिंदी विभाग (Department of Hindi)
कोहिमा परिसर, मेरिएमा, कोहिमा- 797004, नागालैंड, भारत
Kohima Campus, Meriema, Kohima- 797004, Nagaland
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Ph.D/M.Phil. Registration Number पीएच.डी/एम.फिल. पंजीयन संख्या	PHD/SOC/00055
Title of Ph.D thesis /M.Phil. Dissertation पीएच.डी थीसिस/एम.फिल. शोध-प्रबंध का शीर्षक	COMMERCIALIZATION OF AGRICULTURE IN PHEK DISTRICT, NAGALAND: A CASE STUDY OF CHAKHESANG TRIBE
Name & Institutional Address of the Supervisor/Joint Supervisor शोध-निर्देशक/सह शोध-निर्देशक का नाम व संस्थानिक पता	DR. Yamsani Srikanth Nagaland University
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I take full responsibility for whatever errors or shortcomings of the Thesis.

Neikolo Puro
Research Scholar

ABBREVIATIONS

AOA	Agreement on Agriculture
APMC	Agricultural Produce Marketing Committee
CCA	Community Conserved Area
CDR	Complex Diverse Risk-Prone
CGI	Corrugated Galvanised Iron
CO2	Carbon dioxide
CPO	Chakhesang Public Organization
DC	Deputy Commissioner
EIC	East India Company
FAO	Food and Agricultural Organization
GB	Gaonburas
GDP	Gross Domestic Product
GEF	Global Environment Facility
GSDP	Gross State Domestic Product
GVA	Gross Value Added
HYV	High-Yielding Variety
IARI	Indian Agricultural Research Institute
ICAR	Indian Council of Agricultural Research
ICT	Information and Communication Technology
IFS	Integrated Farming System
IK	Indigenous Knowledge
IOFS	Integrated Organic Farming System
ITK	Indigenous Technical/Traditional Knowledge
KCC	Kisan Credit Card
N+P+K	Nitrogen + Phosphorus+ Potassium
NABARD	National Bank for Agricultural & Rural Development
NEHR	North Eastern Himalayan Region
NEPED	Nagaland Empowerment of People through Energy Development
NER	North Eastern Region
NGO	Non-Governmental Organizations
NH	National Highway
NTFP	Non-Timber Forest Products
SHGs	Self Help Groups
SPSS	Statistical Package for Social Sciences
ST	Schedule Tribe
TEK	Traditional Ecological Knowledge

TRC	Terrace Rice Cultivation
UNDP	United Nations Development Programme
UNO	United Nations Organization
UP	Uttar Pradesh
VDB	Village Development Board
WCH	Western Chakhesang Hoho
WTO	World Trade Organization

GLOSSARY

Akezü	Friend
Akezüpile	Same-age women
Akhra	Best friend
Ale	Unknown girl
Alo	Unknown boy
Alu	Potato
Ama	Husband addressed by the wife's brother and male clan members
Amoe	Daughter-in-law
Ano	Brother's wife addressed by the brothers
Anu	A Child of a parent
Anyi	Paternal aunts
Apfü	Father
Apfüde	Father's elder brother
Apfüno	Father's younger brother
Apfüse	Grandfather
Apruo	Sister's brother
Apu	Maternal uncle
Ase	Husband addressed by wife's sisters and female clan members
Atepi	Sister
Atshikezu	Younger brother
Atsi	Nieces and Nephews of maternal uncle
Azu	Mother
Azukese	Maternal older aunts
Azuketsu	Maternal younger aunts
Azuse	Grandmother
Cheje	Religious rite
Chokri	Local dialect
Chükhe	Agro-forestry
Culi	Hot season
Cuthi	Cold season
Dao	Machete
Daru	Chemicals
Donashe	Tomato
Dothi	High Kicking
Ebe	Paddy

Ebu	Bamboo Basket Granary
Eda	First stage of Feast of Merit
Edisemi	Ancestor
Edzunu	Yam
Ehno	Soil
Ehza	Machete
Ekhulo	Terrace field
Ekhulo	Terrace field
Elicura	Shawl of Feast of Merit
Elo She	Paddy Transplantation
Eskhus	Squash
Etshube	Millet
Etshudonashe	Tree Tomato
Etshukhunibruh	Domestic animal waste
Etshumekarhu	Tapioca
Etshunye	Millet festival
Evudo	Ginger
Hamu	Pumpkin
Hazi	local brew
Jhum	Shifting cultivation
Kadzu	Land
Kapfhu	Spade
Karhu	Naga dal
Kecoru	Front door of a home
Kecü	Kitchen Garden
Kecuke	House of Feast of Merit
Kedaloh	Wet Terrace field
Kedo/ Khel	Colony
Kekhroke	Boys Dormitory
Keni	Perilla
Kenyi/Kenyu	Taboo
Kerehla	Bitter Gourd
Ketsholoh	Dry Terrace field
Kewuh	Rake
Keyike	Girls Dormitory
Kezupfu	warden
Kheza	Local dialect

Khuli	Irrigation channel
Khuthonye	Festival in July
Khuva	Green Onion
Kie	Home
Kobi	Cabbage
Kubatshe	Beans
Kudetshe	Brinjal
Kunu/Meno	Wrestling
Kutsamitshutshe	King Chilli
Kutsushu	Stone Pulling Monolith
Lekhu	Second stage of Feast of Merit
Lekhutshe	Bitter Egg Plant
Lezekro	Reciprocal Labor Exchange Group
Lezu	Local snack
Lhabou	Females inherited clothes and jewelry
Lutshile	Paddy Nursery Bed
Luza	Special headgear
Manye	Shame
Mapumo	An Assembly
Mekarhu	Sweet Potato
Mekrita	Maize
Melu	Jhum land
Meluloh	Jhum field
Menabe	Sticky rice
Menayeh	Mustard Leaf
Menipfu	Necklace
Metha	Fear
Mewu	Priest
Motor	Peas
Muchi	Yelling
Muso	Gourd Scented
Ngunye	Festival in February
Nodekhubvo	Thresher
Parhu	Winnower
Pavuno	Fire ash
Pfusemi	Clan
Pocu	Sesame

Qahsutshe	Sponge Gourd
Sukrunye	Festival in January
Teka	Windy season
Tengabe/merube	Plain rice
Tenyidie	Angami dialect
Terhu	Wet season
Thecy	Sickle
Thurinye	Festival in December
Tshele	Folk tune song
Tshemereh	Garlic
Tshukhe	Reserved Forest
Tshutshe	Green Chilli
Tukhanye	Festival in April
Turhinye	Festival in August
Tutho	Genna
Tutshehbe	Job's tear
Yongchak	Tree beans
Zabo	Water impounding
Zatho	Feast of Merit

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INTRODUCTION

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Introduction:

The most comprehensive process to denote how crop plants and domestic animals provide the global human population with food and other products is agriculture. The English phrase agriculture derives from the Latin *ager* (field) and *colo* (cultivate), which, when combined, signifies the Latin *agricultura*: field or land tillage. Nevertheless, the word has come to subsume a vast spectrum of activities that are integral to agriculture and have their descriptive terms, such as cultivation, domestication, horticulture, arboriculture, and vegeculture, as well as forms of livestock management such as mixed crop-livestock farming, pastoralism, and transhumance (Harris & Fuller, 2014). Any human activity, including survival, depends critically on agriculture's ability to consistently produce food and other resources for the world's expanding population.

According to Speeding (1996), agriculture is human entrepreneurship that produces food, fuel, fiber, and various other things, mainly using plants and animals under deliberate control. The science or practice of farming is called agriculture, according to the Oxford English Dictionary (2024). Agriculture is the systematic raising of useful plants and livestock under the management of man (Rimando, 2004).

“Agriculture” and “agricultural system” are commonly used to incorporate various aspects of producing plant and animal materials for food, fiber, and other materials. To narrow analysts, these are limited to just the cultivation of soil and plants. Nevertheless, for others, the terms include financing, processing, marketing, and distribution of agricultural products; production supply and service of farms and industries; and socio-economic, environmental, cultural, and political characteristics of the food and fiber system (CAESS, 1988). Since agriculture practices sociology, trade and international relations, technology, economics, politics, and environmental problems, including biology, it can be stated that agriculture is as social as agronomic and ecological. When understood broadly, agriculture operates under three distinct environmental frameworks: biophysical, socio-political, economic, and technological.

These three elements establish the general parameters that govern how people, communities, and governments participate in production, distribution, and consumption. These three categories of agricultural restrictions also offer a way to evaluate the circumstances surrounding sustainable agriculture.

As per Maslow (1954), reducing hunger and thirst is one of the basic needs necessary for human survival. Malthus (1798) asserted that population size increases geometrically and uncontrollably while food production grows only arithmetically. He further argues that a reduction in agricultural production will be expected if natural resources, mainly land, are not kept in sufficient supply despite population growth. Besides an economic contribution from food supply, society expects agriculture to provide more environmental and landscape services, water management, flood control, social cohesion, and other things. The reason is that agriculture still happens to be the far largest user of the land, but productivity reduces, and consumption increases in rural regions; regions must provide community, leisure, or economic support functions apart from being productive (Potter & Tilzey, 2005). Productivity enhancement is the only pathway to produce more to feed the growing population. This is why an Evergreen Revolution approach is exceedingly essential. An Evergreen Revolution needs the integration of frontier technologies like biotechnology and information communication technology with traditional ecological prudence. We should harness traditional wisdom and frontier science to shape our agricultural future (Swaminathan, 2006).

Agriculture scenario in India:

Indian agriculture is unique due to its diverse nature in climate and geography. India enjoys almost all types of climates, and due to distinct characteristics, it is divided into 20 Agro-climatic zones and 21 Agroecological zones (Singh et al., 2017). Agriculture is still the most significant sector accommodating (44%) workforce, contributing 35% of the national income and 14 % of the National GDP (Singh, 2020a). Agriculture and allied sectors include crops, livestock, forestry, fisheries, and aquaculture. Crops are further divided into field crops and horticultural crops. Crop (field and horticulture) contributes 60.2% to the total agricultural GDP and 9.63 % of the National GDP (Singh et al., 2020b).

Agriculture, the largest employment-generating sector, engaging the world's total half of the labor force, is still the backbone of rural India (Singh et al., 2015). The growth of agriculture shall reflect rural India vis-à-vis the country's development (Singh et al., 2017). Agriculture has played a significant role in India's economy throughout its history. It has been pivotal for the country's social and economic progress. Agriculture was the foundation of India's ancient civilizations, such as the Indus Valley Civilization and the Vedic period, enabling settled communities to thrive (Borah & Gogoi, 2021).

Since Independence, the Indian agrarian sector has developed significantly in increased output, yields, and area under various crops. It has gone through a green revolution, a white revolution, a yellow revolution, and a blue revolution. India is the world's top supplier of milk, fruits, coconuts, and tea. Second in wheat, vegetables, sugar, and fish, and third in tobacco and rice (Adhau, 2017). India is trying hard to get a $5.0 trillion economy status. Agriculture contributes $400 billion to the Indian economy, which is 2nd after China. To achieve this mammoth national target, all sectors of the economy, viz., agriculture, industry, and service, must perform outstandingly. To achieve this target, total exports should be $1.0 trillion annually, and agricultural and allied sectors should be 10 %. To reach $100 million in Agri-export, smart agriculture is pivotal to sustaining our products internationally (Singh et al., 2020b).

Agriculture's performance in the post-independence era was far better than in the pre-independence period. The land reforms initiated in the 1950s-1960s failed to break the land monopoly completely, but they placed some limitations on the power of landed elites in rural society. Moreover, in various parts of India, the tenancy reforms did benefit small and middle farmers (Dev, 2008). Agricultural output has increased as the government increased the investment in power, irrigation, rural development, and agrarian structural changes. For example, the average food grain output between 1950 and 1965 increased by 3 per cent annually, while agricultural output grew by 3.3 per cent. Also, the government fixed minimum support and procurement prices for several crops, which helped the farmers. The government also undertook price stabilization operations for many crops to protect consumers and producers from extreme price fluctuations (Ghosh et al., 2010). In the mid-1960s, the 'green revolution' was introduced based on certain selected regions and aimed at large cultivators who had

money to invest in new technologies, e.g., tractors, tube wells, electricity, new seeds, fertilizers, etc. A significant factor in determining agricultural investment is the ability of the farmers to obtain credits. Since the nationalization of commercial banks in India in 1969, the country has followed the 'social and development' banking policy. The banks emerged as important sources of finance for the agricultural sectors (Shetty, 2006). Also, during the 1980s, the government took the initiative to gradually diffuse technologies to other regions, especially into the semi-arid regions that comprise more than 40% of the land cultivated in total in India and also to other cultivators (Harriss-White & Janakarajan, 2004). As trade began to be liberalized, a significant change was seen. Statistics showed that seven million hectares of land cultivated for food grain was changed for cash crops by the late 90s, resulting in increased cash crop exports. The cultivation area expanded in the main crop areas of soybeans, cotton, horticulture, prawn farming, and sugar in coastal regions. As export bans were lifted, farmers looking to hike their incomes hastily tried to widen their cultivating areas and gain capital from traders. The cultivation of cash crops became the priority over millets. In Andra Pradesh and Maharashtra, hectares of rain-fed lands were transformed into cultivating cash crops (Government of India, 2013).

During the pre-reform period 1950-1990, agricultural growth rates were higher than population growth rates. Just before the launching of neoliberal reforms, i.e., 1980-90, agricultural output grew at 4 per cent annually, and India was self-sufficient in food and even exported rice and wheat. The agricultural growth has declined to about 1.5 per cent per annum with the changes in economic reforms. As a result, food grain availability decreased, and India began importing food grains at much higher prices than the domestic market. Over the decades, the contribution of agriculture and the allied sector to the national income has declined. For instance, from 44.8%to the GDP in 1972, it declined to 27.6% in 2000 (Siddiqui, 2015).

Following 61 years of Independence, the agrarian sector's support to the national income decreased from 50 per cent in 1950 to 18 per cent in 2007- 2008. Nonetheless, more than 60 per cent of workers are employed in agriculture today. Despite this, an important feature of agriculture worth noting is the growth of other sectors, and the overall economy depends on the performance of agriculture to a considerable extent. These factors make agriculture a crucial sector in the Indian

economy (Tripathi & Prasad, 2010). With its predominant rural base, India is considered one of the world's oldest and largest agrarian countries. The agriculture sector's achievements govern every aspect of the economy, polity, and majority of its population. In the Indian economy, agriculture continues to be the main driving force. The growth rate of 2.59 per cent per annum during the past three decades has been the performance of the agricultural sector. It has directly or indirectly employed more than 60 per cent of the population and contributes to about 17 per cent of the total GDP. Over the last few decades, Indian agriculture has registered an impressive growth. In 1950-51, the food grain production increased to 51 million tons (MT) and 250 MT in 2011-12, the highest ever since independence (Somashekhar et al., 2014). The agricultural management system determines the agroecosystem's properties, ultimately affecting the ecosystem's efficiency, productivity, stability, and sustainability (Sanchez et al., 2004). Labor-intensive and low-input ecological organic agriculture, which has stringent on-farm resource management, seems to be a promising and potentially sustainable agricultural system in India (Tiwari, 2003).

Agriculture helps to reduce hunger in the majority of developing nations. It first provides raw materials for the economy and food for people in need; then, it develops jobs for households that depend on food purchases. The National Agricultural Policy states that strengthening the conditions of female farmers and female laborers would also improve food security at the household level. This is because, generally, women spend most of their income on household expenditure, unlike men, which would help improve the nutrition of the children (Rao, 2005). The shift in the workforce from the agricultural to the industrial sector occurred in a very gradual process in the case of developed countries. Increasing jobs and farm incomes in the agricultural industry are preconditions to economic progress and industrialization. Therefore, with most people living in rural areas in most developing countries, agriculture is the most cost-effective and practical strategy to generate more jobs and raise personal incomes (Swaminathan, 1999).

Agriculture Scenario in Northeast India:

The Indian states of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura make up the North Eastern Himalayan Region (NEHR), and three northern districts, i.e. Darjeeling Jalpaiguri and Cooch Behar in West Bengal state. The total geographical area of this region is 2,62,180 Km2, and it shares about 4500 km of international border with five countries: Tibet, Bhutan, China, Myanmar, and Bangladesh. Despite making up around eight per cent of the country's overall land area, this region is home to a mere four per cent, i.e., 9.0 million, of the whole country's population. The region has distinctive landscape characteristics, i.e., hilly and rugged terrain comprising hills, plateaus, and plains to 60%, 12%, and 28%, respectively. The rivers are perennial to semi-perennial. These Northeastern states have huge natural resources, i.e., land, water, and climatic regimes that bless the region with evergreen dense forests, diverse fauna and flora. This region is an abode of tribal communities that inherit rich cultural, ethnic, social, and political diversity to the region and the country. The people in this region are innovative and have mastered the art of converting adverse landscapes and climates for their well-being over centuries. This region has global biodiversity hotspots that host a range of distinctive plant and animal species of global significance. For harnessing natural resources, the area offers enormous potential for exploitation, especially in agriculture and allied sectors, and human resources for fostering the area's growth, development, and economy (Anupam et al., 2022).

The economy of the Northeastern States is mainly rural and agricultural. The region offers scope for cultivating a wide variety of crops because of its diversity in topography, altitude, and climatic conditions. These products are mainly sold in local markets as primary produce without significant value addition. For the development of the agricultural sector, land-to-man ratio is an essential parameter. As the population increases, the average holding size has gradually decreased. The average land holding size in the Northeastern States is highest in Nagaland (6.92 ha) and lowest in Tripura (0.97 ha). The percentage of cultivable area over the geographical location is highest in Meghalaya (47.88%) and lowest in Arunachal Pradesh (3.60%). The Northeastern states are rich in Indigenous Technical/Traditional Knowledge (ITK). This knowledge consists of many facts, has helped farmers evolve many practices tested over long periods, and has proved beneficial. They depend entirely on locally available resources

and knowledge base to maintain crop and livestock productivity. It is used in weather forecasts, good seed germination, soil fertility management, soil and water management, management of plants and animals pests and diseases, post-harvest management, etc., which are still in vogue in organic agriculture, which are sustainable, eco-friendly, viable and cost-effective (Anupam et al., 2022). Assam takes the highest position regarding available cultivable areas and net sown areas. During 1970-71 and 1995-96, changes in cropping patterns were observed. This period is marked by the onset of the Green Revolution in the seventies, agricultural commercialization, and a tremendous increase in production due to the adoption of improved technology and yield-increasing strategies, the beginning of cash crops, and intensive cultivation practices (Hazarika, 2006).

The Northeastern region has two land tenure systems: (i) The government-administered revenue system operates in the plains and valleys of Assam, Manipur, Sikkim, and Tripura. (ii) The village-level customary land tenure system operates in Arunachal Pradesh, Meghalaya, Mizoram, Nagaland, and the hilly parts of Assam, Manipur, and Tripura. Plentiful rainfall, diverse soil types, and agroclimatic conditions have provided NER with an attractive horticultural and value-added product that can be sold domestically and internationally (Patel, 2013). The NER preponderance of small-scale farmers is common in the region's agricultural economies. The bulging proportion of marginal farmers trapped in traditional low-input agricultural practices is subject to economically unviable production systems. In addition, low and uncertain agrarian productivity due to vulnerability to floods, soil erosion, and heavy siltation, the worst form of 'hidden poverty,' lack of market opportunities, and remoteness and isolation, also expose them to high production risk and income risk (Binswanger & Barah, 1980). The significant contribution of agriculture and the allied sectors to the State Income remained meagre. Therefore, revitalizing economies by promoting growth and rebuilding the models for agricultural development is a great challenge. Given the coexistence of diverse ethnicities and geophysical, socioeconomic, and cultural factors, the issues of developmental deficiencies are more complicated and thus require more in-depth understanding and strategies for long-term economic solutions (Barah, 2007). Even after fifty years of planning, agriculture remains the main focus of our development strategy. The important fact remains that notwithstanding the Green Revolution, agricultural development remains lopsided – area-specific and crop-

specific. Given the recent population increase, the per capita availability of food grains has been declining, and food insecurity has become an endemic feature (Banerjee, 2004).

Agriculture in Nagaland:

For the Naga people in Nagaland, agriculture has always been and still is the foundation of their way of life. The Naga people employ over 73 per cent of their workforce in agriculture. The agricultural system, like the other world's tribal population, is a prototype, maintaining a linkage with people and nature. Through experiences, these traditional practices and linkages have been formalized, yet much has not been documented formally. Introducing non-traditional crops has gained popularity recently, converting traditional agriculture to small-scale commercial agriculture. However, the relationship between traditional agricultural practices and farming communities in preserving eco-biodiversity, organic production, regeneration, replication, and multiplication of indigenous plant species cannot be undermined. Transfer of knowledge of time-tested nature-friendly agricultural practices has survived only through oral tradition. Unless the practices are documented, knowledge of nature-friendly practices will die over time (Nakro, 2011).

Over time, food grain cultivation has occupied Nagaland's most prominent agricultural land. It occupied over 90% of the total land area cultivated in 1960, falling to 75% in 2012. The sad reality of agriculture in Nagaland is that 75 per cent of farmland used for food grain production does not lead to self-sufficiency. While land is used more for commercial crops, its growth rate has been negative. This calls for a serious reassessment of what the state should produce (Nienu, 2016). Subsistence and commercial farming are the two practices where the farmer performs subsistence agriculture for survival, and the people depend on him. On the contrary, commercial agriculture is an agricultural business wherein crops are grown, and cattle are reared to sell the produce in the market to earn money. Commercial farming, or agribusiness, is where crops in great demand are primarily produced. Massive capital investment is required for capital-intensive techniques, whereas subsistence farming is labor-intensive. In subsistence farming, mainly food grains like wheat and rice, fruits, and vegetables are grown; conversely, in commercial farming, cash crops and cereals are grown (Surbhi, 2017).

As per the Soil and Water Conservation Department Nagaland (2014), Project: Government of Nagaland-UNDP-GEF. The objective of the projects is to substantiate the livelihood of the communities that practice Jhum or shifting cultivation. This sector has enormous prospects for growth and potential to scale up for national and international markets. The marketing of agricultural produce in Nagaland is mainly unorganized; therefore, it is not possible to tap the market's full potential by local farmers and traders. The study carried out in Wokha, Mokokchung, and Mon districts over six months, from January to June 2014, found that inadequate marketing spaces and sheds are a significant problem where small farmers have to sell their produce locally. Price fluctuation is another cause for concern, mainly when products are sold outside the state, where the national demand and supply situation affects the prices. Poor infrastructure and transport facilities also cause damage to agricultural produce. In his study, Humtsoe (2013) described the state's soil as sandy loam and sandy clay loam, with pHs ranging from 4.5 to 6.0. Nagaland experiences North East monsoon rain in winter and South West monsoon rain in summer. Nagaland's economy also depends on forestry, cottage industry, and tourism, the primary source of which is agriculture. The economy's remarkable feature is that there are no landless farmers in the state. The state's economy is also brought about by the forest sector, where 33% of the forest area is divided into three groups: private, reserved, and protected. We also find cottage industries of pottery, weaving, and woodwork.

Nagaland Economic Survey (2023-24), brought out by the State's Department of Economics & Statistics, Nagaland, states that the mainstay of Nagaland's economy is agriculture, with more than 60% of the state's population in agricultural activities. Over the years, significant progress has been made in the production and productivity of food grains and crops. An economy is categorized into primary, secondary, and tertiary sectors. The economic activities based on natural resources such as agriculture, forestry, mining, and quarrying comprise the primary sector. The primary sector contributed 24.81% to the Gross State Domestic Product (GSDP) in 2023-24. The overall cultivated area, production, and yield of cereals, pulses, oilseeds, and commercial crops increased significantly in 2022-23 compared to 2021-22, which is expected to increase in 2023-24. During 2022-23, the total area increased by 54%, from 245710 hectares in 2021-22 to 378870 hectares. The area sown under fruits increased by 3.2 per cent, from 34232.27 hectares in 2021-22 to 35333.29 hectares in 2022-23,

and the production increased by 7.01 per cent. Regarding vegetables during 2022-23, the area under cultivation increased by 2.3 per cent over the previous year, and the production increased by 1.5 per cent. Concerning spices, the total area sown and production increased by 4.4 per cent and 6.2 per cent, respectively, in 2022-23 over the previous year. The state has made a remarkable achievement. However, ample avenues still exist for optimally harnessing the potential of the horticulture sector.

Conceptual Framework – Commercialization of Agriculture:

From the earliest human existence to the present modern world, agriculture has been the principal domain for the supply of food for human existence. Agriculture, a means of livelihood, has now grown into a source of earning and development. By commercialization of agriculture, we mean the production of crops for sale in the market rather than for family consumption. Surplus production is required for the marketing of agricultural products. In this study, "Commercialization of Agriculture" refers to the change in crop cultivation from subsistent to commercial farming. For example, from traditional paddy rice to cabbage and potato cash crop cultivation, from home garden fruit tree to Plum and Kiwi commercial farming.

The concept of agricultural commercialization can be classified into three hypotheses based on the extent of market orientation, the importance of monetization of inputs, and the terms of the inducement. Based on the extent of market orientation, the commercialization of agriculture refers to transforming from subsistence-oriented to market-oriented (Govereh & Jayne, 1999). Subsistence-oriented production refers to the self-contained and self-sufficient unit where all production is consumed, nothing is sold, and no consumer or producer goods and services are purchased from external sources. On the other hand, market-oriented production refers to production solely for the market. Thus, commercializing agriculture means that a cultivator does not grow crops for family consumption but for profit from market sales (Rao, 1988; Pingali, 2001).

The second classification grouped commercial agriculture into input and output. The cultivation of crops, where there is a shift from non-traded to traded inputs, is called input commercialization. Cow dung and green manure replaced chemical fertilizers such as potash, phosphate, and urea. Traditional tools and bullock energy replaced

power-operated tools, mechanical tractors, and threshers. Now, food nutrition sources are mostly purchased rather than acquired from home. According to Pingali (1997), agricultural commercialization covers more than marketing agricultural products. It includes decisions concerning product choice and usage based on profit maximization.

The third category is separated into genuine and forced commercialization. Commercial farming, voluntarily practiced to obtain surplus and grow agriculture and other sectors, is known as genuine commercialization. Distressed sales for compulsive demands, loan repayment, and fundamental survival are characteristics of forced commercialization, which is opposed to genuine commercialization. Therefore, in force commercialization, cultivation is not for financial gain but to repay debts (Kumbhar, 2009).

Bharadwaj borrowing from Marx presents several traits of increasing commercialization: the conversion of rent into monetary units, the replacement of crops sharing tenancy by cash rents, a greater degree of monetization of inputs and outputs, an increased area dedicated to cash crop production, a sharp rise in the number of landless laborers, etc., (Bharadwaj, 1985). Krishnaiah et al. (1991) posited that factors affecting the commercialization of agriculture are the intensity of cropping and irrigation, the average size of operational holding, the number of fertilizers (N+P+K) consumed, the area under HYV and plant protection, agricultural output, farm machinery and implements.

Theoretical Perspectives on Commercialization of Agriculture:

Schultz (1964) was the leading proponent of the conventional neo-classical theory. Schultz forcefully challenged the long-oversimplified proposition of the peasants' irrationality. Within the “traditional” agriculture limitation, he considered farmers logical and wanted to maximize their profits. Schultz is the leading defender of the idea that farmers in underdeveloped nations react promptly and efficiently to price changes. In his description of the agricultural practices of developing countries, Schultz finds that conventional agriculture does not lack efficiencies in the distribution of factors of production. It follows that farmers in traditional agriculture use their resources just as effectively as in developed agriculture (Adams, 1986).

However, Schultz's idea brought criticism from Popkin (1979) and Scott (1976). Scott argues the orthodox neoclassical profit-maximization formula and favors the sustenance incentive "safety-first" ethic. They proposed that the farmers' most important focus in the face of erratic food supplies was survival. Popkin places significance on the prudent farmers' constant efforts to develop their living standards by making short- and long-term investments and safeguarding them.

The neoclassical approach holds that agricultural practices are determined by relative pricing, which also impacts institutional and technological progress. Utilizing "free" commerce to obtain comparative advantage would increase productivity and benefit society. According to neoclassical theory, farmers are profit-maximizing individuals who are fully aware of their farms' inputs and outputs, working capital, and the interchangeability of inputs and outputs (Ellis, 1988). In summary, cultivators are supposed to maximize crop profitability, apply the least-crop production method, optimize production intensity based on economic calculations, and use the least-cost production approach. Farm production is, therefore, governed by the relative costs of different agricultural inputs and alternative outputs (Veron, 1999). By advocating for unregulated commerce in all circumstances, neoclassical philosophy disregards transaction costs. It also fails to consider whether trade between A and B, whether between individuals or regions, could worsen C's situation. In addition to a comparative advantage, there is also a relative disadvantage (Harris, 1991). Commercial agriculture grows due to trade liberalization, urbanization, and population and income growth, as asserted by Johnston and Mellor (1961).

According to Mellor, agriculture of an economy passes through three phases:

1. Traditional agriculture
2. Technologically dynamic agriculture- low capital technology and
3. Technologically dynamic agriculture- High capital technology

The amount of agricultural labor engagement is significantly influenced by output per unit area, often known as land productivity. Boserup (1965) is credited with groundbreaking research showing a correlation between agriculture labor engagement and productivity per unit area. The Ester Boserup theory states that humanity will develop new agricultural practices to support the population increase. She was the first

to claim that farmers are compelled by population pressure to develop better comprehensive land use practices to increase food production. Boserup argues that population growth is independent of food supply and that population increase is a cause of changes in agriculture.

The Chayanovian model put forward that subsistence farmers are reluctant to be involved in the market or modern technology due to fear of unfavorable results and the chances of hunger and bankruptcy (Timmer, 1997). According to Lipton (1968), risk minimization is the "optimal" and "rational" course of action for poor farmers who produce under uncertainty (like natural hazards, price fluctuations, social security, incomplete information, and political instability). The Theory of Induced innovation is a comprehensive economic model integrating technical and institutional transformation. As per this theory, the advancement of technology, related to institutional change, is determined by the availability of labor and land in a given society. Critics point out that this theory emphasizes economic forces as the primary drivers of institutional change and uses economic jargon (Hayami & Ruttan, 1985).

Neo-Marxist theory dwells on the reality of imperfect markets on the advancement of various social classes and their financial well-being rather than the impact of relative prices. It considered the entire political, social, and economic environment (mode of production) in which markets operate. A society's overall system of social and economic organization is referred to as its mode of production (capitalist and feudal mode of production). It consists of forces of production (material technology), social relations of production (social control over means of production), and the superstructure (cultural standards). Neo-Marxist theory shows that under the current exploitative rural relations of production in developing nations and the global economy, commercialization only creates exploitation and inequality because of its unique focus, technique, and ideology (Veron, 1999).

The New Institutional Economists is a new school of thought that has emerged. They have challenged economic theory for not taking transaction costs into account. This school contends that transaction costs – which significantly increase the exchange's costliness – have been overlooked by economic theory. This "New Institutional Economics," was first used by Williamson (1985). Kherallah and Kirsten

(2001) and Rendani (2005) then emphasized the application of "New Institutional Economics" to small-scale agricultural development. They stress that the key to economic performance is the transaction cost. The high cost of transactions, which undermines economic performance, is the main factor contributing to poor financial performance and poverty in third-world nations. There is unequal access to resources, knowledge, services, and profitable marketplaces due to small farmers' varying transaction costs. Thus, poor farmers cannot participate in the agricultural markets due to the high expenses associated with transactions and information. This school of thought advocates for the establishment of institutions.

Johann Heinrich von Thunen's Agricultural Location Theory was first introduced in 1826. The primary assumption of this model is that agricultural land use is formed as concentric circles around the central market; the latter consumes all the surplus production, which must be transported from the rural areas to the market. This model is a simple way to understand how transportation costs determine land use patterns. The theory deducted that farmers choose the location of their farms against the transportation costs of getting their products to market. The theory is often called the "transportation cost theory" (Von Thünen, 1966).

Five Agricultural Development Models:

Improving the material and social welfare of the people is the primary goal of agricultural development. For this reason, it is viewed as an integrated strategy to enhance the community's natural resources and the farmers' quality of life (Nwachukwul, 2008). Enhancing rural life, guaranteeing enough food, and providing farmers with a suitable income are all part of establishing sustainable agriculture development. It also calls for local knowledge and resource management to be respected and acknowledged (Udemezue & Osegbue, 2018). Consequently, key agricultural development components in developing countries include enhanced food security, social sustainability, productive capacity, and environmental and economic sustainability (European Commission, 2018). Thus, farmers must grow more food and earn more money to feed their families, send their kids to school, care for their health, and invest in their farms. This strengthens the local economy and creates a more stable environment for agricultural development (Udemezue & Osegbue, 2018).

According to Udemezue and Osegbue (2018), there are five general models of agricultural development: (1) the frontier, (2) conservation, (3) urban-industrial effect, (4) diffusion, and (5) high pay-off input models. Although each model has advantages and disadvantages, they are all deficient in some manner. The frontier model ignores the potential environmental harm while concentrating on extending agriculture into new regions. The conservation paradigm ignores the problem of raising productivity in favor of protecting the current agricultural land. The urban-industrial effect model considers how urbanization and industrialization affect agriculture but ignores the numerous variables that influence agricultural growth. The diffusion model aims to disseminate advanced materials and practices throughout the farming environment without taking socioeconomic factors leading to adoption. In contrast, the high pay-off input model examines the potential for increasing productivity through new inputs but ignores the affordability or accessibility of these inputs.

Many small-scale farms define the agricultural structure in the current study region and rarely engage in market trade. Thus, subsistence farming may be a barrier to expanding the rural economy. Commercializing subsistence farming could remedy this predicament. However, it is easier said than done, as several circumstances may influence the predominance of subsistence farming. Furthermore, subsistence farming may still play a key role in the welfare of rural households while not promoting much economic progress (Buchenrieder, 2007).

REVIEW OF LITERATURE

The following section discusses the literature on the research topic with a brief review. The collected literature is organized under various broad themes for clear understanding.

(a) Studies on culture and agriculture:

In this study, Singh et al. (2009) observed that agriculture is a way of life deeply interwoven with the Naga culture and tradition, which define the state's very aspect of the economy. Daugstad et al. (2006) stated that the relationship between cultural heritage and agriculture is of particular relevance for two reasons: On one hand, the combination of agriculture as an economic activity and system of land use, and on the other hand, cultural heritage involving conservation and limits on use. Cultural heritage

is also actualized through agriculture as a producer of collective goods besides food and fiber.

DeLind, & Bingen (2008) highlighted the essentials of the initial stages in re-establishing the connection between our farms and communities, such as farmers' markets, CSAs (Community Supported Agriculture), U-picks, farm-to-school initiatives, eat-local campaigns, and the various initiatives to foster and encourage their development. Srinivas (2011) believes the food system emphasizes consuming "in-season" agricultural and natural produce – mangoes and local greens in the summer, pumpkins during the wet monsoon, and root vegetables in the winter. Religious celebrations coincide with food cycles and sacred periods of the year frequently connected to food feasts and offerings to gods. India is a country where castes, class, family, kinship, tribe, religion, ethnicity, etc., are all indicated by the food that one consumes.

Gómez-Baggethun (2022) asserted that with the disappearance of unwritten languages, humanity is losing cultural wealth and a vast body of ancestral knowledge embedded in indigenous and peasant cultures. Traditional knowledge and resource systems of peasants in the 'underdeveloped' world, now labelled as archaic and unproductive, must be modernized and rationalized for progress and growth. Polanyi (1957) noted that markets eventually came to absorb all fundamental elements in economic activity, turning humans (as labor) and nature (as land) into commodities that could be freely sold and bought.

Jamir (2015) stated that Indigenous farmers always maintain a harmonious attachment to their land, which is intertwined with their social, cultural, and spiritual lives. Among the Nagas, land is understood as the primary source of life, and there is a strong relationship between people and the land. It is considered not only an object or property but a gift from God and thus sacred to them. It is considered holy as their ancestors lived and worked on the same land and handed it to them to pass on to future generations.

Justin (2013) commented that the prosperity of the tribal people depends on their linkage to the land's resources. Tribal culture describes itself as local rather than

universal, social rather than individual, learned rather than natural, historical rather than genetic, evolved rather than planned, distributed rather than centralized, and cultivated rather than coarse. Hence, preserving and promoting these cultures is vital to uplift the quality of tribal lives.

Martemjen (2017) mentioned that biodiversity is the total variety of life, including plants, animals, and other organisms on earth, which critically forms the basis of ecological stability and a life-supporting system for humankind. He argues that climate, topography, geologic history, and human and non-human disturbances influence the biodiversity of a particular place, region, or landscape. He explains that six biodiversity belts have been identified throughout the Nagaland state. Thus, the land and Nagas' social, religious, and economic sources are the foundation of life and biodiversity.

Watson et al. (2002) opine that long-term cultivation of many different types of crops in the same field suppresses insects, weeds, and pathogens by effectively breaking their life cycles. Therefore, carefully planned and diverse rotations are reported to moderate the incidence of pests and diseases in crops, which act as a cultural method of weed control.

Banks (2004) stated that from a farmer's perspective, the weight conservation biology places on wildlife may seem overly idealistic and naive, detached from economic and sociopolitical reality. These endeavors are two sides of the same coin, with a shared heritage in decades of population and community ecological theory and experimentation. Better integration of the two disciplines requires acknowledging their various goals and working to produce mutually beneficial outcomes. The best examples of this integrated approach result from carefully implementing sustainable agriculture practices that support biological conservation efforts via habitat amelioration or restructuring.

Lyson (2004) proposed "civic agriculture" as a broad category of food and farming activities to promote local consumption. These activities include farmers' markets, community kitchens, community-supported agriculture, and U-pick operations. They are part of a larger movement against the isolation, injustice, and

inequity fostered by neoliberalism, industrialism, and globalization. They are the results of innovative attempts made by people to reconnect with their community and reintegrate into its institutions and ideals.

Chakrabarti and Sarkar (1995) stated that humans are a resource, like any other resource base, and should be viewed from the proper perspective. One has no option but to consider culture an equally important input in economic development. Cultural solidarity eventually brings about group solidarity, which creates greater awareness—a necessary input for human resource development.

(b) Studies on agricultural practices in northeast India:

Dikshit and Dikshit (2014) claimed that slash-and-burn shifting cultivation, known locally as Jhum cultivation, is renowned in the Northeast region of India. Over a hundred thousand families are still farming, and the net sown area of about 12 per cent is under shifting cultivation. Lately, land used for shifting cultivation has been undergoing horticulture cultivation. Pulses, maize, and rice are important crops in the region. In Tripura, rubber plantations are becoming widespread commercial farming. In the Northeastern region, tea plantation is the primary activity. The authors argued that even better crops are damaged by frequent floods, resulting in low productivity in the region.

Ghosh et al. (2010) presented that rainfed monocropping farming in the northeastern Indian region is very insecure from an economic risk standpoint and low production. To maintain a sustainable and conservation-oriented production system in various terrain situations, a no-till system is an alternative to generate agriculture within its environment and overcome the imposed constraints of climate change and continuous input costs. Ghosh pointed out that Conservation tillage practiced in terrace upland, valley upland, and low-land situations ensured double cropping and improved farm income and livelihood in rainfed tribal areas.

Das et al. (2009) expressed that the Northeastern states of India are nestled in the globally recognized biodiversity hotspot and an ecoregion known for its abundant species diversity and endemism. Regarding its geo-ecological fragility and strategic location, it is expected to be highly prone to the consequences of climate change.

Environmental security and sustainability of the region are and will be greatly challenged by these impacts. The practices of agriculture that conserve natural resources and have the advantage of delaying the effect of stress should be given importance and encouraged. Integrated farming systems and watershed development with animal, fishery, and hedge row cropping should be practiced for soil and moisture conservation and nutrient recycling.

Goswami et al. (2012) asserted that shifting cultivation, also called slash-and-burn, poses a maximum environmental depletion. This cultivation is a known skill among farmers, as it comprises only a little expense for the cultivation. The cultivation is associated with the ecological, socio-economic, and way of life of small tribal farmers and is interwoven into their rituals. However, it considerably speeds up soil erosion and decreases biodiversity. Although, from an environmental point of view, slash-and-burn cultivation may not be cost-competitive, farmers considered the profits more from this cultivation than the other cultivations.

Barah (2007) pointed out that the congenial temperate climate is favorable to agriculture, but rather than converting these strengths, the weaknesses threaten the regional economies, which adversely affects livelihood. The emerging tribal farmers trapped in traditional agricultural practices are subjected to economically unviable production systems. In addition, lack of market opportunities, remoteness, and isolation expose them to high production risk and income risk. The resultant outcome is the unwanted cycle of low input, less productivity, and low income, a precursor to agrarian distress.

Chhetry and Belbahri (2009) posited that India's northeastern region has outstanding natural, cultural, and biological diversity, conserved by environment-friendly Indigenous knowledge of more than 120 scheduled tribes. It has a distinctive ethnicity, a wealth of native flora and fauna, and inquiring cultural practices with a repository for traditional knowledge and practices. Murthy et al. (2013) contended that Agroforestry and shifting cultivation practices are ecologically nutrient-conservative and primarily practiced by Northeast India, Orissa, and Maharashtra tribals.

Hazarika (2004) opined that the Northeastern Region reflects environmental and cultural diversity between the hills and the plains, yet there are also significant elements of continuity. The Northeast is one of the most bio-diverse regions in the world, where the Land to Man Ratio plays an essential parameter in the development of the agricultural sector. In many of the North-East States, the most important resource is the land, and for raising the region's overall farm production and productivity, the availability and management of land for agricultural activities is very crucial and essential.

Goswami (2006) stated that the practices of two types of agriculture, namely hill/Jhum and settled/plains agriculture, where the main objective is to examine the changes that have taken place in the agricultural sector in Northeast India. Many experts point out that Jhum cultivation has negatively impacted the tribal economy and hill ecology of the dominant tribal belts. This system is responsible for soil erosion, floods, climatic changes, and the destruction of many rare flora and fauna species.

Singh et al. (2021) stated that the Northeastern region of India exhibits tremendous potential for promoting organic farming. Low use of fertilizers and chemicals is common in the northeastern hill ecosystems, despite inherent nutrient deficits and supplementing these to harness better land, water, and crop productivity. A substantial increase in the soil's organic carbon content has been experienced, by the inclusion of legumes in the cropping system under organic management. Using the Integrated Organic Farming System (IOFS) concept, which includes sustainable businesses such as fisheries, duckeries, crops, and livestock, increased the overall productivity and income of the farmers in the system and guaranteed the production of high-quality manures. Zhen et al. (2014) claimed that applying manure plus bacterial fertilizers may help improve the degraded cropland soils by promoting microbial community structure and diversity.

Wani et al. (2017) described that northeastern regions provide ample opportunities for promoting organic farming because farmers use little or no chemical inputs due to poor resources, thereby reflecting its vast unexplored scope. However, significant barriers like yield reduction, soil fertility enhancement, integration of livestock, marketing, and policy, etc. arise at both macroscopic and microscopic levels,

making practically impossible the complete adoption of ‘pure organic farming’; rather, some specific areas can be diverted to organic cultivation and thus a blend of organic and other innovative farming systems is needed.

(c) Studies on Indigenous / Traditional Knowledge in Agriculture:

De, L. C. (2021) posited that Indigenous Technical/Traditional Knowledge (ITK) is a community, local and rural in origin. It is used in northeast India in weather forecasting, good seed germination, soil fertility management, water management, insect pests and diseases, processing, storage, fishing, etc. There are several Indigenous cultivation practices like the *Zabo* and Alder agriculture in Nagaland, wetland rice cultivation of the Apatani tribe of Arunachal Pradesh, large cardamom plantation in Sikkim, Bamboo drip irrigation in Meghalaya, traditional mixed cropping, etc. which are still in vogue in organic agriculture in NEH region which is sustainable, eco-friendly, viable and cost-effective.

Nene (1999) put forward that for farmers with limited resources to improve their living conditions, they must acquire effective farming methods that rely on inexpensive, readily available inputs in their area. For those relying on rainfall, the knowledge grown from ancient times can help their cultivation. Singh (2004) pointed out that crop-livestock mixed farming is traditional in India. Most traditional systems are highly efficient, self-sufficient, and sustainable. Combining livestock with crop production is an effective risk aversion mechanism developed from generations of farmers' experience in arid and rainfed areas. The system is a good example of recycling all farming byproducts and household waste with little dependence on outside resources. It gives an appropriate and sustainable approach for remote rural areas, where outside resources or services are accessible with great difficulty.

Mylliemngap (2021) stated that it is undeniable that TEK was developed by communities through many centuries by trial-and-error methods to conform to the local climate, topography, ecology, and socio-cultural relevance to the concerned Indigenous communities. Thus, there is a lot of room for development in this knowledge by combining it with scientific understanding to create sustainable agricultural systems for climate change adaptation and mitigation of impoverished mountain communities in the Himalayan region. Singh and Ahmed (2006) stated that Urbanization and

population pressure, a decrease in the Jhum cycle, reliance on monsoon rainfall, the prevalence of mixed crops, soil erosion, and global warming are some issues related to shifting farming. Nevertheless, the potential is to provide organic food, preserve biodiversity, and engage in socially acceptable mixed cropping.

Dkhar and Tiwari (2020) proposed that drawing from thousands of years of experience, the Traditional Ecological Knowledge (TEK) is shaped by the ecosystem of that place. It has to do with understanding how nearby natural ecosystems function and how to use them sustainably for the benefit of people. TEK is seen as the community's intangible legacy and intellectual property, passed down orally from one generation to the next. It is strongly held and can occasionally take the form of folklore, songs, stories, beliefs, cultural values, and customs.

Pimental (2006) opines that traditional ecological knowledge and wisdom are essential to the sustainability of agriculture. It uses site-specific and enhanced traditional varieties, minimizes disturbances, encourages the possible accumulation of soil organic matter, and supports biodiversity. This long-standing, site-specific agricultural method has a strong ecological base that supports its global adoption.

Aich et al. (2022) propounded that prominent traditional practices are intercropping, agro-forestry, cover cropping, crop rotation, organic composting, and integrated crop-animal farming. Traditional agriculture often creates a mosaic of different land uses by integrating soil, water, plant, and animal management at a landscape scale, which is maintained based on traditional knowledge by the local communities. Indigenous farming practices are varied, flexible, eco-friendly, and fruitful, but their means of subsistence are threatened by climate change. The benefits of traditional practices, as observed were increased agricultural and tree diversity which increases the change of CO2 to organic form, mitigating global warming, and also reducing the likelihood of pests, diseases, and crop failure by mixed cropping as it increases food diversity.

Nagi et al. (2023) claimed that Nagaland is a state with constructive agro-climatic conditions and prosperous bio-diversity of plants and animals. From the beginning of time, traditional methods of agriculture have been practiced. Different

tribes practice different farming methods viz, the Chakhesang and Angami tribes of Nagaland practice terrace paddy cultivation. The *Zabo* system is an excellent indigenous system of rice cultivation and harvesting rainwater practiced by farmers in Phek district, Nagaland. The Jhum cultivators of Phek and Kohima, plant traditional crops and Alder trees in the Jhum fields. As our ecology and environment face severe sustainability issues today, the great need arises to view sustainable and environmentally friendly innovations drawing upon knowledge of traditional practices.

Murry & Lalruatsangi (2019) opined that in the Northeastern states of India, tribal farmers have curated many indigenously alternative farming techniques that have evolved through their skills of suitability in their locality. These methods have been appreciated for their significant sustainability and efficiency. Without much dependence on external inputs and the very judicious utility of locally available resources, many of these indigenous farming methods are practiced by the Naga people, as they consider it their way of farming life. This opens the potential for overcoming various loopholes and constraints caused by Jhum cultivation, which is a constant practice in the state of Nagaland as well as the majority of hilly states in India.

Pandey et al. (2021) asserted that sustaining the natural resource base and augmenting the productivity of tropical systems necessitate developing a comprehensive understanding of the complex crop species diversity and their potential uses in traditional agroforestry systems. It shows that the Traditional Agro-Forestry System is much more diversified than the Settled Cultivation System. Apart from cereals, millets, and pulses, the upland tribes grow a variety of horticultural crops on shifting cultivation land. The existing food system can be backed up and strengthened by a plethora of underutilized indigenous and traditional crops, otherwise called orphan crops.

Zhimomi and Dutta (2023) posited that Indigenous populations have successfully used traditional methods for food grain production and conservation using locally accessible resources. Indigenous structures are less expensive, more environmentally friendly, and locally available, they also safeguard the grain and pose no health risks. Despite all obstacles, Indigenous farmers have successfully demonstrated their cognitive abilities by skillfully employing available natural

resources to handle the storage problem effectively. Farmers in almost every North Eastern state store food grain in the kitchen, allowing the smoke from the firewood to penetrate and prevent insects from infesting the grains. Cow urine, neem leaf, custard apple leaf, dry tobacco leaf, and datura leaf are used as bug repellent.

Jeeva et al. (2006) stated that by applying indigenous agricultural methods, farmers can manage the present requirements with the preservation of natural resources and also benefit future generations. Traditional agriculture though applicable to local food, is not for mass production. The gap between the current science and age-old practices can surely be bridged by the identification and utilization of such indigenous knowledge from the elderly people of rural tribals.

(d) Studies on the role of technology in agricultural practices:

Vandana and Gitanjali (2002) pointed out that with the onslaught of new technologies for agriculture production, the commercialization of agriculture is taking place rapidly, boosting demand for pesticides, fertilizers, and high-yielding seed varieties. A food system should be seen as a chain where supplying inputs, viz., seeds, fertilizers, insecticides, pesticides, irrigation pumps, power/diesel, etc., lie at one end of the chain, and farming or producing food by the farmers or the primary food producers, make up the middle. At the other end of the chain are postharvest operations, which include processing, storing, shipping, and delivering to final customers.

Edward (2021) stated that farmers, who practice smart farming are increasing their revenues by utilizing the newest machinery and innovative technologies. Various agricultural equipment, including tractors, threshers, chaff cutters, tillage machines, and irrigation pumps, were eventually added as technology developed. The farmer boosts his yields by using automated agricultural equipment and contemporary resources. According to Mylliemngap (2021), market forces and industrialization have caused a slow transition from subsistence to commercial agriculture in Northeastern India, which resulted in a change from traditional to intensive agriculture and cash crop monoculture. As a result, fewer local crop types are being grown, and the traditional ecological knowledge that goes along with them is vanishing.

Mellor (1966) proposed strategies for transforming traditional farming into commercial farming. Examining traditional peasant agriculture, its incentives, workforce, marketing strategies, investments, and reaction to innovation, this study explores various ways agriculture might contribute to the overall goals of economic advancement. Land clearance, price fixing, transportation, education, imports and exports, urban center congestion, agricultural machinery, labor mobility, consumer goods as incentives, village governments, the many impacts of US grain exports, and the import of technicians are some other issues that are studied.

Amanor and Iddrisu (2021) discussed the major shift in agricultural mechanization. Medium-sized farmers have made large investments in tractors, adopted agricultural mechanization, and hired these medium-sized farmers to plow their fields for smallholder farmers. This introduces a new paradigm for agricultural transformation, where mechanization and medium-sized farmers serve as, drivers of agricultural commercialization.

Borah et al (2021) described that the Green Revolution in the 1960s boosted agricultural productivity by adopting high-yielding crop varieties, fertilizers, and pesticides. The increased food production and self-sufficiency which had resulted from this, set the stage for commercialization. globalization, trade liberalization, and the growth of the food processing sector in recent decades have all pushed farmers to serve commercial markets. Better integration into domestic and international supply chains was made possible by the use of contract farming and agribusinesses.

Peterson and Hayami (1973) observed that technical change is typically described as a production function or a productivity index. The technical change raises output per unit input viewed through a productivity index. It alters the production function's parameters or creates a new function in the context of a production function. Technical advancement in this instance might be seen as an upward movement in the production function. It is crucial to understand that changes in the quality of the inputs are necessary for shifts in a production function or changes in output per unit of input. It can be considered as a reference to adding new technology to the physical capital input.

Glover et al. (2019) propounded that developing and spreading new technology is essential for increasing productivity, sustainability, and resilience of small-scale farming systems. The new technology flows and spreads through a sequential accumulation of decisions by many individual adopters. Adoption involves a rather simple, transactional substitution whereby newer and better ones displace existing techniques, artifacts, and practices. The concept of adoption also fits harmoniously with induced innovation theory, in which new technology is developed in response to resource scarcity and adopted because it increases efficiency or intensifies the use of resources, resulting in an improved production function.

Tembo (2008) expressed a need to realize the potential of communication technology (ICT) for farmers and agricultural role players to achieve agriculture development. the contribution of agriculture to rural development is highly dependent on the generation and delivery of new agricultural technologies. Most new technologies (computers, mobile phones, and television) are information-intensive. In the last decade, the dramatic changes happening in the ICT world have made a human impact and agriculture is no exception.

(e) Studies on the role of Women in Agriculture:

Susmita Das (2006) stated that women are the invisible and unrecognized backbone of agriculture in any South Asian country, including India. The significance of their role can be measured not only by their high participation in farm and non-farm activities in rural areas but also by their intimate connection to rural customs, traditions, and values. Despite their round-the-clock activities, when it comes to their participation in the economy, their work often gets unrecognized and thus goes unrecorded, whether women who work as agricultural laborers or farmers have access to the market outside their villages.

Trivedi (2022) observed that seed banks to conserve and circulate the indigenous varieties of seeds are created by women farmers. With the help of these seed exchanges and produce, community farming ensured everyone, including widowed and others with limited resources, had food security. The connection of women farmers to the market, and empowering them politically to be a part of the village council through the development of formal institutions such as the Women's Society proved beneficial,

thus significantly contributing to the decision-making processes. The process of community development has also made it possible for the younger generation to receive traditional knowledge through programs and festivals.

Meares (1997) pointed out that women have traditionally made up the majority of those involved in agriculture. In addition to providing family food, they engage in significant agricultural work, producing commodities for both internal and international markets. Given that agriculture mostly relies on biological processes, farmer's attitudes toward the production process differ from those of farmers in other types of capital production. Most participants in and contributors to the gender-specific agricultural vision, goals, and activities are men. The distinctive and important contributions that women make to the farm and family are not formally recognized or addressed by the sustainable agriculture movement.

Pearl (2003) stated that government and institutional systems usually overlook the significance of women's access to natural resources. women's access to or control over resources is by no means guaranteed. Even though women own less than two per cent of all land, agricultural output increases significantly when they have access to land and technology.

Boo & Wiersum (2002) described that natural disasters and the decline in the supply of forest products have disproportionately impacted women. Women and children collect firewood, animal dung, fallen leaves, and other forest products. In addition, women are typically in charge of caring for their families' sheep, goats, and other domestic animals.

Atmis et al. (2007) claimed that farmers' perceptions of life quality are socially influenced by gender construction. The participation in the sustainable agriculture movement in turn is affected by this social construction. Traditional gender roles are differently ascribed to men and women. Women's access to natural resources has been restricted as a result, creating political, cultural, and economic restrictions, women's engagement is further limited by their lower literacy and educational levels. The instances are the exclusion of women from decision-making and no meeting invitation or expectation of presentation from women.

(f) Studies on challenges of small farmers in marketing:

Upender (1990) stated that the poor, illiterate farmer took his small produce to the markets where he was forced to confront powerful and organized traders who invariably exploited and cheated him in many ways. Thus, agricultural marketing may be said to be infested with more of an unsatisfactory and exploitative type of marketing.

Pauline Alila (2006) stated that fruits and vegetables are incredibly susceptible to deterioration due to their high moisture content, especially under tropical conditions. These losses result in poor returns to the growers and increase the cost of raw materials, ultimately affecting the consumer.

Pranab Baishya (2006) presented that agriculture differs from industry in many respects. One of the crucial differences is that land is the most essential factor of production in agriculture. Under such circumstances, the option for the producers of crops to move closer to an established market disappears completely. Thus, the alternative necessity of taking markets closer to the agricultural producers arises. An efficient marketing system for agricultural produce, therefore, becomes imperative.

Yano, K., & Lanusosang, T. (2013) described that, due to the open market system, the agricultural commodities that flow into the market in large quantities are at much cheaper rates and are drowning the native commodities. In the late 90s, the government encouraged the people to grow cash crops such as coffee, ginger, turmeric, sugarcane, etc., but no proper management and the absence of industries to convert the raw materials into profitable products caused the participants to a severe loss of income.

Neog, A. K. (2006) presented that market access, domestic assistance, and export competition concerning the agriculture sector are the three primary components (pillars) of the WTO Agreement on Agriculture (AOA). It also talks about how trade in agriculture is vital to the world's poor, but its policies work against people with low incomes. The poor rely on agriculture for their livelihood, the prominence of poverty is more common in rural areas, and how farmers in industrial countries earn above-average incomes.

(g) Studies on Agriculture and Sustainability:

Numerous studies have emphasized the significance of social and institutional elements in promoting and realizing sustainable agriculture. Pretty (1995) thought that group dynamics and the backing of local institutions were two prerequisites for sustainable agriculture. Gafsi et al. (2006) opines that "ecologically sound agriculture requires change not only at the farm household but also at the level of the institutions in which it is embedded"

Siddiqui and Shilpa Chohan (2015) mentioned that the United Nations Food and Agricultural Organization (FAO) defines Land Use Planning as "a systematic and iterative procedure carried out to create an enabling environment for sustainable development of land resources which meets people's needs and demands. It assesses the physical, socio-economic, institutional, and legal potentials and constraints for optimal and sustainable use of land resources, and empowers people to make decisions about how to allocate those resources". As per the FAO, land use planning should be a decision-making process that "facilitates the allocation of land to the uses that provide the greatest sustainable benefits." It is based on the socio-economic conditions and expected population developments in and around a natural land unit.

Altieri (1995) states that sustainable agriculture capitalizes on the holistic management of below-ground interactions rather than off-farm inputs (i.e., a trademark of industrial agriculture) to achieve efficiency and resilience. Therefore, it is a farming practice based on ecological principles, i.e. the relationships between organisms and their environment. Allen et al. (1991) claimed that sustainable agriculture creates the least ecological disturbance, fits well on socio-economic, ecological, and ethical grounds, and has the potential to feed the world.

Malézieux (2012) observed that ecological agriculture has been identified as ecological organic agriculture because it considers nature a template for food production. Therefore, agricultural management practices promoting agroecosystems to achieve potential efficiency similar to the natural ecosystems can be called sustainable agriculture. Singh et al. (1989) stated that the importance of microorganisms in soil fertility and as bio-control agents has been marginalized in industrial agriculture

due to high inputs of agrochemicals. Soil microorganisms act as both a source and sink of plant nutrients.

(i) Studies on Commercialization of Agriculture:

Pingali (1997) propounded that economic growth, urbanization, and a decrease in the agricultural labor force led to the growth of agriculture commercialization. The need to provide Asia's fast-growing cities also serves as a trigger for the transformation of the food production system. The broadening of diverse marketed products at the national level also forces regional and farm-level specialization. Upland areas with upgraded market infrastructure tend to shift from subsistence crops to a variety of commercial activities, as their soils are comparatively less prone to erosion. These include horticulture, dairy, cattle ranching, tree crops, and commercial maize production.

Mahaliyanaarachchi and Bandara (2006) contended that agriculture will inevitably be commercialized worldwide. The commercialization process in agriculture is affected by several factors. Market liberalization and expansion, urbanization, a rapid increase in demand for food, the rapid growth of economies in both developing and developed countries, the introduction of new technologies, decreasing in the farming population, liberalized and open economic policies, bilateral and multilateral economic agreements, developed infrastructure facilities in farming areas and government agricultural policies are all contributing factors to the fast-growing nations. Most of the nations are shifting in farming practices toward commercial agriculture. Their main target is future market opportunities since agricultural extension is a key aspect of agricultural production.

Cazzuf et al. (2017) stated that the key factors underlying smallholders' heterogeneous market participation are differential asset endowments and access to public goods and services facilitating market participation. dissimilarities in transaction costs among households also play a significant part in determining market participation. Every household has to invest certain money and time in search of available marketing options, and if these costs are high enough, an invariant of the quantity transacted may prevent market participation altogether. In contrast, a shortage of liquidity resulting

from an absence of alternative income sources and credit can occasionally compel households to sell rice to raise cash for other non-food expenses.

Goletti et al. (2003) argue that commercialization is a complex process involving different dimensions and degrees. The process consists of moving from low to high degrees of commercialization along different dimensions. Factors affecting commercialization include effective institutions, improved infrastructure, knowledge management, adequate incentives, stakeholders' initiatives, and a conducive and enabling environment. It describes the lack of an efficient value chain network as the primary obstacle to commercialization. A value chain is the entire set of operations needed to develop a product or service, carry it through intermediate manufacturing stages, and then deliver it to customers. Successful commercialization will require shifting from a supply-driven to a demand-driven approach.

Von Braun et al. (1991) presented that the commercialization of the rural sector is considered a cornerstone of successful economic development. It allows increased participation of individuals and households in the domestic and international exchange economy. Realizing comparative advantages is supposed to benefit not only individual rural families but also the agrarian sector and the whole economy. It describes an individual's or a household's economic transactions with others. The transaction may relate to agricultural produce, indicating that a certain proportion of a farm's output is not produced for subsistence but for sale. All these transactions will not only enable a rise in a family's or an individual's income, but they may also improve the nutritional situation. Thus, as the increased sale of produce, purchase of inputs, and off-farm employment occurs voluntarily, and insofar as the responsibilities and preferences within a household ensure the sharing of gains, commercialization can be expected to contribute to the household's food security.

Rahut et al. (2010) propounded that increased market integration and commercialization of traditional agriculture in the Himalayas is part of a development strategy toward growth and a better standard of living. A sharp population growth brought extensive land use changes, mainly through the extension of agrarian land and widespread deforestation. As the World Development Report, 2008, suggests, achieving the Millennium Development Goals and rescuing people from extreme poverty depends

on increasing agricultural output and displacing people from agriculture. Therefore, it is critical to improve production and value addition in agriculture through commercialization. Commercialization allows increased participation of individuals and poor households in the domestic and international exchange economy, resulting in higher average farm incomes and lower farm income inequality.

Wiggins et al. (2011) propounded that whenever villages have been connected to urban or overseas markets, smallholders have produced surpluses for them, prompting remarkable transformations in rural economies. The opportunities to engage with markets for small farmers are increasing, making questions that arise about smallholder commercialization all the more critical. Most small-scale farming commercialization occurs within existing farming systems, within existing land tenure forms, carried out by households using their labor, and governed by longstanding norms about who does what and with what reward. Changes are often small and incremental, although they may form part of a series of small steps that eventually add to substantial changes in the farming system.

Barrett (2010) asserted that agricultural and rural transformation processes usher in increased agriculture productivity and commercialization, involving economic diversification and accelerated economic growth. For stimulating smallholder market participation and agricultural and rural transformation, the evidence suggests that interventions aimed at facilitating smallholder organization, reducing inter-market commerce cost, and, perhaps especially, improving poorer households' access to improved technologies and productive assets are central to stimulating small-holder market participation and escape from semi-subsistence poverty traps.

Sharma et al. (2019) claimed that agricultural productivity was expected to feed the teeming industrial workforce through forward and backward linkages with industry while providing markets for industrial outputs. Today, agricultural development is not merely seen as a vehicle for supporting industrialization, but also as a mode of inclusive growth, pro-poor economic development, food security, and environmental sustainability. This is more so in emerging nations, where a significant part of the working population still resides in rural areas and depends on agriculture for its livelihood. Poor farmers have historically lurked along the fringes of the agricultural

sector, and agricultural commercialization is increasingly being discussed as a potential pathway out of intra-sectoral income equality for these smallholder cultivators.

Patnaik (2012) stated that capitalism is the reason for the current shift in cropping patterns in emerging nations. Overemphasis on export-oriented crops in 20 years has brought a decline in crop output in China and India. Previously, non-perishable products such as tea, coffee, jute, sugar, cotton, grains, and hardwood were the only crops grown in developing nations specifically for export. However, the perishable goods that emerging nations produce, such as fruits, vegetables, and flowers, have become the European consumer basket today.

Aregu et al. (2010) opine that while designing development interventions for supporting market-oriented agricultural development, taking into account gender differences is crucial in terms of accessing technologies and services. Providing access to breeds and varieties that serve a dual purpose for home consumption and sale in the market is also relevant. Access to credit is critical to using some modern technologies, but it often acts as a barrier for women and people with low incomes. Consequently, they tend to get left out of the technology development process. Gender roles and relationships influence the division of work, resource usage, and distribution of production profits between women and men. It was noted that even though men appear to control decision-making, they usually consult their wives, and women strongly influence the outcome.

Todaro and Smith (2015) asserted that if development is to take place and become self-sustaining, it will have to include the rural areas, in general, and the agricultural sector, in particular. Diversified or mixed farming is a stage where the staple crop no longer dominates farm output. New cash crops, such as fruits, vegetables, coffee, tea, etc., and simple animal husbandry are established. These new activities can take up the slack in farm workloads during times of the year when disguised unemployment is prevalent. Diversified farming can also minimize the impact of staple crop failure and provide security of income previously unavailable. Farmers learn from each other when valuable new crops and techniques are introduced locally. This facilitates the diffusion of new technologies.

Pingali (2010) stated that smallholder-led output growth is being touted as the vehicle for poverty reduction in the least-developed countries. For emerging economies like China and India, strategies for smallholder inclusion in agricultural commercialization and reducing the growing gaps between urban and rural incomes have motivated a renewed interest in agriculture development. The food policy has to be restructured and modified to the emerging trends that developing countries are facing and at the same time, ensure that it reflects the stage of the renovation process that the country is in. Concerted action towards enhancing food security, especially through the growth of agricultural production is crucial in the quest for income growth and economic development for countries at the low end of the transformation process. Improvement in the productivity of smallholder agriculture entails enhancing food security in rural areas. First, household nutrition and labor performance improved by enhancing local food supplies. It broadens participation in market-led growth in the long term. It not only facilitates market operation and improves research communications but encourages and strengthens the use of natural resources and rural institutions

Dukpa & Ezung (2020) presented that vegetables are essential and part of a person's daily diet; they also play a vital role in contributing to the National and farmer's income. India's superiority in vegetable productivity provides immense opportunities for revenue generation and exports. India is the world's second-largest producer of fruits and vegetables, after China. Agricultural marketing is considered successful if farmers can sell their produce for a fair price. Farmers' living standards rise as a result of effective agricultural marketing. Farm food is moved from the producer to the end users through agricultural marketing. All operations, including gathering, sorting, processing, preserving, shipping, and financing, fall under the category of agricultural marketing. The agricultural marketing system creates a link between the farm and non-farm sectors (Dastagiri et al. 2013).

Kumar (2020) contended that the development of agriculture will assist in the elevation of farmers and benefit a greater proportion of marginal farmers who are either directly or indirectly involved in agriculture as consumers. Enabling the tiny and marginal farmers through education, reforms, and development will ensure a far better, more efficient, and strengthened Indian agriculture. The motivation of new models in

production and marketing, alongside creating awareness and imparting education to small farmers, will empower the world and, more importantly, improve the economic status of poor farmers. Therefore, smallholder agricultural growth and development are critical for poverty alleviation, food security, and improving social and economic development in underdeveloped and developing countries (Pingali et al., 2019)

Birthal et al. (2006) stated that agricultural diversity is one of the many routes to agricultural development, the market demand for high-value food goods, like fruits, vegetables, milk, meat, and fish has surged both domestically and internationally. It is because of the continued market liberalization and globalization that both domestic and international markets are integrating. Due to its hospitable agro-climatic conditions, which encourage the growth of a variety of seasonal and off-season fruits, vegetables, flowers, spices, and aromatic and medicinal plants, the NER has the potential to quickly transit from the current subsistence to commercial agriculture through agricultural diversification. With extremely low usage of agrochemicals, by and large, it is organic, and there is a high-value agriculture in the region. The low use of agrochemicals is an opportunity for the region to encash the growing market for organic foods in Western countries. Besides, there are also opportunities in the domestic market, especially among high-income segments.

Fernandes and Pereira (2005) claimed that in northeast India, more recently, state agencies like the agriculture department, soil and water conservation department, development block, rubber, and coffee board have played an important role in promoting commercial crops. This transition is encouraged by individual orientation too. In northeast India, to meet children's education needs, the Angami farmers of Nagaland have adopted new crops as second crops. In the northeast, one of the best examples of government policy on changing cropping patterns was observed in Mizoram. Following the government's easy availability of highly subsidized PDS rice, farmers in Mizoram stopped cultivating paddy and started growing cash crops. Besides, as youth stayed in the urban areas and could not continue the jhum cultivation anymore, old farmers gave up rice cultivation (Goldsmith, 2006).

Birthal (2010) propounded that because the northeastern region of India has rich land, an abundance of water, and a temperate climate, hill agriculture has a great deal

of potential to expand and improve farm incomes, food and nutrition security, rural poverty, and the region's overall economic growth. Due to the dominance of small landholder farmers in the agriculture sector, over three-quarters of the land holdings in the northeastern region are smaller than or equal to two hectares, the primary form of agriculture in this area is rainfed farming. However, the environment is suitable for growing a variety of crops, particularly horticultural crops. The majority of the states have diversified their agriculture to include high-value products including fruits, vegetables, spices, and sauces. A chance to boost farm revenue, create jobs in rural areas, and quicken agricultural expansion is to diversify from lower-value to higher-value crops.

Kadirvel et al. (2020) presented a huge gap in market forces concerning agricultural produce and livestock in the NER. Shortages in food grains, fish, and eggs have also been reported. The region suggests a tremendous potential for capitalist ventures due to the shortage of agricultural products in this sector. The NER shares international boundaries with South Asian (Bangladesh, Bhutan) and Southeast Asian countries (China, Myanmar). This renders immense potential for border trade and export. The existing India-Myanmar-Thailand trilateral highway also facilitates access to the fast-growing potential markets of Southeast Asia. The availability of exportable resources and the region's strategic situation provide enormous potential to transform the NER into a thriving international commercial hub of agro-based products.

Ram et al. (2012) stated that the Northeastern area of India is home to rich natural resources and a fusion of diverse, beautiful people and cultures. Northeast India has all the necessary components to develop into a commercial hub. Due to the conversion of priceless irrigated agricultural lands for non-agricultural uses, such as residential homes, commercial and industrial buildings, and the subdivision and fragmentation of holdings, the amount of land available per person is decreasing every day. Thus, no single farm business can satisfy the small and marginal farmers' increasing needs for food and other requirements. A wise combination of cropping systems with related businesses like fruits, vegetables, flowers, dairy, poultry, duckery, piggery, fishery, sericulture, etc., appropriate to the given agro-climatic conditions and socioeconomic status of the farmers should be chosen to create additional employment and income for the small and marginal farmers under rainfed and irrigated conditions.

Longkumer (2021) opines that Agricultural marketing is a significant means for farmers and traders to meet their ends and increase their productivity. A proper agricultural marketing system means the availability of correct marketing information, storage, grading, price, planning, proper marketing infrastructure, and better transportation facilities without the support of intermediaries. An efficient marketing system in Nagaland is necessary to help sustain the economy and the layman involved. Most villagers have house gardens and farms, so a surplus of vegetables is to be sold by those villages that organize weekly bazaars in their respective villages. With the scope of agriculture widely expanding in the State, farmers are opting to cultivate vegetables and other allied agricultural farming. So, the growth of agriculture depends directly on an efficient agricultural marketing system.

Kumar and Konyak (2024) presented that horticulture and floriculture play pivotal roles in the agricultural landscape of Nagaland, offering immense potential for economic development and diversification of agricultural practices. With its potential to increase farm incomes, provide nutritional security, and reduce dependence on traditional shifting cultivation (jhum), Horticulture has become a focal point of agricultural diversification in Nagaland. On the other hand, floriculture adds a new dimension to agricultural methods by providing prospects for high-value products and export possibilities. Both sectors have enormous potential to raise farmers' standard of living and advance the state's economy.

Kikon (2017) posited that one strategy for achieving steady growth and a greater income level in the rural economy is through farm diversification towards commercial crops. Changes in demand-side factors such as economic growth, per capita income, fast urbanization, and eating preferences are causing a shift in cropping patterns. High-value crop diversification has been viewed as a possible tactic in recent years to support agricultural growth, boost farm revenue, create jobs, and make use of the comparative advantage in growing high-value crops unique to a certain location. Profit maximization has become the primary objective in the shift from consumption-oriented production to a market-oriented production system. At present, Nagaland farmers are producing a surplus to commercialize certain crops like potatoes, pulses, ginger, etc. Apart from food grains, horticultural crops are mainly produced.

Sema et al. (2009) propounded that Nagaland, supported by the government for commercialization in the state is known for its potential to grow a wide range of horticultural crops. The livelihood of the farmers can substantially be improved through this cultivation. In addition, by default, pineapple has been organically cultivated. Many farmers have shifted from paddy cultivation, improving their livelihood to a great extent as progress has been made in cultivation and commercialization. Horticultural crop cultivation has overtaken the age-old practice of Jhum cultivation, which is much more lucrative, thereby improving the livelihood security of the rural poor.

Chirhah and Baruah (2019) presented that Horti-cultural farming in Nagaland seems important as it contributes significantly to developing the rural economy. It might be said that Nagaland produces more fruit than other crops like legumes, grains, etc. For the farmers of Enhulumi village in the Phek district of Nagaland, Plum cultivation has been a good source of income. It has helped the cultivators to finance their child's education, buy household commodities, look after the family members, etc. The community is developing and expanding as a result of this nurture. Due to inadequate processing and poor post-harvest management, a significant amount of fruit was also wasted and destroyed at every stage of the value chain. Fruit processing is therefore a significant economic sector that raises farmer earnings and lowers post-harvest losses.

Sashimatsung (2022) stated that most of the rural farmers in Nagaland have recently shifted their focus to horticulture and other high-value crops that provide more revenue for the government. Many rural households rely on agricultural production as their primary source of income. Therefore, the agricultural sector needs to commercialize farming. A key factor in increasing household food security and lowering rural poverty is farmers' market involvement. Nagaland continues to lag in terms of marketable surplus and market participation despite, agricultural market expansion and the slow structural change.

Statement of The Problem:

Agriculture is a significant contributor to the state's economy in Nagaland. However, the price of agricultural products has remained unchanged, although the cost of growing all crops has been rising rapidly. A significant amount of post-harvest losses occurs, and the market glut poses the uncertainty of prices. These factors have reduced

farm income to a great extent. As the 2011-12 employment data of Nagaland state shows, 61 per cent of the workforce is engaged in agriculture; thus, most people in Nagaland, in a big way are dependent on agricultural produce. Nagaland state has a high ratio of land per person per capita. It is amongst the highest in the country. Each family owns the land and there is no need for land leasing and rent, which accounts for a considerable cost to the farmers in other parts of the country.

A long-term development trajectory shows that countries move slowly from the agricultural sector to the industrial sector and then to the service sector. Nagaland state skipped the industrial development stage, jumping from farming to service sectors without developing the agricultural industry. This has the undesired effect of not only the irony of insufficient food in the state but also unemployment as there is an absorption gap of workers in the industrial sector. Thus, the state has a dual economy – an undeveloped agriculture sector with a thriving service sector. This is where the focus on the state's internal resources arises. The land is mostly forest with little wasteland, almost all areas being arable. Thus, the state is witnessing a trend of small-scale commercial farming among the farmers.

As we have seen, the dynamics around Nagas' conservation discourse and resource-based subsistence farming practices revolve around land over which shifting cultivation is practiced. It is thus essential to understand the land ownership system in Nagaland, which is unique and different from other states. This sociological study of the commercialization of agriculture among the Chakhesang tribe of Nagaland aims to understand the process of agricultural change and commercialization. The research not only considers the commercialization of agriculture but will surely bring in varied facts about the differences between traditional and modern agriculture practices. It aims to find the factors responsible for peoples' inclination towards commercialization and its socio-economic impact on the indigenous tribal community of Chakhesang Nagas.

Significance of Study:

It can bridge a vital gap in the contemporary world of globalization and indigenous traditions concerning agricultural practices if done with an insider perspective. The findings of this research will undoubtedly serve as valuable data in the service of the government, NGOs, entrepreneurs, youths, and society in general for

better undertakings in the critical analysis of the development of agriculture, especially in Nagaland and specifically in boosting farmers and unemployed youth for commercial agriculture.

Objectives:

1. To explore the traditional practices of agriculture among the Chakhesang tribe.
2. To examine the process of commercialization of agriculture.
3. To explain the factors contributing to the commercialization of agriculture and its prospects and challenges.
4. To understand the socio-cultural and economic impact of the commercialization of agriculture on Chakhesang Naga society.

Research Questions:

- What are the traditional agricultural practices in the Chakhesang community?
- What are the major crops cultivated?
- What is a cultural significance in agriculture?
- What are the customary laws about agriculture and land management practices?
- What are the Indigenous practices involved in traditional agriculture?
- What are the factors promoting the commercialization of agriculture?
- What crops are cultivated for commercial farming?
- What are the land tenure practices observed in commercial farming?
- What is the organization of agriculture production involved in commercial farming?
- How does commercialization benefit small-holding households?
- Does commercialization increase or decrease social equality and equity?
- How do women contribute to agriculture in the Chakhesang Community?
- What motivated the farmers towards commercial farming?
- Are the farmers satisfied with commercial farming?
- What is the role of market availability in commercial farming?
- Does commercial farming affect the status of a farmer in the community?
- Does commercialization lead to the degradation of the environment?
- What are the challenges and opportunities of commercial farming?

Study Area:

The universe of the study was among the Chakhesang tribe of Nagaland. The tribe is divided into two groups known as *Chokri* and *Khezha*. The name "Chakhesang" was created as an acronym from the names of three tribes: the *Chokri*, *Khezha*, and *Sangtam*. For all practical purposes, the selected area will be in 7 administrative circles of Pfutsero, Phek Sadar, Chizami, Sakraba, Razeba, Khezhakeno, and Zuketsa in Chakhesang tribe, where agriculture plays the most crucial part in the socio-economic growth of the region.

Nagaland state is in the northeastern region of India, in the easternmost state of the country bordering Arunachal state in the north, Manipur in the south, Assam in the west, and Myanmar in the east. There are sixteen districts in Nagaland. There are two tribes, Chakhesang and Pochury, in the Phek district. Chakhesang people mainly speak two dialects, *Chokri* and *Khezha*, apart from other dialects like *Sapu* and *Sumi*. Data were collected from villages of the four ranges of the Chakhesang tribe, namely the Sakraba range, Chizami range, Razeba range, and Pfutsero range.

The Chakhesang community lives in the hilly, sloppy area of the Phek District of Nagaland state, India. The area is mountainous, and its food sources are farming and forest products like fisheries, timber, and bamboo. It was formerly a biodiverse farming method comprising kitchen gardens, terrace rice culture, and shifting cropping. So, agriculture is the primary source of livelihood and economy, and bioresources are naturally available in and around the villages. Every village has its natural forest cover, and almost every clan conserves a forest area. Every household cultivates and has a land of its own. The farmers do indigenous farming, but small commercial farming has also risen recently.

Figure 1.1. Map of the Study Area:

Map of India Map of Nagaland Map of the study area: Phek District

Research Methodology:

The research study used both qualitative and quantitative methods, which were exploratory and analytical.

A) Source of Data Collection:

1. Secondary Source: Secondary data were collected from books, journals, magazines, newspapers, articles, reports of previous research, relevant publications, websites, etc., which are related to the problem of the study.

2. Primary Source: Primary data were collected through in-depth personal interviews, participant observation methods, and focus group discussions from 280 households of eighteen villages and four towns through fieldwork.

B) Sampling Framework:

For the present study, 18 villages and four towns are selected based on range, geographical terrain, diversity of crops, and level of commercialization. From these villages, 280 households were selected proportionately based on simple random sampling. The details of the study villages and the number of households selected are mentioned in the table below (Table 1.1).

Table 1.1. Sampling Framework of the Study Area:

Range	Village	Number of Households
Chizami	1. Chizami	15
	2. Sumi	08
	3. Thetsumi	16
	4. Enhulumi	15
	5. Mesulumi	11
Sakraba	6. Pholami	16
	7. Sakraba	14
	8. Gidemi	08
	9. Porba	17
Razeba	10. Zhavame	17
	11. Zelome	15
	12. Tsupfume	18
Zuketsa	13. Khezhakeno	18
	14. Kami	13
	15. Lasumi	13
	16. Leshemi	13
	17. Lekromi	14
	18. Zapami	14
Towns	1. Chizami Town	06
	2. Sakraba Town	05
	3. Razeba Town	06
	4. Pfutsero Town	08
Total	18 villages/4 towns	280

Techniques of Data Collection:

A direct participant observation technique was used to get first-hand information and real-life experiences for the research, which were added with still photography.

The primary data was collected from 280 households from eighteen villages and four small towns, and a household survey of the Chakhesang tribe was used to form the basis of the study. Each household was administered a semi-structured interview schedule with closed and open-ended questions. It covers details on demography, occupation, land ownership, income level, cultivated crops, and agriculture production organization. Several case studies were documented to understand the transition from traditional to modern forms of agriculture and the perception of farmers on the commercialization of agriculture and its impact on their socio-economic life in the

community. The researcher also used observation techniques to gain in-depth knowledge of various activities involved in agriculture, from sowing to marketing the crops cultivated by the farmers. Extensive fieldwork is carried out to collect empirical data about farming practices from different villages and government officials from the region, constituting a significant part of the methodology adopted for the study. With the help of the Statistical Package for Social Sciences (SPSS), data was examined for descriptive statistics (such as percentages and frequencies).

Data Analysis:

The gathered data were carefully and thoroughly examined for validity and completeness. Village-wise data and the findings were separately scrutinized and checked. Quantitative and qualitative data were processed systematically, classified, computed, and presented in tabulation form, meaningfully interpreting the research study.

Chapterization of the study:

This study is organized into six chapters that are in alignment with its objectives. The first two chapters are introductory, with the literature review and the profile of the Chakhesang tribe. The next three chapters are based on the data collected from the study area. The final chapter is the summary of the main findings and policy implications.

The first chapter titled Introduction, provides the context for the study, the agriculture scenario in India, Northeast India, and Nagaland. It incorporates the conceptual framework of the commercialization of agriculture and the review of literature, which are organized under various broad themes. It includes the statement of the problem of the research, the significance of the study, research questions, objectives, research methodology adopted, the technique of data collection, data analysis, and the thesis chapterization.

The second chapter details the ethnographic profile of the Chakhesang tribe. It begins with a brief history of the tribe and the profile of the Phek district. It provides the socio-cultural aspects of the tribe, the farming system, categories of land holding, rights on traditional land, customary laws, and village administration.

The third chapter deals with the traditional agricultural practices of the Chakhesang tribe. An overview of the Indigenous knowledge, culture, and land, types of land ownerships, agriculture, and social status, agricultural land, and empirical data on traditional agriculture, cropping pattern, crop production, agriculture tools used, role of family members in traditional agriculture, role of women in agriculture and pre- and post-harvest management are presented in this chapter.

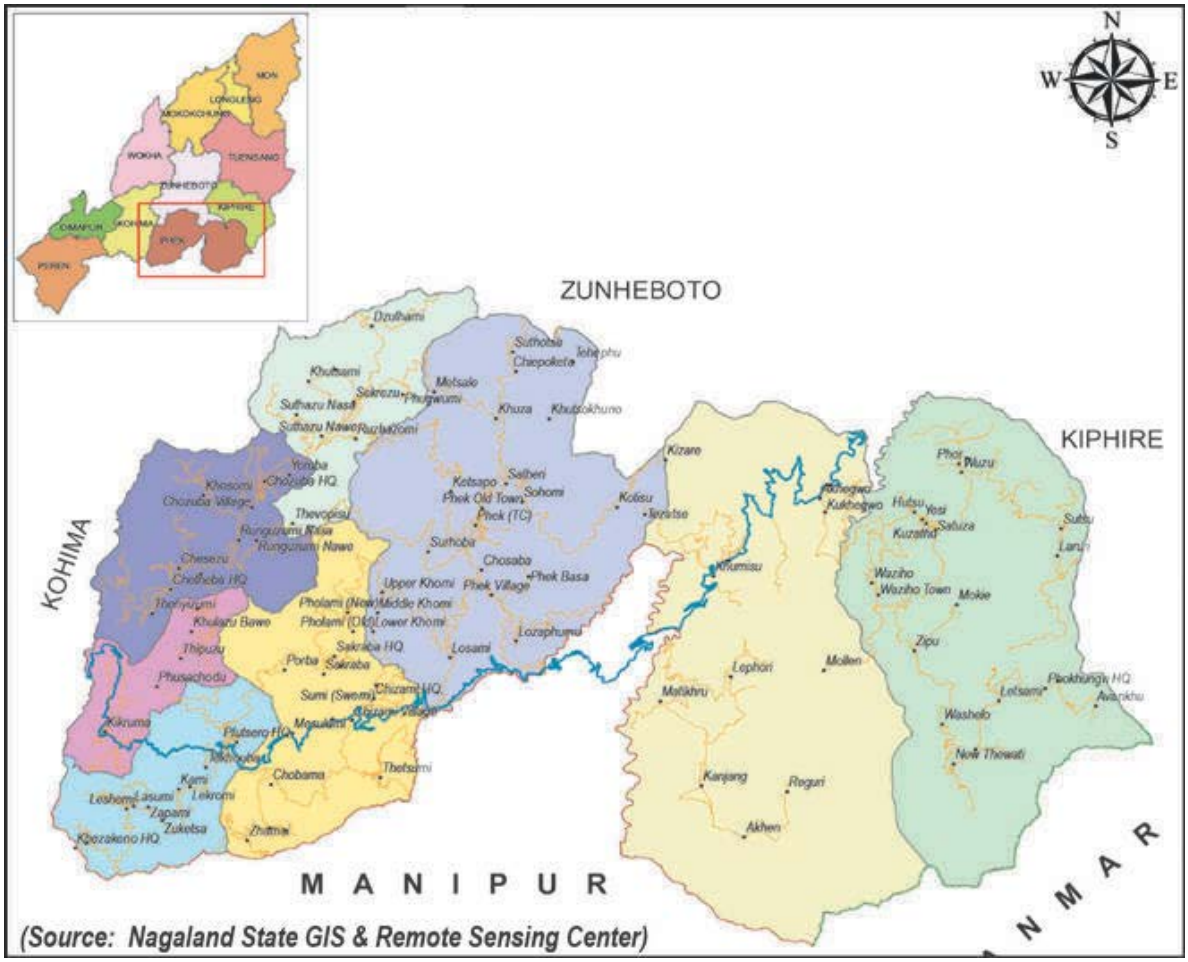
The fourth chapter deals with the commercialization of agriculture in the Chakhesang tribe. The researcher has discussed the perception survey on the commercialization of agriculture based on the data collected from 280 households of the Chakhesang tribe. It includes land use and management, commercial farming and types of commercial farming, factors of motivation, livelihood, and division of labor, women in commercial farming, usage of chemicals, opinion on soil degradation, sale of commercial crops, satisfaction in commercial farming, better lifestyle, and better social status.

The fifth chapter presents the socio-economic impact of commercialization of agriculture in the Chakhesang community. It also explains the challenges and prospects of commercial farming in the study area.

The sixth chapter summarizes the study's key findings and discusses the conclusion and recommendations.

Map of Nagaland State:

Map of Phek District :



Study Area (Yellow Highlighted):

CHAPTER II
ETHNOGRAPHIC PROFILE OF CHAKHESANG TRIBE

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A Brief History of the Chakhesang Tribe:

The Imperial Gazetteers of India in 1891 originally described a tribe as a "collection of families bearing a common name, speaking a common dialect, occupying or professing to occupy a common territory" (Mukherjee, 2013). Such opinions were reiterated in 1967 by a joint Parliamentary Committee, which said that "geographic isolation" and "distinctive culture" were essential traits of tribes (Atal, 2009). The renowned anthropologist Furer-Haimendorf (1982) also discusses the "cultural background of the individual tribes," implying that every tribe had a distinct and cohesive civilization. "Tribal groups in Nagaland are forming new affiliations and using names hitherto unknown to anthropology," as noted by Elwin Verrier in the 1950s (1961). One such new affiliation is the Chakhesang Naga. It was in August of 1946 that the tribe officially entered the administrative and ethnological records (Vitso, 2003), having been formed through the union of various linguistic groupings that had previously been a member of other tribes.

The Nagas are thought to have originated in central Asia and then travelled through Burma. The group that travelled in a northwesterly direction arrived at the current Mao village of Makhel in the Senapati district of Manipur, where some of the group moved on to other locations, including the village of Khezhakenoma in Chakhesang region of Phek district (Yanthan, 2010). They then dispersed to other Naga regions, with information about their movement included in *The Hidden World of the Nagas, Living Traditions in Northeast India and Burma.* It is acknowledged that the Naga tribes have since then relocated from Khezhakenoma to their various locations. The direction of the Chakhesangs was northeast. According to Hutton, migration moved west and east and continued north through Mao-gate (Stirn & Peter Van Ham, 2003). In *The Angami Nagas*, J.H. Hutton also discussed the myth and beginnings of Khezhakeno (Hutton, 1921).

Chakhesang's name amalgamates three significant sub-tribes: *Chokri*, *Khezha*, and *Sangtam*. It is a name unanimously selected by the leaders of the three sub-tribes in alphabetical arrangement, giving equal attention and acknowledgement to each sub-tribe entity. The Sangtams are now recognized as distinct tribes, but this does not change the original abbreviation, "Chakhesang." In addition to these three major sub-tribes, there are a few smaller communities, such as Poumai (Sapuh), Sumi (Sema), Rengmas and Pochuris (Meluri area), and some Tangkhul (Jessami area). As a result, Chakhesang is a conglomeration of Kheza, Chokri, Poumai, Sumi, Tangkhul, Pochuri, and Rengmas, making it a unique tribe among the Naga family. The tribe is spread across the Pfutsero, Chozuba, and Phek subdivisions of Phek, which borders the land of Mao, Poumai, Tangkhul, Sumi, Angami, and Pochury. Many tales about the early phases of Naga settlements that link Khezhakenoma village fall under one of the administrative circles of the Phek District. The Lotha, Sema, Chakhesang, and Rengma tribes are thought to disperse further during their trek through Khezhakenoma. The Lotha first travelled north to Wokha, their present settlement. The Sema broke eastwardly. The Rengmas proceeded as far as Tseminyu, where they settled. The Angamis spread north and north-westward, while the Chakhesang selected the Eastern terrain. There is not only diversity in the composition of the tribe, but the tribe also speaks different dialects. Angami's Tenyidie, Chokri, and Kheza are the main conversational dialects used; many Chakhesangs are also fluent in Poumai, Mao, Sumi, Rengma, and Tangkhul. With all these advantages, it is unsurprising that this tribe has rich traditions, culture, folklore, songs, and other traditional practices (Singh et al., 2018).

With the late Mr. Goyiepra Kenye's initiative, the Chakhesang tribe was ultimately established. On November 1, 1945, the three sub-tribes of *Chakru*, *Khezha*, and *Sangtam* attended a public meeting called by Mr. C. R. Pawsey, the then D. C. of the Naga Hills. Mr Goyiepra Kenye headed the meeting, and the term "*Cha-Khe-Sang*" was created by taking the first syllable of each sub-tribe, i.e., *khe* for *Khezha*, *sang* for *Sangtam*, and *cha* for *Chakru*. Mr Goyiepra Kenye called another conference at Chizami on November 12, 1945, and at that meeting, a public proclamation was made recognizing Chakhesang as a distinct tribe. The official acknowledgement of the Chakhesang tribe came on January 10, 1946. According to Venuh (2014), the Chakhesang tribe was governed by the district of Kohima until December 21, 1973,

when Phek, a distinct district named after the settlement of Phek, was established. The land is home to ranges and evergreen forests. Mount *Zanibu* is the highest peak, and Mt. *Kapamodzu*, a scenic mountain, is the second highest. The largest river in the district, the *Tizu*, empties into Myanmar's Chinwin River. The Chakhesangs are the inhabitants of the Phek district (Puro, 2017).

One of the well-known Naga tribes is the Chakhesang tribe, often known as "Eastern Angamis", because they split off from the Angami tribe in the eastern region (Hutton, 1921). The British Government approved the name "Chakhesang" upon its creation (Vitso, 2003). The term "Eastern Angami," which dates back to the British era, is no longer used. The Chakhesang and other Naga tribes were formerly fierce head-hunters, and it was a source of honour for a Naga warrior to return from battle with the enemy's head. Men's primary responsibility was to defend the women, kids, and hamlet against invading attackers. Due to this function, men came to dominate their society, and a patriarchal system was developed, with the father serving as the head of the family. In addition to being the family's primary provider and decision-maker, he also serves as the family's guardian and protector of their belongings. The social structure of all Naga tribes is patrilineal, patrilocal, and patriarchal, and they all have nuclear households. Typically, a Chakhesang village is split up into khels, or clans. Clan members cannot marry one other; this is forbidden and viewed as incest. Offenders face social rejection (Thingnganing et al., 2017).

Profile of Phek District:

The district Phek got its name from the term "*Phekrekedze*," which signifies watchtower. Phek is the home of the Chakhesang and Pochury tribes. Phek was one of the subdivisions under the Kohima district till 1973. The Government of Nagaland approved Phek as a separate and full-fledged district vide notification No. APA 15/12/71 (HQ), dated the 19th of December 1973, with 2026 sq. km. representing 12.22 per cent of Nagaland (16,579 sq.km.). Phek is the eighth district of Nagaland. In terms of area, the district occupies the second most prominent place among the sixteen state districts. It lies in the southeast of Nagaland between 94° 35'18" to 94° 38'09" E

Longitude and 25° 37’37” to 25° 39’47” N Latitude, and an altitude of 520 to 2900m above mean sea level (MSL) (Government of Nagaland, 2020).

It has a temperate to subtropical climate. The typical summer temperature is between 27 and 32 degrees Celsius, which is moderately warm. The end of May marks the beginning of the monsoon season, which ends at the end of September. January and February, the coldest months of the year, saw temperatures as low as zero degrees Celsius. The average annual rainfall is 1,527 mm. The Phek district is mountainous, just like the rest of Nagaland. It is located Southeast of Nagaland; it shares borders with Burma (Myanmar) to the south, Kohima district to the west, and Zunheboto district to the north. More than 70 per cent of the area is covered by dense evergreen forest (Government of Nagaland, 2020).

Kohima, the state capital, is located 145 km from Phek. The district has 14 administrative circles and 117 villages in Census- 2011, which are all inhabited. Previously, Phek and Pfutsero only had the status as a town. Lately, the Nagaland government has declared all the other three Sub-Divisions, Chizami, Chozuba, and Meluri, and the Mini Cement Plant of Weziho, as full-fledged townships (Singh et al., 2009). The villages are mainly isolated from one another and situated primarily on the hilltops (ibid.).

The Phek district stands out because it launched two effective state-wide community-based initiatives. 1976 the Village Development Board (VDB) was founded in Kutsapo village. In 1980, the Rural Development Department extended the VDB’s reach to encompass the entirety of Nagaland. Additionally, Phek catalyzed the communitization of governmental services and organizations. Both programs are highly regarded and serve as examples of best practices. In 2008, Nagaland’s communitization initiative won the United Nations Public Service Excellence Award (ibid.).

Although the Phek district is proud of its abundant and varied mineral resources, which include semi-precious and precious stones, they have not yet been thoroughly investigated. It also boasts of the state's only Mini Cement Plant in Wazeho. Tizü, one of the largest and longest rivers in the state, flows through the district, providing ample opportunities for freshwater fishing. Zanibu is the highest mountain, about 8000ft above sea level. Phek district is rich in flora and fauna. There are three important rivers, namely Tizu, Lanye, and Sedzu, and three crucial lakes, Shilloi, Chida, and Dzudu. It has a population of 163,418 males and females, 83,743 and 79,675, respectively, with a density of 81 people per sq. km. The literacy rate is 78.05 %, the male is 78.05, and the female is 72.21 % (Census, 2011). Agriculture is the main occupation, with Terrace Rice Cultivation (TRC) being the predominant. Besides agriculture, people make salt, weave, use bamboo, wood carvings, and fruit juice (Census of India, 2011).

***Nhetho* (Village Settlement):**

The people who settled in *Nhetho* are exogamous patrilineages who share common customs and practices of a specific culture. They exercise territorial supremacy, uphold democratic governance, maintain economic independence, and defend the village's boundaries. The village's obedience and unity were paramount (Puro, 2017). Naga Society and Culture describe the village's distinctiveness: the village network and its dominance form the foundation of Naga society's social fabric. Their hamlet is the most important, although it appears limited in scope and perspective. They are willing to sacrifice for their community because they are proud of it. Thus, Naga society means village society, a watertight community with the maximum social cohesion. A naga's village identity is its primary identity, followed by the tribal community (Jamir & Lanunungsang, 2005).

Regarding ancestral Chakhesang, their *Nhetho* is established where customary procedures favour them rather than their preferences or fitness. Rituals and rites have been a vital part of their predecessors. They were carried out per luck, misfortune, and novel endeavors. It has been gathered from oral history that the Chakhesang followed certain rites when they left to find a new location for settlement. A Mithun, a dog, a rooster, seeds, simple cutlery, and a section of thatch were taken during the search. They

stopped when the dog barked, the rooster crowed, the thatch dropped, or even when the Mithun bellowed. They searched for these indicators as they travelled. These indications lead them to conclude that, despite the location, starting a new community is auspicious. "*Zetshekewe ruke keku kajucie tengubera*" (the victorious spirit is showing us the signs of the land now) was their cry. A new village settlement is therefore established (Puro, 2017).

After identifying the area based on the clues, the community is asked for a blessing after carrying out a custom known as *Erumeshu*, which involves splitting bamboo in half to create fire. Numerous generations have also asked for blessings for the new village during the event. After that, the settlers split up the land and started building homes. The *Mewu* (priest) is granted the best plot of land, and the *Pfusemi* (clan) senior is given the second-best plot (ibid).

***Kedo* (Colony):**

The villages are arranged and divided into numerous colonies, referred to as *keto*. An area with a clearly defined boundary is called a *keno*. Colonies exist for specialized and valuable reasons, such as housing various clans and improving administration.

***Mapumo* (An Assembly):**

An assembly of men known as a *Mapumo* is formed from each *Kedo*. The *Mapumo* is a forum for discussing everyday happenings and moulding young people. When someone in the *Mapumo* family or village does anything wrong, the oldest member corrects them and tells them not to do it again. Men congregate at the *Mapumo* to mingle and drink; sometimes, essential topics and issues are discussed. *Lezu*, a regional food, and *Hazi*, a regional beer, are frequently brought and shared. This meeting typically occurs in the morning before leaving for work and in the evening after returning. They discuss various subjects and events while they sit by the fire. When young boys attend the assembly (*Mapumo*), they are considered to be and accepted as

the official members. They learn to respect the elderly here. The Chakhesang culture places a strong emphasis on showing respect for seniors. One instance is when young guys give up their seats to elders as they enter. As long as the elderly are present, they should not be seated. Elders' regard and esteem are cherished traditions. It involves cultural taboos and disrespect that, in addition to drawing criticism from the community, are also thought to have dire long-term effects (ibid).

***Keyike/Kekhroke* (Dormitory):**

In the past, there were separate dorms for males and females called *Kekhroke* and *Keyike*. *Keyike* is for girls, and *Kekhroke* is for boys. Each *Kedo* possessed a unique Kekhroke and Keyike. A suitable location was chosen, and the homeowner was given the title Kezupfu (warden). The Kezupfu was required to impart life lessons to the young people; he was expected to be knowledgeable about customs like games, crafts, stories, and songs. The young boys and girls in the dorms were taught about their societal roles, religious and political issues, duties, and obligations to their families, neighbors, friends, elders, and priests (Puro, 2017).

The broad term "*Morung*," used for convenience, appears to have originated from the Arunachal word for their large, lengthy homes. Concerning the *Morung* activities, Haksar Nandita mentioned in ABC of Naga Culture & Civilization that this was where young men received training in the principles of the Naga religion and ways of life. Even though the male and female dorms were separate, they had plenty of opportunities to socialize, which is how they met their life partners (2011). Preparing young boys and girls for adult societal responsibilities was crucial to living in dorms. Before marriage, every girl and boy belonged to *Keyike*/*Kekhroke*. They would discover information about their lineage, bravery stories, headhunting, battle, and other topics here. They even used songs and melodies to converse, laugh, and give each other admiration. In addition, the girls pick up skills in spinning, weaving shawls, and writing folk tunes.

The dorm's sacredness was scrupulously upheld and respected. The girls were not permitted to visit the boys, but the boys were allowed to visit the girls. A boy was forbidden from seeing any girl in private, no matter how he pleased. When they visit the girls, the boys sometimes sit in *Kecoru*, the front door of a home with a fireplace. They yelled out to the females, inviting them to join and mingle. The dorm is a play-based learning environment for the Naga ancestors and a significant social hub for young boys and girls. It is ingrained in the Naga way of life. Although there is no common language among the Naga people, each tribe has its own terminology for its dorms (Haksar, 2011).

Socio-Cultural Aspects:

The people are expert craftsmen and excellent at making pots, baskets, sculptures, and furniture. Society is patrimonial, but women enjoy a high status in their families. Customary laws are unwritten but practiced by all villages. These laws are binding to members of society and are passed on from generation to generation by word of mouth. The older people of the village decide and pass judgment on disputes and matters concerning the community (Singh et al., 2009).

The community has a straightforward socioeconomic structure. Their contributions to the village, the kinds of buildings they built, the shawls they wore, and their participation in religious rites can all determine their socioeconomic standing. The foundation of all other facets of Naga society is the utilization of the land. In other words, not only must the land be farmed to provide the people with basic subsistence food, but people can only rise the social ladder if they have enough excess to pay for the elaborate feasts and sacrifices required. Wealth is also desired for a successful marriage or political partnership (Jacobs et al., 1990).

The youngest son receives the Lion's share of the family's property for the Chakhesang people, who inherit most of their possessions through men. Thus, it falls to the youngest son to look after his parents. It is customary to inherit properties in the forms of *Kadzu* (land), *Kie* (home), *Ekhulo* (terrace field), *Tshukhe* (forest reserve), and

Melu (Jhum land). Though men usually divide property, women are also entitled to inherit priceless presents from marriages, such as necklaces, bracelets, and earrings. According to traditions of the Chakhesang, a woman inherits what is referred to as *Lhabou,* or her collection of clothing and jewellery, which is inherited through her family. A woman's matrilineal line, whether inside or outside the village, will inherit it if she passes away without daughters. The legacy of the previous matrilineal ties, which would have otherwise been forgotten, is restored by the inheritance of *Lhabou*. There are no inheritance issues because of the continued use of this traditional inheritance system (Puro, 2017).

Family and Kinship:

Family is a fundamental institution in the Chakhesang society. As the home is the primary source of moral instruction and social cohesiveness, parents bear the burden of raising their children to be respected, devoted individuals who adhere to social standards and values. Deference to elders, empathy for the ill and impoverished, civility, obedience, a spirit of competition, and social prohibition are some of these principles (Chase Roy, 2004). The male dominates every area of life in this patriarchal society. The social structure is patriarchal, patrilocal, and patrilineal. It inevitably cleared the path for establishing a dominantly male and authoritative social order.

Family members were divided into work groups according to age and sex. Women were responsible for household chores, fieldwork, childrearing, and food collection, while men were in charge of trade and business, fighting, hunting, administration, cutting firewood, and clearing forests. The children's ages also had a significant impact; whereas young girls were taught domestic chores, young boys were taught how to hunt.

The Chakhesang people's beliefs, customs, festivals, rituals, and other aspects of their sociocultural existence are still observed today. Verrier Elwin emphasizes the significance of kinship in this regard. Every Nag has four main interests: his family, the clan, the khel, and the village. He believes this is his culture and cannot be altered. He

has strong feelings for his land, his system of land tenure, the way his village is run, how farming is organized, and how the village and tribal courts handle tribal justice (Puro, 2017). In a kinship relationship, specific terminologies are used to identify and communicate with one another. In society, using these terms to address one another is seen as necessary:

1. The grandchildren address grandfather as *apfüse*

2. The grandchildren address grandmother as *azuse*

3. The children address the father's elder brother as *apfüde*.

4. The children address their father's younger brother, *apfüno*.

5. The kids refer to their father as *apfü*.

6. The kids refer to their mom as *azu*.

7. Male clan members or the maternal uncle are called *apu*.

8. All the male clan members refer to the girl's husband, including her brother and father-in-law, as *ama*.

9. The girl's sisters address her husband as *ase*.

10. The maternal older aunts are called *azukese*.

11. The maternal younger aunts are called *azuketsu*.

12. The paternal aunts are called *anyi*.

13. The brothers call the brother's wife as *ano*.

14. The daughter-in-law is referred to as *Amoe*.

15. The nieces and nephews are referred to by the maternal uncle as *atsi*.

16. The children are referred to by their parents as *anu*.

17. The women and older men generally address unknown girls as *ale*.

18. The women and older men generally address unknown boys as *alo*.

19. Men address their best friend as *akhra*.

20. The same-age women address each other as *akezüpile*.

21. The younger brother of a man is referred to as *atshikezu*.

22. The brother calls his sister as *atepi*.

23. The sister calls her brother *apruo*.

24. The friend of a man calls each other *akezü*.

Marriage and Divorce:

A significant life stage for the Chakhesang society was marriage. The customs around marriage varied from one village to another, and the stigmas surrounding women were based on the idea of their "purity, chastity, and innocence." Such taboos were strictly enforced and keenly watched. Marriage in the Chakhesang tradition requires the approval of both the male and the woman. In the past, a man or husband who had multiple wives or had extramarital affairs was praised and held in the highest regard (Lohe, 2011). These kinds of activities, however, were not permitted in the case of the Chakhesang women. They were supposed to be pure to protect the community's integrity (Chase Roy, 2004). Due to the perception that being single was aberrant and illegal, women were compelled to marry regardless of their desire. Girls' heads were shaved as a sign of purity and protection from other village warriors when they went outside to fetch water or work in the fields (Vitso, 2003).

Although women could choose their mates, the clan man or the father had the last say. There were two kinds of marriages: ceremonial and non-ceremonial (Vitso, 2003). Chakhesang marriage ceremonies were intricate. Levirate marriage and junior sorority were widely accepted in the culture despite trial marriage, polygyny, and cousin marriage (Das & Saha, 1994). Within the Chakhesang sub-tribal, endogamy was encouraged, but marriage between clan members was discouraged. Remarriage was possible for widows, but marrying their first cousin in both parent's families was frowned upon (Vitso, 2003).

The practice of divorce was rare, but divorcees were free to get married again if they so desired. For example, separated couples may reconcile even after a prolonged

divorce, but remarriage cannot be celebrated with rites. Divorce carried a discriminatory penalty against women. If the husband's adultery was the reason for the divorce, the properties were split equally between the two parties. However, if the wife's adultery led to divorce, she faced harsh consequences, including having to leave her husband's home wearing nothing but a skirt and a shawl (Zehol & Zehol, 1998). When a couple was divorced, the father was supposed to raise the kids; if the mother persisted in having the kids, the boys went to the father and the girls to their mother.

Religion:

The old Chakhesang religious approach was predicated on animism, or the belief in spirits. The spirits, who guarded and shielded people from natural disasters and various tragedies, were divided into good and evil. To keep the good spirit at bay, it was imperative to make the appropriate moments. The locals feared that if the spirits were irritated, they might stop protecting them. Additionally, it was thought that the spirit posed a threat and would ruin all human endeavors. To prevent this kind of suffering, many sacrifices were made. The ceremonies, such as offering animals as sacrifices to the spirits to appease them or asking for their graces, were typically carried out by a priest with experience in offering sacrifices (Lohe, 2011).

The concept of Gennas, which refers to taboos or prohibitions related to festivals, crops, diseases, and seasonal changes, was carefully adhered to by the society. These rites were observed on specific days of the year, during which the communities abstain from performing their regular field tasks. It was noted that the idea of *Kenyi* or *Kenyu* (taboo) was a deterrent to evil doing. Disrespect for *Kenyi* or *Kenyu* was thought to cause diseases, abnormal deaths, and even blindness and dumbness. The Chakhesang community upheld several taboos, including if a villager is killed by fire, assaulted by wild animals, has an accident, or paddy plants eaten by rats, or if someone is washed away in a river or by landslides. It is illegal to mistreat orphans, destroy holy plants, have illicit children, and show contempt for gods and spirits (Lohe, 2011).

Festivals:

One of the most beautiful cultures and festivals in all of Nagaland may be found in the Chakhesang community—the celebrations center on agriculture, a vital source of revenue earning for the area. People with high social standing, such as brave fighters and those who could organize the Feast of Merit, are respected and revered. These folks make lovely symbolic shawls, and horns are used to adorn the front and rear of their homes. Due to climate constraints, the villages' festivals take place at slightly different times, but the purpose and format remain the same. The following festivals are observed one after the other (ibid.).

Khuthonye: In July, after the completion of the terrace cultivation, *Khuthonye* is celebrated. The farmers work hard for a month to procure a year's provisions. Having completed the cultivation work, everyone, poor or rich, eats and drinks heartily to regain the lost energy. This is also a time for harvesting millet, coinciding with Khuthonye, and the millet festival, "*Chunye*," is also celebrated for two days.

***Turhinye*:** This is a festival to preserve crops from wild animals, which may destroy the laborers and their hard work. Before the celebration, the locals perform maintenance and upkeep on the village pathways and roadways. It is observed for two days in August as the Autumn Festival.

***Thurinye*:** For ten days, this event is celebrated as the Paddy Festival in December, after all the harvest, when the granaries are full of grain. A chaste bachelor has to perform a ceremonial rite called "*Mudzu*," wherein a spotless piglet is killed first. The rest of the villagers then kill their domestic animals and start the feast. People are jubilant as they thank the Gods for protecting their crops from sowing to the harvest stage.

***Sukrunye*:** The celebration takes place in the middle of January. It is the most significant of all the festivals since it is a ten-day celebration that guarantees the

community's health in the upcoming year. The festival's main highlight is "*Sukru*," intended for the menfolk. It implies the sanctification of the young boys. In the morning, all menfolk visit the village spring, washing their weapons, tools, and clothes in freshwater before any animals touch the water. They believe all misfortunes and physical ailments have been washed away. In return, every male who is old enough to do so kills an unblemished cock, but it must be killed by throttling it with his hand only. Thus, it stretches to days of celebration by feasting, dancing, and singing throughout the day and night till dawn.

***Ngunye*:** This festival falls in February and lasts for two days. The event is for rejoicing. Traditional games and sports are played in this celebration by singing indigenous songs, folk dances, and wrestling. People in their traditional clothing made a parade of procession from every *khel*.

***Tukhanye*:** This event is the final celebration in April. This festival marks the yearly routine of hard work cultivation. Now that all the festivals are over, the people are not at rest. They become more active in the cultivation activities. The Chakhesang people celebrate festivals from 1 to 11 days with utmost delight. People put on new clothes and decorate themselves with priceless traditional ornaments. They eat and drink and observe hospitality beyond his resources. Participation of the local people is the most prominent feature. They sing songs, dance, recite about their ancestor's meritorious velour, and participate in the festival with a sense of unity and equality. The Chakhesang has many peculiarities. *Muchi* (Yelling), *Dothi* (High Kicking), *Kunu* (Wrestling), *Kutsushu* (Stone Pulling Monolith), etc. are the peculiar features of this area (ibid.).

Folk Wisdom:

Cultural activities such as folk songs, dance, merry processions, and yelling are distinctive characteristics of the tribe. The classification of each cultural item has its features and purposes (ibid.). The cultural activities are,

Folk songs

- Classic, Romantic, Patriotic, Work culture, and Processional hymn.
  Folk dance
- Ceremonial dance, Amusement dance, Self-encouragement dance, Sacrificial Dance, War dance, and Commitment and affirmation dance.
  Procession
- Procession for honor/respect, Merry-go-round procession, Ceremonial procession, Agitation procession, and Sanctification procession
  Yelling
- For self-encouragement, For challenging enemies, For Victory, War cry, Youth romance, etc.

Taboo:

A taboo is when a social group forbids or shuns something (typically a speech or behavior) because they believe it to be extremely hurtful, offensive, holy, or reserved for specific individuals (CPO, 2020). Taboos observed are: To commit adultery when a male adult is wearing combat gear and carrying a weapon. It is forbidden to harm or kill the peace mediator in any way. The village monitors the animal genna to prevent pests or wild animals from destroying crops in the field. Killing any animal or bug on this specific Genna day is forbidden. The locals in their communities prayed to Mother Nature for a full day to obtain sufficient monsoon rainfall for paddy cultivation. The weather determines public worship when the paddy ripens. In the last week of September, just before the paddy harvest, the villagers used to observe "*Tutho*," a native genna meant to stabilize and normalize the weather and shut out the sound of thunder. Furthermore, the ripening paddy fields will not be destroyed by wind or hailstorms. There are reports of Genna regulating severe weather, hail, strong winds, etc. Any agricultural tool designated for Genna monitoring is forbidden in the field on certain days. This includes building, clearing, or cleaning irrigation channels, hunting, and other activities. It is also improper to alter a stream's natural course. Removing the monoliths is forbidden, and is considered a sin to employ counterfeit scales in any way.

Economy:

Even though they were primarily farmers, the ancient Chakhesang were also gatherers. They gathered fruits and veggies from the woods. They knew what to eat and what not. The ancestors demonstrated that as long as they were healthy and robust, they could fight and live against all difficulties. It is generally recognized that Chakhesang villages are self-sufficient (Puro, 2017). Their primary source of income is shifting agriculture, which is the focal point of every sociocultural aspect of their way of life. Agriculture is the primary means of subsistence for the hardworking Naga people (Jamir & Lanunungsang, 2005).

In the economy of the natives, there is no habituation of begging for rice, other food grains, or money from other people for their survival. In village life, everybody cultivates their terrace field, jhum field, and other lands sincerely, and the annual harvest is at least enough for every household (CPO, 2020.). Begging for family survival is considered the greatest shame in rural life, so people work hard for economic survival. Sitting around doing nothing while others toil diligently on a particular task is disgraceful. It is shameful for men who do not know how to do domestic manual work, such as basketry, wood carvings, etc., and for women, weaving, knitting, needlework, spinning cotton, etc. (ibid.).

The primary sources of income for the Chakhesang people are agriculture, handicrafts, animal husbandry, hunting, and other activities. There was trade amongst the villages. Goods served as the trading medium. Typically, locally produced goods, including cotton, chilli, ginger, brine-salt, and food grains, were traded. Even though every village is self-sufficient, trade plays a significant role. The Nagas generally traded regional goods to the plains in exchange for items like shells, pearls, and locally unavailable fabric.

Agriculture:

Traditional agriculture in Nagaland is a highly complex system. Farming families adopt and maintain diverse agricultural practices to sustain their livelihood, mainly Terrace Rice Cultivation (TRC), Shifting Cultivation, Home-garden, and Firewood Reserve Forest. The locations of these varied sites compel the farmers to adopt and adapt practices that suit the site factors. The prominent site factors, particularly the altitude, temperature, precipitation, soil, and biotic and abiotic factors, play essential roles in managing traditional cultural practices and conserving agrobiodiversity. As a result of these adoptions and adaptations, conventional farming systems have a high degree of agro-biodiversity, which is one of their prominent features. Centuries of cultural and biological development have given rise to these traditional agricultural methods, resulting from indigenous farmers' cumulative experiences interacting with the environment without access to contemporary scientific knowledge, capital, or outside inputs (Nakro, 2011).

Two types of terrace rice cultivation are practiced. Dry terraces are where irrigation is given only during the growing period of paddy from June to October, and ponded water is drained out and allowed to remain dry from November till June because water sources are not perennial. Wet terraces are where water is impounded throughout the year with irrigation. Several cultural operations given to dry terraces are averted in these wet terraces. They also have a better yield than that of dry terraces (ibid.).

Agriculture in Phek is rainfed and the mainstay of Nagaland's people. Shifting cultivation is prevalent here but is decreasing. The Chakhesang farmers are excellent in terrace cultivation. A traditional farming system called *'Zabo'* is practiced in the Kikruma area of the district. Paddy, maize, beans, pea, cowpea, and naga-dal are the common agronomical crops, whereas cabbage, banana, orange, passion fruit, guava, garlic, potato, ginger and cardamom are the common horticultural crops. Besides this, pigs, goats, backyard poultry, Mithun, and cattle are essential district livestock (Singh et al., 2009).

The terrain of the Phek district is very severely undulating, full of high hills and deep gorges. Most of the high hills are steep. Mid hills with 50-100% slope are suitable for orchards and plantation crops. Jhum cultivation is also practiced in mid-hills; lowlands with a 20-50% slope are best suited for paddy cultivation. In the foothills, paddy is predominantly taken. Nonetheless, the area used for fish culture and rice fields is growing. Early May is when the monsoon rains begin, lasting until September. The primary employment is in agriculture, with 80 per cent of the inhabitants working in this field. Except for the thin strip banks on either side of the Lanye, Tizu, and Sedzu rivers, most cultivated areas have a steep to marginal slope (ibid.).

Rice, maize, millet, cabbage, yam, legumes, ginger, bananas, etc., are the principal crops. Cardamom, peach, plum, and passion fruit are also becoming popular in the neighborhood. Standard mono-cropping practices are used, and most land holdings are dispersed and fragmented (ibid.).

Farming Systems:

Tested knowledge of Indigenous farming is still used alongside contemporary agricultural technologies. One such farming practice that has already been recognized as one of the best practices and sustainable farming ways by all parties involved is the agriculture method created by the village of Kikruma in the Phek district. The *Zabo* farming technique bears similarities to the Integrated Farming System (IFS). The participation of all the village farming families, the sharing of rainwater gathered, and the handling of land and off-farm activities are remarkable differences adopted by the farmers. In hill agriculture, where farmers deal with soil erosion and water scarcity, there is great potential for this traditional farming method to be embraced with technological assistance (Amenla & Shuya, 2021).

The word “Zabo” in the local language refers to water impounding. The system has forest land at the top of the hill, water harvesting tanks (silt retention ponds and water storage tanks) further down the hill slope, and livestock enclosures. The system combines forest, agriculture, livestock, and fisheries with a water and soil conservation

base, encouraging environmental sustainability and increasing crop productivity (Sonowal et al., 1989). The system is followed on the land belonging to individual farmers, but 10-15 farmers may join in practicing the Zabo system (Sharma & Sharma, 2000).

Zabo Cultivation:

Zabo is prevalent in the Kikruma Development Block of the Phek district. The area surrounded by two rivers, "*Seidzu*" and "*Khuzha*", is traditionally under this system. This farming system integrates a combination of forest, livestock, and fisheries with a well-founded conservation base. Red and red laterite soil groups are predominantly available, and their textuality varies from clay-to-clay loam. Rainfall is moderate to high, with an average rainfall of 150-170 cm annually. Temperature is medium with high humidity. The average temperature in winter is about 4-6 degrees Celsius; in summer, it ranges from 18 – 26 degrees Celsius. There are mountains with moderate hills and mild slopes. One crucial component of this agricultural method is building a water-gathering pond. Usually, the pond is built in the centre, next to the catchment area. Farmers construct water-gathering ponds in the lower locations for paddy field irrigation and fish farming. Although pipelines are now very frequently used, the indigenous people used bamboo to transport water from ponds to the fields.

An indigenous farming system (*Zabo*) combines crops, fisheries, cattle, and forests. Trees of forest species like Alder, Oak, Ficus spp. Albizia spp. Bahunia spp. Pinus spp. Delbergia spp. Bamboo spp. etc., are commonly taken on the top of the slope. Fruit plants like Banana, Pear, Peach, Plum, and Passion are also grown. Maize, Millets, and Paddy are the common cereal crops in this farming system. Maize is taken on the slope. However, paddy is taken on terraces and foothills. Nagadal, Beans, Peas, and Cowpea are commonly grown among the pulses. Vegetables like Potatoes, cabbage, sweet potato, chilli, etc., are also taken. Livestock is an essential component of this system. Buffalo and cattle are the primary livestock brought adjacent to the pond in a confined area. Local and exotic carp spp. are raised in ponds, and common carp and local fishes are taken in paddy fields. In most places, mono cropping is practiced. Still, in an area where irrigation facilities are available, pulses like peas and vegetables such

as potato, cabbage, mustard leaf, sweet potato, chillies, etc., are being taken. The farming system has distinct land use patterns: forest areas, orchards, cattle areas, and agri-horticultural crops. This technique is also used on community property, with small and marginal farmers as the main participants (Singh et al., 2009).

Alder Based Cultivation:

The Alder-based farming system is mainly practiced in the Pfutsero and Chozuba sub-divisions. In this arrangement, alder trees are planted alongside fields, providing the crops with atmospheric nitrogen. Loam soil is widely available under this system, and moderate rainfall of 160-180 cm per annum is observed. Temperature is low with high humidity. Cultivation is done on average for steep terrain and mid-to-high hills. No specific irrigation facilities usually are available in this system, but the water from the streams is channelized by bamboo and used for irrigation. Major crops like Maize, Millet, Potato, Sweet potato, pumpkin, cabbage, large cardamom, and Tea are grown along with alder trees. Mono cropping and mixed cropping systems are practiced.

The farming system's land use pattern comprises agricultural and horticultural crops integrated with alder trees. The significant and marginal farmers mainly practice the alder-based farming system. The villagers also use this approach on their communal land. The locals in the district use a traditional adoption pattern and operate a primitive farming method (ibid.).

Jhum Cultivation:

Jhum, or shifting cultivation, was a promising system in the olden days. Lately, due to population pressure on land, the Jhuming cycle has reduced to 3-5 years from an earlier Jhuming cycle of 15-25 years. This farming system is prevalent in all four sub-divisions, i.e., Pfutsero, Chozuba, Phek, and Meluri, and is practiced on slopes of the hills. It is still the primary cultivation practice of the local inhabitants occupying the dominant area under cultivation. In this system, several crops are grown simultaneously

on the same land. Sandy loam to loam is this system's predominant textural class of soil. Moderate rainfall of 160-180 cm per annum and mild temperature with high humidity. Jhum cultivation is practiced in low to high hills with moderate to steep terrain. This system is solely dependent upon rainfall.

Mixed cultivation of various cereal crops like Paddy, Maize, Millets, etc., pulses like Beans, Cowpea, Pea, fruits and vegetables like Banana, Papaya, Cabbage, Potato Ginger, Garlic, Turmeric, etc. are grown. Mixed and relay cropping systems are followed in this farming system. The farming system's land use pattern comprises agricultural and horticultural crops. Small and marginal farmers primarily cultivate Jhum on communal land, but some resource-rich farmers also choose to cultivate Jhum. Jhum agriculture employs about 35 per cent of the district's entire population. The locals in the state and district use Jhum agriculture, a primitive farming method. The components have a conventional and primitive adoption pattern (ibid.).

Terrace Cultivation:

Using small tools and their hands, Chakhesang created stunning terraces on slopes, and they are renowned for being the best terrace builders. Paddy is typically grown on these lovely terraces. In addition to paddy, they also grow maize, beans, etc. A network of water channels irrigates the fields. Usually, the terrace proceeding is such that water flows down usefully from one terrace to the other below it (NE Travel Expert, 2020).

Wetland terrace cultivation is an indigenous system of cultivation in the district. This cultivation system developed by the Chakhesang tribe is practiced in all four sub-divisions, i.e., Pfutsero, Chozuba, Phek, and Meluri, on mid and low hills. This is a rice-based cropping system where paddy is grown on terraces. Bunds and terraces prevent soil erosion and reduce the loss of nutrients and topsoil. Clay loams to clay soil texture are this system's predominant textural soil class. High annual rainfall of 160-200 cm is noted. The humidity is high, and the temperature is mild. Foothills and terraces with mild to moderate slopes are used for farming. Although rainwater is abundant where

paddy and fish culture are used in this system, water is transported from high hills using major channels and subchannels, guaranteeing a water depth of 10 to 15 cm. Water can occasionally be redirected or transported to terraces by bamboo channels.

Along with paddy, the principal crops, Colocasia and yams, are cultivated on bunds. A small water pond for fish cultures, usually dug out in the terrace field, fetches additional income and helps with water management. One of the typical features of wet terrace cultivation is this fish culture. Mono cropping is a major farming practice in this system, and only rice is planted. The farming system's land use pattern comprises paddy cultivation and fish farming. All farmers mainly practice it with minor to extensive holdings. About 30 per cent of the district's population is engaged in this system. Farmers of all socio-economic categories follow this system. It is a traditional farming system developed by the Chakhesang tribe in the district and is now practiced by all the tribes. The adoption pattern of the various components is traditional and primitive (Singh et al., 2009).

Horticulture:

Fruits and vegetables are the chief sources of essential minerals and vitamins in the human diet. The district's topographical characteristics are ideal for growing horticulture crops, which can be cultivated as cash crops. The main fruit crops include bananas, papayas, guava, oranges, passion fruit, kiwis, and plums. However, the district's main vegetable crops are potato, cabbage, tomato, tapioca, Colocasia, leafy vegetables, etc. These crops have good market potential, but due to their perishable nature, they cannot be kept for a longer time. Cold storage, transportation, and market chain facilities are the basic needs for developing horticulture in the district (ibid.).

Livestock and Fisheries:

Animal husbandry takes a major part in the socio-economic life of the people of the district. For example, rearing pigs, poultry, cattle, buffalo, goats, etc. They also keep Mithun in semi-wild condition. Most people in the district are non-vegetarian and

hence have a high demand for meat and eggs. Due to the low production performance of the local animals with traditional rearing practices, the production performance of livestock in the district is not up to the mark to fulfil the district's meat, egg, and milk demand (ibid.).

There is no recognized breed of cattle in the district. The crossbred animals are generally imported from other states. The local cows are poor in milk production and are mainly reared for beef. There is also a high demand for beef meat in the district, but the production is insufficient to meet the total requirement. The indigenous cattle rearing system is mostly an open grazing system, where the cattle are kept loose in the open fields, roadside, reserve forests, and river banks for grazing. They are brought home in the evening and tied in a locally-made cattle shed.

For most of the hybrid cattle reared for milk purposes, the farmers built low-input cow sheds using locally available material roofed with CGI sheets. Most farmers prefer to feed their cattle using their feed composition. The common feed ingredients provided to the cows are wheat bran, broken rice, and mustard oil cake. Some farmers mix vegetables along with the feed ingredients and feed two times a day. Apart from the feed ingredients, green grasses and forages are provided daily. Paddy straw is used as dry roughage and is offered to the cattle. Mithun, the pride animal of north-eastern states, are reared in jungles under a shallow input system. Since they are not taken care of correctly, the productivity of this animal is not up to its potential (ibid.).

Hunting:

Hunting occupies a significant role in the traditional and cultural importance of the Chakhesang tribe. Hunting animals is prohibited in the state, but hunters would have a very high social status in the olden days. If a hunter killed a tiger, he was entitled to wear the distinctive '*luza*' (a special headgear), while one who killed a wild boar was entitled to wear a '*menipfu*' (necklace of its incisors around his neck). The Children of Chakhesang were taught hunting skills from a very early age (NE Travel Expert, 2020).

Weaving:

The Chakhesang society believes it is only a woman's job. Weaving is done mainly on days when women are off from working in the fields. They sit comfortably on their looms for long hours weaving the stretched wool. The end products of the wool are shawls, mekhala, mufflers, etc. It is made for family members or is also sold in the local market. People like to give hand-spun woven shawls or wrappers to close friends, relatives, and guests during special occasions such as weddings (ibid.).

Categories of Land Holding in Chakhesang Tribe:

For the Chakhesang, the nature of land-holding means the ownership and possession of land, and there are several types as per the traditional system;

- Individual land
- Families of one ancestor's land
- Sub-clan's land
- Clan's land
- Village community land

In the above categories, in individual land, the person has the absolute right and traditional ownership of his land. However, the other categories have collective or common ownership rights. In joint ownership, a person alone does not have the absolute owner of the land but by outright purchase or gift or will, etc. (ibid.).

The individual land includes the site of the house building, other plots of land, terrace fields, cultivable jhum fields, woodlands, or forest land that have been owned or either inherited from his father or grandfather or purchased by him or allotted to him during the initial stage of founding the new village. In the case of common land, the clan household jointly owns the land. However, an individual or a household does not have the right of absolute ownership as per the tribe tradition (ibid.).

When a person has acquired forest land or cultivable field but has not made any testamentary disposition to a particular person, either of his sons or brothers, during his

lifetime, the said land becomes the common property of the descendants of the said person. The eldest male among the clan or sub-clan shall coordinate the maintenance and cultivation of that land. It will remain a common property for future generations (ibid.).

Rights on Traditional Land for the Chakhesang:

For Indigenous peoples, land is a vital resource for long-term economic growth, and land rights are essential for self-determination. The land is crucial for continuing culture, sustains present and future generations, and is connected to traditional knowledge, spiritual beliefs, and teachings (ibid.). Some of the advantages the Chakhesang have on their traditional land are;

- Right to absolute enjoyment
- Right to let out and lease
- Right to the exploration of resources
- Right to cultivate any crops
- Right to develop terrace field/pond
- Right to develop the land into a farm or plantation
- Right to mortgage
- Right to exchange
- Right to inherit the land from ancestors
- Right to extract minerals
- Right to sell/transfer
- Right to gift/will

Rights of Eldest and Youngest Son:

The traditions among the villages differ little. Still, in many Chakhesang villages, the eldest son of one father has the right to make the first choice of privileges over the inheritable land. Traditionally, the youngest son would stay with his parents and have the traditional right to occupy his father's house and the best terrace fields the parents had cultivated (ibid.).

Lack of Customary Provision for Inheriting Immovable Properties by Females:

In the Chakhesang tribe, there is no provision or precedent to inherit the immovable properties from the ancestor's line by the females in any manner. However, it is permissible and eligible to give any immovable property as a gift or will to a male or female child if the concerned parent purchases it. The Jhum or terrace field can be passed down to the female child, which will be cultivated exclusively for her lifetime only and return to the male line after her death (ibid.).

Sale of Plot of Land:

The sale of plots of land in villages shall follow the traditional system and procedures of its respective villages. The seller must be the absolute owner of the property. Every sale must be recorded at the concerned village council's office. The terrace field is the costliest property among the immovable properties. The terrace field with the traditional water usage right is complimentary in all sales and purchases. On the first day of the visit or entering into the newly purchased terrace field, the field owner forbids himself to work in its terrace field or elsewhere for fear of the handle of the hoe or dao slipping off from his hand as it is an evil omen for him (ibid.).

Restriction on the Use of Fertilizers for Agriculture:

In the customs and traditions of the natives, fertilizers of any kind are not allowed to the people. All crops cultivated are organic. However, after fertilizers came out in the markets, people tried to use them, but they were found unsuitable for human health and soil fertility. Therefore, the native villages have strictly restricted the application of chemicals in every Chakhesang village. In default to the restriction of the native villages, if anybody uses chemical fertilizers, the crops yield from such a village shall not be allowed to sell in the market anywhere in Phek District or the state of Nagaland (ibid.).

Prohibition of Import of Pigs:

To avoid the communication of epidemics of non-local import pigs to the locally rearing pigs in the native villages, the Chakhesang Public Organization (CPO) has strictly prohibited the import of pigs to the Chakhesang inhabited areas. Its policy is to encourage the rearing of domestic species of pigs in the district and to boost the economy of the rural people (ibid.).

Forest:

In Nagaland, there is a distinct structure of land ownership; the community owns most of the land, granting them the authority to use and manage the resources. Forest departments hold specific categories of forests, classified as Reserved, Protected, Wildlife sanctuaries, National Parks, and Botanical Gardens, comprising about 16.7% of the available forest area. The villagers and government own around 83.3% of the remaining forests and have no control over them (Singh et al., 2009). Since the government has a minimal role, management practices broadly vary with the communities. Communities have their way of exploiting and replenishing resources, which differs from the communities. The individual's right is exclusively determined by tradition or "customary laws" (Singh et al., 2009).

In Nagaland, more than 50% of the land is under forest (55.62%). However, due to community ownership, only 11.7 % are under the control of the government, and 5.5% are under protection (FSI 2011). All the protected areas in Nagaland are areas bought from villages by paying an agreed compensation. The state has notified a single national park and two wildlife sanctuaries. The communities also declare several Community Conserved Areas (CCAs); some declare voluntarily, some on initiation of Forest Department or various organizations like Nagaland Empowerment of People through Economic Development (NEPED), etc. Community reserves are another concept of the Nagaland Forest Department, which aims to protect the community forest by giving incentives for alternative livelihood, etc., to the community to preserve or maintain such a reserve. This reduces pressure on forests and people's dependency

on traditional sources of income, i.e., farming or NTFP collection from forests (Kumar & Kaul, 2012).

Agricultural Marketing System:

At 2600 meters above sea level, Pfutsero town is the highest altitude town in Nagaland and the coldest inhabited place. During winter nights, the temperature drops to below minus zero degrees. This town is the central commercial hub of the Chakhesang area.

More than 80 villages in Chakhesang are under the umbrella of CPO (Chakhesang Public Organization). The APMC (Agricultural Produce Marketing Committee) markets agricultural produce in some villages. However, due to the remoteness and poor connectivity of roads to urban areas, the department cannot market the goods of most of the villages. The farmers predominantly market village produce themselves.

A few business establishments by our members are coming up in Dimapur city. Dimapur has a positive scope to market agricultural produce from our Home District if adequately guided and managed. Therefore, WCH has initiated and formed the 'Western Chakhesang Business Association' to look into such aspects for establishing business and marketing avenues. It is very encouraging that our Hon'ble Minister Shri. Neiba Kronu has fully committed to supporting such initiatives and has agreed to work towards opening up a Chakhesang Market in Dimapur City (Souvenir, 2021.).

Chakhesang Customary Laws and Traditional Practices:

In the socio-ethical life, the ancient people had their customs as guiding principles and abide by them as laws. Without change, it has been in practice up to this contemporary age. It is the oldest law since it was in place before the other laws were enacted. They are very distinct as they follow the natural law. It is a common law for all the communities and members of the Chakhesang tribe. The violation of the

customary law is liable to be punished by the traditional court in each community (CPO, 2020). Article 371-A of the Indian Constitution states, in clause (1) sub-clause (a) of the article, that despite the provisions of the Constitution, no act of Parliament about the following shall apply to the state of Nagaland unless the Legislative Assembly of Nagaland adopts a resolution to that effect on the following subjects:

- Religious or Social practices of the Nagas;
- Naga Customary Law and Procedures;
- Handling Civil and Criminal Cases, making conclusions based on Naga Customary laws, and
- Transfer and Ownership of land and resources of the Nagas.

The provision has been safeguarded as follows,

Religious and Social Practices: The Nagas are free to practice any religion, believe in it, spread it, plan religious events and social gatherings, and create religious institutions.

Naga Customary Laws and Procedure: Recognizes the Naga Customary Laws and its procedures and enables the establishment of its traditional system of court to try and settle all kinds of cases.

Administration: Following Naga customary law, the State Authority of Nagaland is empowered to draft laws, rules, and regulations that serve the interests of the state's residents and administer civil and criminal justice.

Transfer and Ownership of Land and its Resources: The Central or State Govt. has no authority over the land belonging to the Nagas since all the land wholly belongs to the absolute possession and traditional ownership of the private individuals of the Naga villages from time immemorial as inherited from forefathers.

Superiority of Customary Laws: The customary laws are the natural laws above human interventions, whereas the enacted laws and ordinances are made by and for the nations concerned. Any human civilization in any manner cannot change the law of nature. Hence, the traditional law prevails whenever a conflict arises between the customary and the other enacted laws and is superior to all enacted laws. Therefore, as long as they are based on natural justice, no court can quash or undermine the principles of native customary laws (ibid.).

Punishment:

According to the Chakhesang tribe, anyone who damages crops in another person's field faces a fine of three times the value of the destroyed crops. When the shepherd or cowherd is on duty, and if damages are still caused to the field by the animals, the negligence of the cowherd needs to be examined. As a result, the Village Customary Court will determine the appropriate fine for the damages. Fundamental values form the basis of socio-religious laws, which are rigorously upheld. These include refraining from swearing false oaths, stealing, murder, wicked deeds, perverting justice, adultery, witness fabrication, and other transgression. The local and religious authorities have the right to penalize those who break these regulations. Religious ceremonies and socio-religious gennas are closely observed. If someone defiles such a genna, the village authorities will punish the culprit immediately. The community has denounced several horrible crimes, such as murder, rape, rape and murder, kidnapping, human trafficking, spreading human or animal diseases, home burning, arson, etc. If a wildfire destroys a Jhum, orchard, farm, forest, woods, or plantation, the perpetrator may face punishment commensurate with the loss, which the village court will decide. It outlawed the harvesting and distribution of medicinal plants. When someone disobeys natural laws, they also disobey customary rules, and the relevant village authority will punish them accordingly, up to and including expulsion. In case, without the knowledge of others, when customary law is broken, the offender faces unavoidable bad luck, severe injuries, disease, or starvation and cannot flourish or live a long life.

Landholding system and customary laws:

The landholding system in Nagaland is entirely different from that of other states in the country. Customary laws govern almost every aspect of the Naga life, including the land system, which includes common village land, khel land, clan land, individual land, marriage, divorce, adoption, inheritance, succession, debt, theft, murder, etc. The Nagas need to have land, whether it is ancestral or acquired. Without land, an individual or a family will not be considered the original inhabitants of the Naga village. Naga values land more than lives. Apart from the sociocultural significance, land also yields economic and political power. The sociocultural relevance of land legitimizes the Nagas' traditional authority over the land (Sridhar et al., 2017).

The Constitution of India was amended in 1963, and Article 371A was introduced to bring about civil affairs in Nagaland under tribal customary laws. The state has been given special status and autonomy, including Nagas' customary laws and land. The land in Nagaland belongs to the people, which means buying and selling cannot be done without the consent of the people/village authority. At the village level, the land is administered by the village council. The government has no right over this land. As per estimation, almost 98% of the land in the state is under people's ownership. The remaining two per cent is government land (ibid.). In Nagaland, land ownership is categorized as follows:

Clan Land: A clan is a group of families where it is forbidden for the members' intermarriages. A clan in a village is merely one line of parents, and the size of the community affects the number of clans. Every clan has a particular piece of land under its authority within the village limits. Clan land grants certain clan members complete ownership rights. The designated territory belongs to the members of that particular clan—sites for building houses, vegetable crops, forest land, and meadows. Fodder, fuel wood, and cultivable grounds (Jhum and terrace fields) encompass this land (ibid.). Each clan household has the right to a portion of the clan land for farming or building. Only the eldest male member of the clan is nominated as the clan head and authorized to administer clan land. He allows clan land to the clan members as per the availability of clan land. They were once allotted to a specific clan, and land ownership

was transferred from generation to generation. Women have access to clan land, but traditionally, they do not own it and are nominated by clan heads (Sridhar et al., 2017).

Khel Land: A Naga village is a composition of several khels. A khel is then composed of various clans. It is a residential division and a collection of several exogamous kins. The number of clans in a particular khel varies from khel to khel (ibid.).

As per the customs and traditions of the Chakhesang, the land-holding system is the traditional possession of land by the native people. The person who owns the land has absolute conventional privileges over the land owned. All the rights and privileges appurtenant to him or them are in that very portion of land. Such a definite area of land is either inherited from his ancestor or acquired by or purchased by that person himself or themselves (CPO, 2020).

Village Administration:

In contrast to other states in the Union, Nagaland enjoys special safeguards for protecting religious practices, customary laws, and the economic interests of its people. The Constitution of India gave due recognition to the distinctive identity of the Nagas through the Constitution (Thirteenth Amendment) Act, 1962 (Sema & Golmei, 2016). For village administration, the State Government issued the Nagaland Village and Area Council Act, 1978 (Act No.1 of 1979), which also served as the basis for creating the Nagaland Village and Area Council Rules, 1979. The Act and the Rules cover the whole State of Nagaland. The land, woodland, and surrounding area traditionally belong to the village head. However, in practice, the land and the forest belong to the entire village (Sema & Golmei, 2016). Every village, no matter how big or small, has a village council. The village council members are chosen among the residents using the present traditions and usages. Each Khel and clan is given equal representation on the village council by allowing them to select or elect a council representative. The size of the community dictates the size of the village council. There are more council members in larger villages than in smaller ones. The number of representatives each Khel or clan

has may also be influenced by size. The village council usually has a five-year term. After it expires, the newly elected village council members are notified by the office of the district Deputy Commissioner. Each clan has a representative to the Village Development Board. The secretary and other village council members are active participants in the VDB. The village's development board, or VDB, has regular meetings. The VDB is the channel through which all state development funds for the villages – such as those for building playgrounds, water supply projects, and inter-village roads – are distributed. Without outside assistance, the VDB carries out these projects using labor virtually exclusively provided by the people, working "for the village, by the villagers." The VDB typically has a three-year lifespan.

The Dobashis (DBs), who work in the Judicial Court of Sub-Divisional Office or Deputy Commissioners, are referred to important cases. The village court also acts as a mediator to help the disputing parties to reach an agreement. Another crucial village official directly involved in its management is Gaonburas (GB). There are multiple GBs in the villages. GBs are often elected or nominated by the people to serve as permanent representatives. All village development initiatives are coordinated with the village people by the Village Council, GBs, and DBs. When two villages within the same district have a dispute, the Deputy Commissioner is the proper person to resolve the conflict, and the Nagaland Commissioner resolves the disputes between villages of different districts (Census of India, 2011).

CHAPTER III
TRADITIONAL AGRICULTURAL PRACTICES

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Introduction:

From the earliest days of cultivation, agriculture has experienced tremendous advancements. Agriculture began in India around 9000 BCE (Bowman & Rogan, 1999). It was claimed that the Harappan and Kashmiri regions began cultivating rice in the second millennium BC (Pillay, 1972). Mixed farming served as the foundation for the Indus Valley economy (Dev, 2006). Remarkable production of diverse domestic crops, livestock, and farming systems is made possible by traditional farming. Many traditional farmers in developing nations continue to use these agricultural practices because they are consistent, sustainable, well-organized, and balanced with the surrounding ecosystems. New farming practices are employed because the traditional farming system faces numerous obstacles. The primary agricultural systems in new approaches include multiple, vertical, polyculture, genetically modified crops, organic, and greenhouse farming (Alam et al., 2014).

The North-eastern region (NER), consisting of eight states, namely Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura are identified as the homeland of many tribal communities known as Scheduled Tribes (STs). The community of the Scheduled Tribe jointly owns and governs the land. Thus, landless households were less common among the ST households. For most of them, agriculture – especially shifting cultivation – is their primary source of income, and land is their most important resource. Small- and medium-sized land is the primary source of income for ST households, making it a subsistence economy (Marchang, 2018).

The region of Northeast India is distinguished by its incredible biodiversity, cultural heterogeneity, marginalization, inaccessibility, and fragility. About 56 per cent of the area is classified as low altitude, 33 per cent as mid-height, and 11 per cent as

high altitude. Large CDR (complex, diverse, risk-prone) types, low cropping intensities, subsistence farming, undulating topography, and incorrect land use patterns are characteristics of the agricultural production system. Given the low investment and low-income farming environment, the horticulture industry likely possesses favorable characteristics to quicken the region's agricultural growth process. In all agricultural systems, including rainfed and hilly farming systems like those in the northeast, agriculture and related industries, particularly horticulture, are essential for ensuring sustainable rural livelihoods (Roy et al., 2014).

Diverse agroclimatic and geographical conditions characterize the region. Due to abundant natural resources, NER has remained economically backward despite ample potential for development. Valleys are abundant in organic materials. Rainfed agriculture, with rice taking up over 80 per cent of the planted area and maize coming in second, is the traditional method used by farmers on highland terraces and valley land. NER is currently cropping at a 120 per cent intensity (Ghosh, 2010).

Indigenous Technical/Traditional Knowledge (ITK) is a local and rural community. In North East India, it is used in weather forecasting, good seed germination, soil fertility management, soil and water management, insect pests and diseases of plants and animals, processing, storage and fishing, etc. There are several Indigenous cultivation practices like wetland rice cultivation of the Apatani tribe of Arunachal Pradesh, the Alder and *zabo* farming in Nagaland, large cardamom plantation in Sikkim, Traditional Mixed Cropping, Bamboo Drip Irrigation in Meghalaya, etc., are all still in vogue in organic agriculture, which are sustainable, eco-friendly, viable and cost-effective (De, 2021).

ITK used for Agriculture in North East India:

ITK is an effective tool for agriculture in India; for example, in Sikkim, organically rich topsoil matter is added into grooves over the seeds of potatoes. Farmers also use forest litter for bedding and producing compost material. Terrace farming has long been used for the production of maize and rice. This method efficiently controls surface run-off, controlling for expanding gullies already in existence. Foreign input

materials and highly specialized expertise are not required for the traditional huge cardamom drying kilns (Bhutti). The kilns' four sides are made of stone masonry and mud that can be found nearby. For improved germination, growth, and yield, cucurbit seeds are buried deep in the soil after being embedded in balls of fresh cow dung (Musara & Chitamba, 2014).

Adi tribes of Basar put five wooden / bamboo sticks randomly in the rice field during the flowering stage and placed dead frogs / dry salted fish/crabs on the sticks to attack adult Gandhi bugs (De, 2021). In the hills, natural perennial streams are the primary water source for domestic and irrigation uses. Farmers in the Jaintia hills of Meghalaya practice drip irrigation using bamboo to irrigate areca nut and betel vines grown on steep hill slopes with boundary soil. The Khasis (Meghalaya) cures the areca nut in the flowing water (De & Sarangi, 2006).

The old practice of ploughing the field many times and exposing it to the scorching heat of sunlight before sowing or transplanting kills most pests, such as stem borers' larvae and rice weevil larvae. This cultivation is sustainable and adapted for various crops as it helps eliminate the significant pests of cultivated crops. Indeed, this practice continues for small-scale farmers in the Manipur valley (Santosh & Chhetry, 2012).

The *Zabo* rice cultivation system is an excellent indigenous method of rainwater harvesting used by the farmers of the Chakhesang tribe of Nagaland. The Jhum farmers of Kohima and Phek districts of Nagaland usually plant alder trees in the Jhum cycle area along with traditional crops for soil fertility and erosion (Nagi et al., 2023). It has been discovered that sun-drying grain effectively prevents insect infestation. Most farmers in Arunachal Pradesh store meat and grain near the kitchen, where the smoke from the firewood reaches. To avoid insect pest infestation, they also place Neem or Tulsi leaves on top of the storage building (De, 2021). Farmers gather the leaves and branches of weeds and bushes from the crop field and forest in the summer and spread them around the field. Ash is added to the land when these leaves and branches are burned before the monsoon season begins. The soil's ability to retain water, its smoothness, and its fertility level are all enhanced (Devi, 2020).

In Nagaland, the Chakhesang and Pochury ethnic communities reside in the Phek district. 91% of the total population relies on agriculture as their livelihood (Jamir, 2011). The Chakhesang of the Nagas are known for their rich cultures and traditions. This community's melodious folk songs and the festivals' lively folk dances are always associated with agriculture. The Chakhesang are skilled artisans who create furniture, sculptures, pots, and baskets. One of the Chakhesang settlements, Mutakhru village, also produces salt. In the Chakhesang tribe's homeland, agriculture is not only a source of income but also a vital component of communal life. Despite being mountainous, the region has many forest resources, including lumber, bamboo, and food from fisheries. This biodiverse agricultural technique consists of kitchen gardens, terrace rice cultivation (TRC), and shifting. When combined, these three strategies have ensured food security despite lousy weather.

Food production in India has always relied heavily on conventional farming methods. Nagaland farmers follow traditional wisdom, which advocates adding easily accessible organic materials to the soil, such as agricultural leftovers, animal dung, and leaf litter. These benefits allow the region to transition to organic agriculture without significantly adjusting the current farming methods (Murry, 2019). Agriculture is the primary source of income in the Phek district, where Chakhesang has long engaged in family farming and sustainable horticulture. The soil and climate in this area appear to be beneficial. Terrace cultivation, alder-based farming, Jhum farming, and the *Zabo* farming system are a few examples of traditional agricultural practices. Despite recent changes in agricultural methods, the Chakhesang farmers continue to use indigenous knowledge (IK). Their social, cultural, and spiritual life are closely linked to their land, which these farmers hold in high regard. Some of the indigenous crops cultivated by the Chakhesang community are Plain Rice, Sticky Rice, Millet, Job's tear, Yam, Maize, Pumpkin, Sweet Potato, Colocasia, Ginger, Naga dal, Soybeans, oilseeds, Mustard leaf, Long Beans, Flat Beans, Winged Beans, Peas, Chilies, Garlic, Tomatoes, Gourd, Chow-Chow (Squash), Potatoes, Cabbages, Bamboo-Shoots, Cucumber, Ladies Finger, Brinjal, Egg Plant, Green Onions, etc. and fruits are Banana, Sugarcane, Oranges, Passion Fruit, Pomegranate, Plum, Guava, Peach, Lemon, Mango, Gooseberry, Papaya, Pear, etc.

Culture and land:

Land is generally regarded as the primary source of life, and people and the land continue to have a close relationship. For them, it is sacred since it is a gift from God and an item of property. It is also regarded sacred and should be passed down to future generations because the ancestors lived and toiled on the same land. Since ancient times, there has been a strong bond between the Chakhesang culture and their homeland. Indeed, some of Mother Nature's best partnerships are those based on honesty and respect. They uphold the purity and dignity of their land. The terrain provides them many resources, including rich woods, various plants and animals, rich soil, and robust crops. It can meet its citizens' requirements.

Kheza is the language of the locals, and the entire year is filled with agricultural activities and associated celebrations. Farmers are healthy, strong, enthusiastic, and friendly. A lazy man is not admired, and they foster kindness and devotion to the land. While working in the field, they sing specific songs in folk tunes (*tshele*) as a complementary labor culture. A solo melody is a music produced by an individual working alone. When two guys sing together, they sing the song in response to raising the tool in the worker's hand; the slow song is adapted to the slower activity. The process of working likewise quickens when the song speeds up. One of the indigenous' admirable work cultures is the custom of exchanging labor in return, whereby groups of farmers work together on each other's fields until the roster round is finished.

Three ethics- taboo (*Kenyi*), shame (*Manye*), and fear (*Metha*), are essential moralities in traditional society that guarantee social norms are upheld. These morals influence attitude, direct human conduct, regulate emotion, and mould the mind. It is highly regarded and has enhanced the socio-cultural and socio-ethical nature. For indigenous people, land is an enduring gift that provides for their basic needs and is the source of their culture, economy, and life. Land access is essential for any livelihood that depends on agriculture. In addition to agriculture, the land is utilized for transportation, residence, and recreation. A tribe's culture is the unique identity of its members. Their land is the source of their rich tribal culture and legacy, which includes arts and crafts, dance and music, language and deeds, festivals and customs, dietary

habits and lifestyles, rituals and taboos, beliefs and values. Our quality of life is improved by culture. It expands people's and communities' general well-being. It fortifies our pride, unity, and sense of belonging while tying people to the past. It serves as a reminder of our superior character and compassion.

The indigenous people's ability to connect with the land's resources is essential to their prosperity. The theory of tribal culture holds that culture is learned rather than spontaneous, shared rather than centralized, social rather than individual, local rather than universal, historical rather than biological, and cultivated rather than coarse. Therefore, it is essential to preserve and promote these cultures to improve the standard of living for tribal people. Introducing culture into new homes is the best way to conserve it.

Types of Land Ownership:

For the Chakhesang tribe, the land is owned by the people of the tribe itself. The land is bifurcated into forest land and agricultural land. The land is then classified into different ownerships: Individual ownership, Clan ownership, and Community ownership.

Individual Ownership Land: In this ownership, the land is private property, and its usage is in the full authority of its rightful owner. This type of land comes from a conventional patrilineal inheritance system, and land is bought individually. He can use the land at his whims and wishes, except for those against the customary laws or the village council regulations, like the cultivation of illegal crops (Ganja) or sponsorship of any unlawful activities.

Clan Ownership Land: In this ownership, the land is utilized according to the terms and conditions of the clan members. The clan members will decide whom to cultivate, in which part of the land, for how many months or years, and who can harvest the forest produce or cut firewood in the forest.

Community Ownership Land: In this ownership, the land is utilized according to the conditions of the village council's regulations. The village council will instruct which areas to reserve, which to cultivate, and how long. The village council board will decide what needs to be developed and when the villagers can hunt or gather produce from the communal land. The council makes decisions about what can and cannot be grown.

Customary Laws of Land:

Customary law is founded on fairness and natural law. Despite being verbal, the Chakhesang tribe's traditional rules have been followed for all eternity. The village customary court takes action when the customary law is broken. After carefully examining the witnesses, each case will highlight the principles of customary law. Indigenous customs and traditions do not allow a female to receive any inheritance from her ancestor's lineage regarding immovable properties. Only men are eligible to inherit their father's property or inheritance. Since the ancestors took these lands from no one else, it was forbidden for female members to inherit certain types of ancestral holdings they had conquered by defeating the enemies. The marriage of a female child cannot cause the land inherited from the descendant of the ancestral lineage to be lost. Since land plays a vital role in the lives of the local people, a woman's title can be modified upon marriage. However, in the customs and traditions of the natives, there is a peculiar system of women's share that the parents give a terrace field with a few contours to each of their daughters. When the daughter dies, her brothers shall take the terrace field back.

When any private person or group of persons has infringed on public rights or hampered public utility services, the offender shall be summoned to the customary court for the case. Particular forest areas are kept in reserve and restricted from hunting, fishing, and logging. A village can sue for public interest litigation per customary law when a person blocks a footpath, road, or irrigational channel. If the wildfire destroys the agricultural field, it is an individual case between the owner and the offender, but if necessary, the village court will decree the field's value for the fine to be paid. The forest fire is unpredictable, so the village youths constantly watch their village by the

roster system. Whoever ignited the forest fire outbreak from his slash-and-burn field shall be punished with a fine determined by the village court. Taking an oath is for the final settlement of cases. In all matters of dispute, irrespective of civil or criminal cases, an oath is administered to settle the issue between the two parties by the village court or joint court of two or more villages. People swear by invoking spirits to settle disputes. No other case shall come out again relating to the same matters since an oath is performed, and the right or wrong is left to the supernatural being for an appropriate reward. Anyone caught violating the village council's orders regarding the usage of the community land will be dealt with strict customary laws up to expulsion from the village.

In tradition, the natives help needy people with free labor, individually or for the whole clan or village, for one day or more per work. The youth are the workforce for agriculture, and they form groups for a reciprocal exchange of labor every year. They go to each other's fields alternately until they complete the roster round. This system of the reciprocal labor force is the most commendable culture for boosting the rural economy.

Culture and Agriculture:

Like many other Naga tribes, the Chakhesang Naga people were distinguished by their belief systems and cultural customs essential to their identity. These customs were strongly linked to their agriculturally oriented way of life, agricultural rites, and deep connection to the natural world (Yekha-u & Marak, 2021). The community life mainly revolves around farming practices, so different activities carried out by the people are based on agricultural seasons. Each practice is guided by strict observation of restrictions and taboos (Singh & Theluo, 2016). Agriculture and community life are so interconnected that some of the most famous folk melodies, folklore, steps of traditional dances, and festivals celebrated have origins and connections in agricultural practices. In the Chakhesang community, agriculture has developed into a primary repository of cultural legacy.

Agricultural Festivals:

A good number of festivals are attached to agriculture. They joyfully participate in singing and dancing along with notable local beer (*hazi*). Some of the major festivals are listed below:

***Tshükhenye*:** This festival is celebrated in the last part of April or the first part of May when the full moon is waning or a new moon is coming up. It is held for five days to complete sowing the seeds in Jhum fields. For this festival, men go hunting birds, animals, and fish. They also kill and feast on domestic animals.

This festival also marks the end of winter and spring's joy and leisure seasons and indicates the dawn of hardworking monsoon days. One of Chakhesang's striking features observed during this season is organizing a village wrestling competition. Young and older men participate in wrestling by showcasing traditional sports, testing their strength, and earning a name as the village wrestler. It is a simple but highly technical sport played by tying a waistband (belt), usually made of cotton cloth. The wrestlers generally maintain a special diet and proper exercise to make themselves fit for the prestigious annual tournament. The individual winner is highly esteemed and occupies a respectable position. It also signifies solidarity and tribal identity. This title will help him move forward to enter the next inter-village wrestling title and also at the state-level title.

Figure.3.1. Naga Wrestling

Source: Fieldwork

Pupfü: *Pupfü* is a one-day festival celebrated to complete paddy transplantation work in the paddy field. People kill and feast on whatever domestic animals they have. They rest, feast, and drink *Hazi* to regain strength and health.

Etshünye is a millet harvest festival that lasts five days in July. *Etshübe* means millet and *nye* is festival. Millet is the elder brother of paddy rice and a poor man's rice. During this festival, they worship and thank God for the harvest. They kill animals and feast. They also do social work, cleaning village footpaths and maintaining cleanliness in their environment. They visit friends and family members and engage in merry-making.

Enonye**:** This festival is observed for two days in August. The village priest and the villagers sacrificed an animal to invoke God and protect their crops from natural calamities for a plentiful harvest. It is taboo to draw water from the well, wash clothes, even plucking of plants, and entry of outsiders into the village. It is also prohibited to have a bath.

Ebouchüto: This is celebrated seven days in November for the paddy harvest. It is taboo to consume newly harvested paddy until they celebrate this festival. They collect snails, crabs, frogs, fish, etc., for the sacrificial purpose of their Gods so that the *Ebu* (big bamboo paddy storage basket) shall be blessed. It marks the dawn of eating the newly harvested paddy from *Ebu*.

Erünye**:** This festival is considered the best and the most content of all festivals. It lasts for ten days in December. *Erü* means paddy, and *nye* means festival. They wore the best dresses and danced and sang together. On the festival's first day, drinking, eating, and cooking is forbidden. It was forbidden to kill the pigs with a rod, spear, dao, or gun. They must use a sharp, pointed wooden stick to pierce the animal's heart as a sacrifice. After that, they take the blood of the sacrificed animal and rub it on the door frame and walls of the front house.

During the festival, older people give food and blessings to children in return for their acts and goodwill. The children provide local beer to their elders as a symbol of love and respect. During this festival, all male members bathe before sunrise as a

sign of purification and go hunting, and all animals killed are hung on a tall bamboo pole for the year as a symbol of victory.

Agriculture and Rituals:

As per the culture and tradition of the natives of the Chakhesang tribe, some major seeds are arranged and preserved for agriculture. They are Jhum field-paddy seeds, various seeds of rice, maize, Millet, jobs tear, pumpkin, mustard, beans, oilseeds, and yam. When the seed sowing arrives, the priest will fast for five days. He cannot leave the house or speak to anyone during his fast. Similarly, the priestess will perform the same religious rites for harvesting when the time for reaping has arrived. Anyone who intentionally destroys crops faces a reasonable fine of three times the crop's value. Those who commit the crime of cruelty to domestic animals are likewise subject to this.

The newly acquired terrace field owner prohibits himself from working on the terrace or anywhere else on the first day of the visit because he fears that the handle of his hoe or dao would fall out of his hand, which is a bad sign for them. All agricultural and construction activities are strictly restricted to adhere to the socio-religious gennas or taboos (*Kenyi*), and religious ceremonies. To celebrate the festivals and provide abundant crops, the genna of a one-day holiday, during which manual activity is forbidden, is preserved. To prevent pests and wild animals from destroying crops, the villagers also rigorously observe the animal genna, which prohibits killing any animals or insects on that specific genna day. Genna of Millet ill-health is held annually to control pest damage and illness. To regulate the unfavorable weather conditions of hailstorms, strong winds, and continuous rain during the paddy ripening season, the public worships nature in genna; during the Autumn and paddy festival, a religious ceremony known as *Cheje* will be performed in which a piglet will be killed, and its blood will be used to stain the major walls and doors before other animals are killed for the celebration. It is a post-harvest rite for the village not to let any fire incident or natural calamity happen during the year.

Agriculture and Social Status:

As agriculture is the main occupation of the Chakhesang tribal people, most of the events and activities surround the agriculture system. It is observed and held high that whoever cultivates the most extensive field is most regarded and respected in the village, as he harvests the most. This also shows the strength and richness of the farmers. He can become the village's leader and head as he can give a 'feast of merit' and host extra expenditures. So, agriculture is also related to status sustenance. Throughout the world, feasts of merit are vital to many tribals' social structures, particularly in Southeast Asia. Before the arrival of Christianity, the many Naga tribes in Northeast India were well-known for this practice. Nonetheless, the Chakhesang Nagas continued to celebrate feasts with only little variations in taboos and rites following the arrival of Christianity. On the other hand, the values and symbolic significance associated with this behavior are preserved.

The Chakhesang refer to the Feasts of Merit by other names, including *Zhothi*, *Zatho*, and *Trayo*. Every agricultural cycle, before paddy plantation and after harvest, was marked by communal feasting in the past. Since not every household could afford to feed the entire hamlet, the wealthiest family in the community would be chosen and invited to feed the whole village. The number of paddy fields and animals one previously owned was a good indicator of wealth. The Feasts of Merit, among them, are intricately connected to their worldview, whereby the feast-givers distribute their wealth in terms of sacrificing Mithun, buffalo, and/or other livestock in consecutive feasts and receiving in return a higher social rank and the right to wear a unique shawl ("Feasts of Merit" shawl), variously known as *Hapidasa, Elicüra*, and *Thüpikhü* and the right to adorn the house with particular architecture (Mithun and buffalo wood carvings on the wall, and to put up a horn at the pinnacle of the house front) (Yekha-ü & Marak, 2021).

Feast of Merit: The Feasts of Merit were traditionally held in three successive events. The people sing folk songs and chant during the first stage, known as *Eda,* in the Chakhesang Chokri dialect while sipping endless rice and beer and eating a whole feast of meat and rice. The feast was held in the feast-givers' courtyard.

The only person qualified to serve the second feast, known as *Lekhü*, was the one who had finished the first. Even after providing unlimited rice and beer and a full supper feast, this involved giving raw meat to the village, which was expensive and considerably more prestigious. Several buffaloes, Mithuns, and pigs were killed for the feast. Depending on the giver's wealth, this feast might be extended beyond the village limits. After finishing the second feast, A person is now entitled to adorn the Feast of Merit shawl known as *Elicura* (*eli* meaning "buffalo," *cü* meaning "horn," and *ra* meaning "shawl") and also could install certain carvings in their home's construction. These "Feasts of Merit" houses go by several names, including *Kecükie*, *Ceka*, and *Kike*. The right to erect two horns, one in the front and the other in the back of the house, was granted to the feast-givers who fed two or more communities simultaneously.

The final feast is called *Zatho* or *Trayo*, while the Chokri called it *Zhothi*. Before the feast day, a stone-dragging ceremony was held in which all of the male villagers, young and old, dressed in traditional attire, took part in pulling a stone to be placed in the village's main walkway. After the stone was erected the following day, the feast-givers provided the villagers with a full supper feast, music, and dances, with unlimited rice and beer. As a result, the feast-givers gained greater social standing, privileges, and honors.

The introduction of Christianity significantly altered the Naga people's way of life and culture. As the dragging of monoliths was linked to animism, which went against Christian standards and lifestyle, the custom of hosting feasts, dining with rice beer, and having a good time decreased in the Chakhesang villages, such as Chizami and Pholami. It was forbidden for anyone who had converted to partake in or organize such a series of feasts. Nonetheless, the hosts continued to serve the villagers two feasts on Christmas Day in certain Chakhesang villages in the early days of Christianity, depending on the church denomination. The Zhavame of Chakhesang village were particularly inclined to this (Yekha-u & Marak, 2021).

Figure. 3.2. (a)Traditional Wooden Rice Beer Container

(b)House of the Feast of Merit

(c) Stone erection of the Feast of Merit

(d) *Elicura*- Feast of Merit Shawl

Source: Fieldwork (Pholami Village)

Traditional Work Calendar:

Commonly, there are four seasons counted in a year viz; cold season (*Cüthi*) in December to February, dry, windy season (*Teka*)from March to May, the hot season (*Cüli*) from June to August, and wet season (*Terhü*) from September to November. According to these seasons and months, socio-economic activities are conducted in one calendar year, shown in the table below;

Table. 3.1. Socio-economic activities for one calendar year:

Month in Kuzale	Socio-economic activities	Division of labor
Zathokhrü (January)	Plowing the terrace fields, construction of houses, weaving and knitting cloths.	Men - Ploughing the terrace fields, construction of houses. Women - weaving and knitting cloths.
Tshüpfukhrü (February)	Cutting firewood, constructing houses, weaving, and knitting clothes.	Men - Cutting firewood, constructing houses. Women - weaving and knitting clothes.
Tshidekhrü (March)	Fetching of firewood, burning of Jhum field, and sowing seeds.	Men - burning of Jhum field. Women - Fetching of firewood and sowing seeds.
Tshükhenyekhrü (April)	Sowing seeds in Jhum fields and carrying cow's manure.	Men - carrying cow's manure. Women - Sowing seeds in Jhum fields and carrying cow's manure.
Kemekhrü (May)	Clearing wet and dry paddy fields and plowing wet terrace fields.	Men - Clearing wet and dry paddy fields and plowing wet terrace fields. Women - ploughing wet terrace fields.
Kezhükhrü (June)	Ploughing of paddy fields, transplanting of rice plants.	Men – Ploughing of paddy fields, Women - transplanting of rice plants.
Etshünyekhrü (July)	Harvesting millet, sowing naga Dal.	Men – Harvesting millet, Women - Harvest millet and sow dal.
Enokhrü (August)	Harvest of maize, weeding paddy fields, clearing field paths, and community fishing.	Men & Women - Harvest of maize, weeding paddy fields, clearing field paths, and community fishing.
Metshakhrü (September)	Clearing paddy fields and bundling up rice plants for harvest.	Men – Clearing paddy fields and Women - bundling up rice plants for harvest.
Ciedekhrü (October)	Clearing Jhum land, cutting trees for the construction of houses, and Paddy harvest.	Men – Clearing Jhum land, cutting trees for the construction of houses, and Paddy harvest. Women - Clearing Jhum land and Paddy harvest
Ebouchüketokhrü (November)	Collecting thatch for house roofing.	Men & Women – Collecting thatch for house roofing.
Ernyekhrü (December)	Carrying firewood, harvesting naga dal and tuberous crops, and weaving cloths.	Men – Carrying firewood, harvesting naga dal and tuberous crops, Women - Carrying firewood, harvesting naga dal and tuberous crops, and weaving cloths.

Types of Agricultural Land among the Chakhesang Nagas:

The land is of hilly terrain, and the weather is tropical. Villages are primarily on the hilltops, and the fields surround the villages, near and wide. Farmers cultivate their rich land from the habitation to the stretch of the river down the mountain bed. Fields (*Ekhulo*) are primarily in sloppy areas and forest-cleared regions, where farmers traverse on foot on their long, narrow, winding roads.

The land among the Chakhesang Nagas is classified into two parts: forest land and agricultural land. The village usually reserves the forest land for natural resources unless necessary for cultivation. The farmland is further sub-divided into the following categories;

Ekhulo (Terrace field)

Meluloh (Jhum field)

Chükhe (Agro-forestry)

Kecü (Kitchen Garden)

***Ekhulo* (Terrace field):**

The terrace field is of two types: *Kedaloh* (wet) and *Ketsholoh* (dry). It is a permanent field for the cultivation of paddy rice. Terrace fields are individually owned and are cultivated individually at the household level.

Figure. 3.3. *Ekhulo* (Terrace field)

Source: Fieldwork (Pfutsero Village)

Kedaloh is a terrace field where water is retained throughout the year. These wet terrace fields are typically dug near the water sources, where the water stream could be

channeled to these fields. These fields are owned by the villagers, who have land near the water sources and are primarily owned by wealthy farmers in terms of land and wealth. Farmers also practice aquaculture, keeping fish and snails in these fields. Many farmers desire this field type since cultivating and producing more harvests is much easier.

Figure. 3.4. *Kedaloh* (Wet Terrace Paddy Field)

Source: Fieldwork (Chizami Village)

Ketsholoh depends on monsoon rain and other water sources, like a watershed management system for cultivation and water channels brought to the fields from available water streams. One of the unique integrated watershed management systems in the Chakhesang tribe, mainly practiced in Kikruma village, is the *Zabo* system.

Figure. 3.5. *Kethsoloh* (Dry Terrace Paddy Field)

Source: Fieldwork (Thetsumi Village)

***Zabo* system:**

Zabo is derived from the term *zabö*, used for "impounding run-off water" in the Chakhesang dialect. *Zabo* is also known as *Dzüdü* or *Ruza* system. It combines forest, horticulture, agriculture, fishery, and animal husbandry with a well-founded soil and

water conservation base. Water resource development, water management, and protection of the environment are intrinsic components of the system (Sharma *et al*., 1994).

The outstanding indigenous integrated farming practice of this tribe, specifically in Kikruma village, is *Zabo* farming (water impounding), where a vast forest area is conserved for cultivation. The forest hilltops are preserved for water catchment areas, and on the next level, ponds are dug for water collection, which serves as reservoirs. The collected water is channeled through cattle yards and fields below. This water carries the cattle's dung, urine, and wastes to the field areas and fisheries, adding nutrients to the soil again. Crops like maize, pumpkin, cucumber, Naga Dal, chilies, and beans are also cultivated.

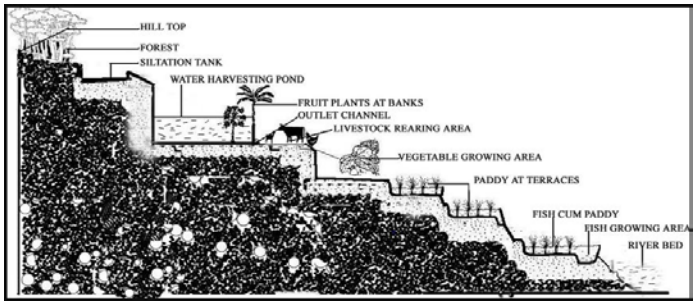


Illustration: Zabo Farming System (Source: Singh et al., 2012)

Figure. 3.6. *Zabo* Cultivation

Source: Fieldwork (Kikruma Village)

The significant differences between wet and dry terrace field cultivation are that in dry terraces, farmers can grow lots of seasonal crops like beans, cabbages, potatoes, pumpkins, peas, etc., but cannot be cultivated for paddy if it does not rain during its season, usually in June. Meanwhile, as water is kept in wet terrace fields, farmers are

only able to plant paddy and aquaculture. The job becomes increasingly difficult on dry terraces because farmers must correctly dig and plow the fields for several days before mixing them with water for paddy plantations. Following this, the field is immersed in water for four to seven days. The mixed soil must be carefully leveled before the paddy saplings are moved onto the field. Until the paddy is harvested, water must once more be sufficiently retained. In October, the paddy from both terrace fields is harvested.

***Meluloh* (*Jhum* field):**

Jhum fields also known as *Melulo*, make up 55 per cent of the cultivated land in Phek. Terrace fields constituted 41 per cent (Nagaland Phek Village Profile, 2001). Since Jhum fields are not permanent, they will be farmed for two or three years before becoming fallow for ten years or more. *Jhums* are usually done in forests and sloppy areas where terrace cultivations are not applicable and are generally far from home. It is commonly known as slash-and-burn cultivation. The ashes accumulated from the burned area are used as fertilizers and manure for *Jhum* farming. Burning also eliminates pathogens and other pests from the surface area. Zero tillage methods such as stick dibbling are the traditional way of *Jhum* cultivation. Felled trees are laid on the field as contour bunding to check soil erosion.

Upland paddy is incorporated with other crops primarily to create a physical barrier for the movement of insect pests- pathogens. Secondly, this practice provides a food source to the farmers throughout the year. Creeping vegetables like pumpkin, cucumber, etc., are incorporated between plants primarily to check the weed pests and attract insect pest pathogens for feeding in preference over the paddy crop. It has also been observed that jobs tear (*Coilacryma jobi* L) is sparsely cultivated in patches over the paddy field to avoid birds and rodent pests. These plants produce disturbing and loud sounds during the blow of winds, which drive out the entry of rodents and birds into the field. Pungent odor spices like onion, garlic, chili, ginger, etc., are usually grown, directly or indirectly repelling the pest pathogen from the area (Kuotsuo et al., 2014).

After the harvest, the field is left for around ten years to recover its fertility, and the farmers move to another spot to continue their *Jhum* farming. *Jhum* fields are cultivated on individual, clan, or village land. On clan land, that is, the land inherited from the great grandfathers by members of the close-knit group of interrelated families of the same line; after burning the area, the field is divided equally among the households of that clan who are to cultivate it or cultivated in roster system. The clan family collectively owns clan land. For village land, the village council will decide on the plot for *Jhum* cultivation. Usually, the forest for *jhum* fields is cleared in October/ November and burnt in March to sow seeds for various crops.

Figure. 3.7. *Melulo* (*Jhum* cultivation)

Source: Fieldwork (Tsupfume Village)

***Chükhe* (Agro-forestry):**

Chükhe, also known as agro-forestry, is an agricultural land whose ownership can be individual or clan. There are various flora and fauna that the owners can freely collect. Bamboo and trees are grown and shared equally among the clan households. Firewood is customarily cut twice yearly, once in January and then in December for the *Erünye* and Christmas festivals. *Erünye* is a paddy festival after the November harvest. For various constructions, art, and wood crafts, the village people will collect bamboo and wood for their skills in making houses, barns, furniture items, bamboo baskets, wooden plates and spoons, and other agricultural implements in their *Chükhe*.

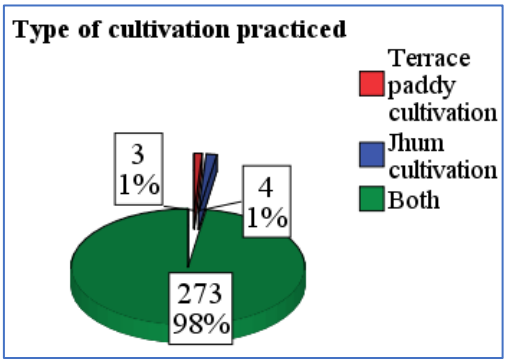
***Kecü* (Kitchen Garden):**

Every household owns its own *Kecü* or kitchen garden in the backyard of their immediate house compound. They cultivate this *Kecü* normally in February and March and sow varieties of seeds for household consumption. Seasonal vegetables, mainly mustard seeds, cabbage, garlic, cucumber, beans, chillis, eggplants, ginger, peas, etc., are cultivated. Most of the households plant squash crops in this garden. This *Kecü* also provides a space for the domestication of pigs, fowl, rabbits, goats, and cows.

Types of Agriculture cultivation in Chakhesang Tribe, Nagaland:

Since time immemorial, traditional agriculture has provided food security to the area's population despite climate change. Two primary cultivation methods are Shifting/Jhum Cultivation and Terrace Cultivation.

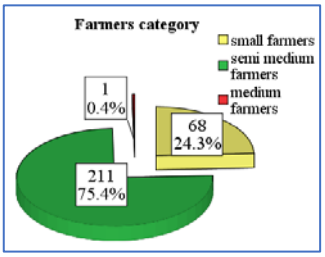
Figure. 3.8. Types of Cultivation:



Source: Fieldwork

Figure. 3.6 shows the various cultivation methods the Chakhesang Tribe practices in the study area. Of 280 respondents, 98 per cent are engaged in shifting and terrace cultivation. Four households are exclusively involved in jhum cultivation. Another three families do only terrace cultivation. Thus, this study involves most homes in Jhum and terrace cultivation.

Figure. 3.9 Farmers Category:



Source: Fieldwork

Note: Marginal farmers = below 1 hectare (ha), small farmers =1 to 2 ha, semi-medium = 2-4 ha, medium farmers = 4-10 ha, and large farmers = 10 and above ha.

In Figure. 3.7, out of 280 respondents, 75 per cent of the farmers are in a semi-medium category. Another 24 per cent of farmers are in the small farmers' category, and one household is in the group of medium farmers. Thus, in the present study, most households fall into the category of semi-medium farmers.

The Chakhesang Naga tribe is traditionally a subsistent agricultural tribe where people cultivate their land alone and not for commercial use, possibly due to self-sufficiency, self-dependence, lack of awareness and exposure, and desire for development. So, most of them are in the category of semi-medium farmers. Even if they have land (*kadzu*) at their disposal, the shortage of workforce, agricultural machinery, and the disposition of the hilly terrain give them the hurdles of extensive farming.

Table. 3.2. Type of Cultivation Farmers' Category Wise:

Farmers Category	**Terrace cultivation**	**Jhum cultivation**	**Both**	**Total**
Small Farmers	0 (0%)	4 (1%)	64 (23%)	68 (24%)
Semi Medium Farmers	3(1%)	0(0%)	208 (74%)	211(75%)
Medium Farmers	0(0%)	0(0%)	1 (1%)	1 (1%)
Total	**3 (1%)**	**4 (1%)**	**273 (98%)**	**280 (100)**

Note: The figures in parentheses are percentages.

Table. 3.2 explains various types of cultivation the farmers in the study practiced. It was found that 98 per cent of households were engaged in Jhum and terrace cultivation. Four families were exclusively involved in jhum cultivation, and another three were in terrace cultivation only. None of the small and medium farmers are cultivating terraces. Some of the significant local varieties of crops cultivated are *Etshube* (Millet), *Tutshehbe* (Job's tear), *Keni* (Perilla), *Pocu* (Sesame*)*, *Karhu* (Naga dal), *Mekrita* (Maize), *Hamu* (Pumpkin), *Edzunu* (Yam), *Evudo* (Ginger), *Mekarhu* (Sweet Potato), *Etshumekarhu* (Tapioca), *Ebe* (Paddy), etc. These crops have rich nutritional and taste qualities, with a high commercial potential for small farmers.

Table. 3.3. Type of Land for Traditional Crops:

Farmers Category	Individual Land	Both Individual and clan land	Total
Small Farmers	63 (23%)	5 (2%)	**68 (25%)**
Semi Medium Farmers	172 (61%)	39 (13%)	**211 (74%)**
Medium Farmers	0 (0%)	1 (1%)	**1 (1%)**
Total	**235 (84%)**	**45 (16%)**	**280 (100%)**

Note: The figures in parentheses are percentages.

Table. 3.3. illustrates the land ownership where 84 per cent of the farmers cultivate crops on their land and 16 per cent on individual and clan land. The Chakhesang tribe is naturally rich in land, and the area is generally abundant in flora and fauna. The people of this tribe are hardworking, and most of them are farmers. The land is fertile and rich, the weather is friendly to the farmers, and these farmers cultivate their land for their livelihood. Every clan member (household) of the Chakhesang tribe has joint ownership of the land of each clan. In this clan land, every clan household can cultivate crops according to the rights of the clan decision. Any household that wants to cultivate in the clan land can do so after permission from the clan members, where land allotment is given for specific years to each member's household. Some households may cultivate in the clan land for an extended period due to a shortage of individual land, which clan members usually agree on humanitarian grounds and a sense of togetherness. Moreover, every clan member (household) will get a chance to cultivate in the clan land if they want to for a certain period.

As per the traditional system, mono-cropping or only one crop is cultivated yearly, but steadily mixed-cropping and crop rotation were also followed. Farmers grow crops like potatoes, green leaves, peas, maize, etc., in and around the paddy fields before transplantation. Cultivation, to a large extent, is done in two seasons: the summer season, or Kharif crops like paddy, Millet, maize, squash, pumpkin, and cucumber, and the winter season, or rabi crops like ginger, Naga Dal, yam, cabbage, potato, peas, etc. There are various kinds of rice for different regions of different climatic conditions. Some grow better and healthier in some areas due to the type of soil and weather conditions. It also depends upon the farmers' choice of which to cultivate. In this study area, there are two main kinds of rice: *Tengabe/merube* (plain rice) and *menabe* (sticky rice). Both are cultivated for food, but *menabe* is used more in making *hazi* (local beer). These two rice can be grown in any paddy field (*Jhum* or Paddy terrace field) the farmers want, but sticky rice is usually cultivated by farmers with more paddy fields and those who would like to sell the sticky rice for want of money. In addition to growing sticky rice for everyday use, some people also grow it to make tea for fast food and bread for breakfast. They also offer sticky rice as an extra menu item. Sticky rice is harvested just once a year, as opposed to twice a year for Millet. Due to its early emergence and simultaneous harvest, sticky rice is sown a bit later than other types of rice. Sticky rice is traditionally grown more for rice and beer by wealthy men who have more land for other types of rice. Other farmers will have less to eat if they don't grow more plain rice. Plain rice is seen as a daily necessity because sticky rice is sticky, it cannot be eaten like regular rice. The sticky rice was mainly cultivated to make local beer.

Table 3.4. Distance from Field:

Farmers Category	Distance from Field				Total
	1-2 km	2-4 km	4-6 km	6-8 km	
Small Farmers	12 (4%)	40 (14%)	13 (5%)	3 (1%)	68 (24%)
Semi Medium Farmers	9 (3%)	116(41%)	66 (24%)	20 (7%)	211 (75%)
Medium Farmers	0 (0%)	1 (1%)	0 (0%)	0 (0%)	1 (1%)
Total	**21 (7%)**	**157 (56%)**	**79 (29%)**	**23 (8%)**	**280 (100%)**

Note: The figures in parentheses are percentages.

Table 3.4 depicts the distance the farmers traverse from their homes to the field within the farmers' category. It is found that 56 per cent of farmers cover a distance of two to four kilometers (km) between their homes and farms, twenty-nine per cent cover between four to six km, seven per cent of farmers from one to two km, and eight per cent cover six to eight km each. The distance from home to the field is essential to farmers' daily routines. For long distances, farmers must go early and return early from their fields as they traverse on foot, affecting the amount of work done. They sometimes sleep over in their fields as returning and going affects the job. Women typically carried the food and other necessary things for fieldwork behind their backs in bamboo baskets, and men folks would hold their *daos* (machete) along with them as they departed for their fields. When they return, men will bring home a bunch of wood or tree trunk or a piece of bamboo on their shoulder for household use, and women carry a few crops and vegetables in their basket for home.

Figure. 3.10. Farmers going to the field.

Figure. 3.11. Farmers returning from the field.

Source: Fieldwork (At Enhulumi Village)

Table 3.5. Presence of Irrigation Facility:

Farmers category	Presence of Irrigation Facility		Total
	No	Yes	
Small Farmers	21 (7%)	47 (17%)	68 (24%)
Semi Medium Farmers	44 (16%)	167 (59%)	211 (75%)
Medium Farmers	0 (0%)	1 (1%)	1 (1%)
Total	**65 (23%)**	**215 (77%)**	**280 (100)**

Note: The figures in parentheses are percentages.

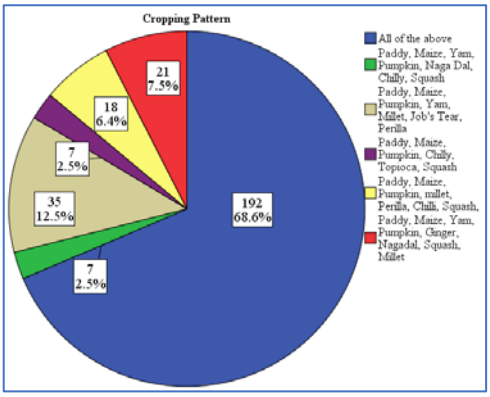
Table 3.5 summarizes the presence of irrigation channels in the farmers' fields. Seventy-seven per cent have irrigation channels connected to parts of their fields, and twenty-three per cent have no irrigation channels connected. Irrigation facilities for paddy fields are vital as they depend upon the rainfall for their cultivation. The wet paddy fields need to be maintained with water throughout the year. As the primary source of irrigation is channelized from rivers and streams, proper maintenance of irrigation channels to fields is a crucial practice of paddy cultivation. These channels are dug along the slopes of the hills from the river source to the farmers' fields by those paddy field owners who wish to share the same channel. They take turns maintaining and clearing the channel or working together to supply their water channel well.

Some farmers could not manage irrigation channels in their fields because the water source was too far from their fields or did not have any water source. So, they depend upon the rainfall.

Fig. 3.12. *Khuli* (Irrigation Channel)

Source: Fieldwork (Leshemi Village)

Figure 3.13. Cropping Pattern



Source: Fieldwork

Figure 3.13 displays some of the major crops cultivated traditionally, namely; Millet (*etshube*), Job's tear (*tutshehbe*), Perilla (*keni*), Sesame (*pocu)*, Naga dal (*karhu*), Maize (*mekrita*), King Chilli (*kutsamitshutshe*), Green Chilli (*tshutshe*), Squash (*eskhus*), Pumpkin (*hamu*),Yam (*edzunu*), Ginger (*evudo*), Sweet Potato (*mekarhu*), Tapioca (*etshumekarhu*), Beans (*kubatshe*), Potato (*alu*), Tomato (*donashe*), Tree Tomato (*etshudonashe*), Cabbage (*kobi*), Garlic (*tshemereh*), Green Onion (*khuva*), Mustard Leaf (*menayeh*), Paddy Rice (*ebe*), Gourd Scented (*muso*), Bitter Gourd (*kerehla*), Brinjal (*kudetshe*), Bitter Egg Plant (*lekhutshe*), Peas (*motor*) and Sponge Gourd (*qahsutshe*).

Table. 3.6. Purpose of Traditional Crops:

Farmers Category	Self-consumption	Both Self-consumption and Market Sale	Total
Small Farmers	60 (21%)	8 (3%)	68 (24%)
Semi Medium Farmers	183 (65%)	28 (10%)	211 (75%)
Medium Farmers	1 (1%)	0 (0%)	1 (1%)
Total	**244 (87%)**	**36 (13%)**	**280 (100%)**

Note: The figures in parentheses are percentages.

Table. 3.6 represents the purpose of cultivation. Traditionally, agriculture in this study area is for self-consumption, where 87 per cent cultivate for self-consumption and 13 per cent produce for both self and market consumption.

Agricultural Cycle:

Table 3.7. Agricultural Cycle of Major Traditional Crops:

Agricultural Cycle among Major Traditional Crops		
Traditional crops	Sowing Season (Month)	Harvest Season (Month)
Etsube (Millet)	January - February	July
Tutshebe (Job's tear)	April	November
Kenei (Perilla)	March - April	September - November
Pochu (Sesame)	March - April	September - November
Karhu (Naga dal)	August	December
Mekhrita (Maize)	March - April	August
Menabe (Sticky rice)	June	October
Kutsamichutshe (King Chilli)	March	June-July
Chutshe (Green Chilli)	March - April	August
Eskhus (Squash)	December - January	October - December
Hamu (Pumpkin)	March - April	November - December
Edzunu (Yam)	March - April	November
Evuhdoh (Ginger)	April - May	December - January
Mekaruh (Sweet Potato)	June - July	October - December
Etshumekaruh (Tapioca)	January - February	(after 2 years)
Etshudonashe (Tree Tomato)	January - February	(after 2 years)
Tshemereh (Garlic)	September - October	February - March
Khuvah (Green Onion)	September - October	February - March
Menaye (Mustard Leaf)	October - November	December - January
Erube (Paddy Rice)	June	October
Muso (Gourd Scented)	March	November - December
Rasutshe (Sponge Gourd)	March	October - December

Source: Field Work

Table 3.7 lays out some major traditional crops cultivated, and some discussions, along with the agriculture cycle, are provided below:

In Nagaland, in general, and the Chakhesang in particular, the cultivation pattern starts in March as a sowing season and harvests from May up to October according to the nature of the crops. Jhum fields provide us with diverse vegetable crops and nutritional food. Paddy rice and Millet are traditionally stapled food for this tribal region. In Jhum, rice is the dominant crop compared to other crops like maize, yam, pulses, and varieties of vegetables. Millets are usually grown in the second and third cropping patterns when the soil loses fertility.

In the labor system, the family members work together in their respective fields as household farmers. They also work in the reciprocal free labor exchange (*lezekro*) and sometimes as wage earners. Traditionally, labor is only needed when transplanting paddy samplings and during harvest seasons. Weeding is generally practiced with a reciprocal free labor exchange system or is self-done when required in any field.

Customarily, the knowledge and skill of lighting, managing, and controlling fire in *Jhum* land have been passed down to generations since immemorial. They are trained to deal with the forest at an early age, learn how to manage fire, and be aware of its implications, including assessing wind direction, weather patterns, land topography, biomass, and local conditions. For instance, during windy and rainy days, *Jhum* land is not burnt but before (Shaw et al., 2022).

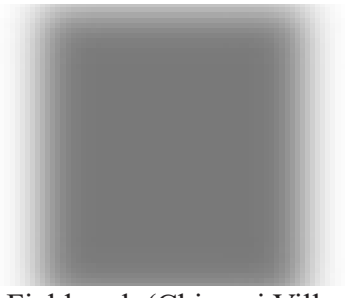
Organization of Agriculture Production:

Preparation of Seeds for jhum: One of the most critical steps in Jhum cultivation is the preparation of seeds. The process of preparation of seeds is as follows;

Seed Selection: The first step in seed preparation is selecting the right seeds. Farmers usually prefer seeds from their previous harvest, which are well adapted to the local environment and have a high yield potential. The selected seeds should be healthy, big in size, disease-free, and contaminant-free.

Women folks are the main participants in seed selection. In the figure. 3.12, the millet seed selection procedure for field sowing is shown. After being removed from storage, the millet branch is torn or crushed against the palm. The best seeds are chosen because they are healthier and larger.

Figure. 3.14. Selecting of Millet seeds for sowing



Source: Fieldwork (Chizami Village)

Seed Treatment: After the seeds are chosen, they need to be treated to increase the germination rate and shield them from illness and pests. Soaking the seeds in water overnight before planting them the following day is the most popular seed treatment technique in Jhum agriculture for maize. This procedure speeds up germination and softens the seed coat. Additionally, the seeds are kept in different baskets after being sun-dried. A nursery method is used to treat tree potatoes and king chilly. Another seed treatment method is coating the seeds with cow dung and ash, e.g., Naga Dal, Potato, maize, etc. This coating helps to protect the seeds from pests and diseases and provides essential nutrients for germination.

Figure. 3.15. Soaking of maize seeds overnight.

Source: Fieldwork (Lasumi Village)

Figure. 3.16. Sundrying of Paddy Rice.

Source: Fieldwork (Sumi Village)

Clearance of land for Jhum Cultivation: For *Jhum* cultivation, a plot of land in the forest must first be cleared. Men folks lead the cultivation by cutting down the forest and burning it. Branches of trees and stones are kept as contour bunds on sloppy hills. Women folks lead the arrangement of seed beds and sowing of seeds. Weeding is done mainly by women. They also practice the labor exchange work culture known as *Lezekro*, where members of the *Lezekro* group work together in each member's field in a roster system until the last one. This division of labor is found practicing to the present day.

Figure.3.17. Clearance for Jhum Field

Source: Fieldwork (Thetsumi Village)

Figure.3.18. Planting of Garlic

Source: Fieldwork (Sakraba Village)

Transplantation: Rice (Oryza sativa L.) is a staple grain for more than half of the world's population (Jaiswal et al., 2019). Rice is not sown directly in the paddy field when wet terrace farming is used. Before being moved to the paddy fields, it is first sown in their nursery bed. A plant is moved from one location to another during transplantation. It involves growing seeds or seedlings in a nursery, which is a safe, well-run plot of ground. The plants are transferred into the main field to continue developing once the seeds have sprouted. Thirty to forty days after the main field has been plowed and puddled, rice seedlings cultivated in a nursery bed are removed and moved into the terrace fields. The transplantation of paddy rice nurseries is done by hand.

Through transplantation, young plants are protected from pests and diseases until they become established. Germination problems can also be avoided by using seedlings rather than direct sowing. While both sexes contribute equally to this transplantation, women often plant paddy nurseries in the field and men move them from nursery beds to wet paddy fields. While planting paddy nurseries in fields, they sing songs together. They keep planting till they finish the quantity of nursery in their hands.

Fig.3.19. (a) *Lutshile* (Paddy Nursery Bed) (b) *Elo She* (Paddy Transplantation)

Source: Fieldwork (Tsupfume Village)

Weeding: The process of getting rid of weeds is known as weeding. Weed growth is detrimental since it lowers agricultural output using many resources like nutrients, water, sunlight, etc. Weeding helps to protect plants from pests and loosens the soil to allow the target plants' roots to develop more easily. In June and July, weeding is done by hand for terrace cultivation.

Harvesting: Harvesting paddy involves manually chopping and collecting panicles that are affixed to the stalks using a sickle tool that is created locally. Traditionally, handling, reaping, threshing, winnowing, cleaning, and bagging are all

part of paddy harvesting. The main workers in paddy harvesting are *Lehzekro*, or individual households. Every farmer, regardless of age or gender, takes part in this task.

Reaping - Reaping or cutting is the first step in harvesting in October, four months after planting into the field, by cutting the mature panicles and straw above the ground. The cut paddy is carried behind their back in wrap-around cloth around the farmer's waist or through the bamboo basket against their head.

Handling - A small clearing is created to convey the cut crop for threshing. It is to ensure that no paddy falls off the ground and is collected together, for threshing is a priority when moving the cut paddy to the cleared area.

Threshing - Farmers manually thresh the harvest using their feet, separating the paddy grain from the rest of the chopped crop. Men and women, more energetic and robust than the rest, usually perform this activity as they have to hop and jump on the paddy to separate the grain from the stalk. They also use threshers made of bamboo and wood. A short song usually accompanies this activity as they work along.

Winnowing – After threshing, rice grains are gathered for winnowing. It is a method for separating grain from chaff. A winnower called *Parhu* is used for this purpose. Two to three farmers, irrespective of gender, will stand side by side, holding the grains in the bamboo basket above their heads to pour it down for the winnowing process. They need to ensure the direction of the wind to blow the chaff away once the winnowing starts. There will be another two to three winnowers standing to blow away the chaffs with their winnowing tool called *Parhu*.

Cleaning and bagging – once the grains are collected and cleaned from chaff and wastes, they are bagged and carried home in gunny bags, carried on their backs with bamboo knitted strips as a rope to hold their gunny bags against their head. As they walked and climbed with their harvest along the long winding roads towards their

home, they seemed tireless, for they sang songs and chants "*aho, aho,*" which is a traditional practice whenever work is done in groups. The harvested paddy is then stored in granaries in big bamboo baskets called *Ebu*.

Figure. 3.20. Paddy Harvesting

(a)Reaping of paddy

(b) Winnowing

(c)Transferring of paddy for bagging

Source: Fieldwork (Leshemi Village)

Storage of Harvested Crops:

Depending on the variety and surrounding circumstances, rice plants take three to six months to reach maturity from seed. Nonetheless, the harvested rice grains are eaten all year long. This makes rice storage necessary for a specific amount of period (Shu et al., 2021). Apart from their private barn, this study area had no storage facilities. Farmers traditionally store their harvested paddy rice in a big bamboo basket/container-*Ebu* (local name). The bamboo strips are intertwined to form a basket called *ebu*, and the finished product is slowly heated and smoked in the fire for three to four days or more, to make it stronger.

Post-harvest loss is a severe problem in rice. Traditional methods of storing paddy rice are vulnerable to insect and fungal infestations, leading to a considerable deterioration in rice quality. It is stored on low–temperature storage to improve the storage efficacy of rice (Katta et al., 2019). Other crops like maize and Millet are hung on horizontal bamboo poles in the house and the kitchens. Crops like potatoes, pumpkins, yams, Naga dal, etc., are stored inside the cold corners of the places. Chilies are dried, and bamboo shoots are fermented by drying in the sun, boiled in water, and stored or preserved inside jars. Leafy vegetables are also dried and preserved for future use. One unique storage system is a squash/ chow-chow, where the earth is dug down

for a few feet or meters, and the squash is stored in the dug hole by covering it with the soil again.

Figure. 3.21 a Ebu-Paddy Bamboo storage

Figure. 3.21. b Mekrita-Maize storeroom

Source: Fieldwork (Porba Village)

Seed Storage: After treatment, the seeds are stored in a cool and dry place until planting time. Proper storage is crucial to maintain seed viability and prevent damage from pests and diseases. Farmers usually store their seeds in containers made of bamboo or clay.

Figure. 3.22. Seed Storage:

(a) *Kubatshe* (Beans)

(b) *Tutshehbe* (Job's tear)

(c) *Karhu* (Naga Dal)

(d) *Keni* (Perilla)

(e) *Hamutshu* (Pumpkin seed)

(f) *Pocu* (Sesame seed)

(g) *Mekrita* (Maize)

(h) *Etsube* (Millet)

(i) *Necu* (Tulsi)

(j) Rasutshe (Sponge Gourd)

Source: Fieldwork

Traditional Tools in Agriculture: Most Chakhesang farmers employ traditional agricultural techniques and use local equipment for all fieldwork. The primary source of power for farms is human labor. Mountainous geographic terrains have made operating newly designed farm machinery and equipment difficult. Therefore, the primary source of energy is human labor. Blacksmiths, carpenters, and handcrafters produce all of this equipment and implement it locally using bamboo and wood, some of which are added with metals.

Traditionally, farmers use only simple farming tools, mainly *Kapfhu* (spade/hoe), *Ehza* (dao/machete), *Thecy* (sickle), *Kathi* (pickaxes), *Ezhikhumi* (crowbar) and *Kavu* (bamboo) supplementary tools like *Kewu* (rakes), *Tshuza* (bamboo dao), *Nodekhubvo* (clod breaker) *Eche* (baskets), *Ezu* (bamboo mat), *Pharuh* (winnower), *Pakhu-Khumi* (wooden rice pounder), *Enhyi* (straw raincoat) and *Ebu* (big bamboo basket) for paddy storage.

Figure. 3.23. Traditional Farming Tools.

(a)Ehza (Machete)

(b) Kapfhu (Spade)

(c) Thecy (Sickle)

(d) Kewuh (Rake)

(e) Nodekhubvo (Thresher)

(f) Eche (Bamboo Basket)

(g) Pharu (Winnower)

(h) Melhe (bamboo basket)

(i) Enhi (Straw Raincoat)

Source: Fieldwork

Use of Chemicals (*daru*) in Traditional Crop Cultivation:

Traditionally, crops are grown or cultivated using methods and knowledge from their forefathers' time. On the ground where farmers will grow crops, *ehno* (soil) is typically tilled by hand. After that, the farm is managed by weeding, producing green manure, and sometimes spreading household waste. For ignorance, unavailability, or to

preserve pure organic farming, chemicals, and fertilizers are not used, and also because that was not how their *edisemi* (ancestor) cultivated crops. Due to potential negative consequences on their health and environment, the farmers also opposed pesticides and fertilizers on their farms.

Preservation of Soil Fertility:

Soil preservation is natural since farmers do not use fertilizers or chemicals in the cultivation. However, they also burn and bury leaves, twigs, branches, and grasses known as "green manure," spread *etshukhunibruh* (domestic animal waste) and *Pavuno* (fire ashes) into their fields, and practice crop rotation, which involves growing a variety of different crops in the same area in successive seasons, such as maize and peas. They also do mixed Cropping by growing different varieties of diverse crops like potatoes, chilies, yam, Naga dal, beans, maize, etc. Intercropping is where the cultivation of two or more dissimilar types of crops is done, for instance, garlic, peas, and tomatoes.

Table 3.8. Market for Traditional Crops

Farmers Category	**Presence of a Market for Traditional Crops**		**Total**
	Yes	No	
Small Farmers	9 (3%)	59 (21%)	68 (24%)
Semi Medium Farmers	28 (10%)	183 (65%)	211 (75%)
Medium Farmers	0 (0%)	1 (1%)	1 (1%)
Total	**37 (13%)**	**243 (87%)**	**280 (100%)**

Note: The figures in parentheses are percentages.

Table 3.8 presents the result of the traditional marketplace according to the farmers' category. Eighty-seven per cent have traditionally no marketplace. Thirteen per cent have a marketplace. Farmers who wish to sell their crops have to transport them to neighboring towns because markets are only located in small-town regions. They even go for door-to-door sales. Therefore, farmers who reside in or close to town have a competitive edge. Village farmers typically employ a barter system rather than cash for purchases and sales. All households grow little crops and are content with

veggies. As a result, traditionally, there was little demand for the market or the sale of commodities.

Role of Family Members in Traditional Cultivation:

Farmers used to have fewer farming tools and infrastructure than they do now. They engaged the entire family in farming, from the largest to the tiniest, to facilitate and expedite work. Since farming requires manual effort and there is typically no other option to find more labor, the larger the family, the easier the job is. Regardless of gender, the entire family works for cultivation. For Jhum cultivation, the father, the family's head, and the sons first clear the ground for cultivation by chopping down and burning the trees and bushes. Then, they set the plot in sizes, leveling, contour bunding, etc. After this, the women will join the cultivation, where tilling and plowing, weeding and sowing, etc., will be done accordingly.

The initial step in paddy rice terrace farming is for workers to look for water sources. They also take the field's location and soil richness into account. Following site selection, the entire family works to build the paddy field before cultivation starts. Men are more involved in the early stages of cultivation in both farming practices. The intermediate and central parts of farming, such as planting and managing, pulling weeds, and tending to the crops, are accomplished more by women. Men and women work together for the harvest.

Role of Women in Agriculture:

It is customary for males to clean and burn fields in Chakhesang homes, women, the elderly, and the younger generation are mostly responsible for the tasks of preparing land for farming, which includes weeding, seed distribution, plowing, and harvesting. Jhum agriculture is led by women, as seen by the significant role, they play in choosing healthy seed stock for post-harvest activities. Approximately 70 per cent of the agro-industry workforce is now female because of the gradual decline in Jhum farming over the previous few decades. Women have been denied the right to own land despite this,

which affects their ability to manage and safeguard community resources (Shaw et al., 2022).

The Chakhesang women are always considered the main cultivators in the agricultural system. The people of the Chakhesang tribe, irrespective of gender, are always treated equally, and no one is inferior to anyone. Though men are generally placed in higher positions or ranks and are usually considered as the stronger gender, decision maker, and sole bread earner, women are never neglected or looked down upon. Instead, women are highly respected and regarded in every walk of life. They are considered the leading cultivators; without them, farming will not flourish and will be unsuccessful. Women are usually engaged in agriculture from the beginning to the harvesting and storing of produce. From post-harvest to pre-harvest management, women are the main participants in its truest sense. Along with men, they are the storehouse and the bank of traditional knowledge and practices. In traditional practice, the male gender is paid more than females because males are more robust and can do more physical work than females.

Pre- and post-harvest management:

Traditionally, many pre- and post-harvest management systems were not carefully considered. Nevertheless, some pre- and post-harvest management practices observed are:

Pre-harvest management practices: - weeding and pruning, scarecrow poles, burning of the weeds and garden waste in the field for soil fertility, the spread of domestic animal wastes and ashes, monitoring of irrigation channels for wet paddy terraces, looking for pest infections, crop damages, animal tracks and constant visitation of the field for any consequences.

Post-harvest management practices: handling procedures while harvesting, storing matured and quality seeds, drying and fermenting commodities, sorting and grading, storing and packaging, and caring for transportation from fields to homes.

CHAPTER IV
COMMERCIALIZATION OF AGRICULTURE

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Subsistence and commercial farming are the two practices where the farmer performs subsistence agriculture for survival, and the people depend on him. On the contrary, commercial agriculture is an agricultural business wherein crops are grown, and cattle are reared to sell the produce in the market to earn money. Commercial farming, or agribusiness, is where crops in great demand are primarily produced. Commercialization highlights the importance of the profit motive within the farm business as an indicator of commercialization. Agricultural commercialization refers to choosing products and inputs based on the principles of profit maximization, rather than just marketing agricultural output (Leavy & Poulton, 2007). Commercialization is how farms increase their engagement with input and output markets as they move from integrated or subsistence farming systems to specialized crop and livestock production (Pingali & Rosegrant, 1995).

Commercialization is influenced by supply and demand dynamics. Higher income growth creates a demand for high-value goods like meat, fruits, and vegetables, which drives agricultural commercialization. The primary cause of the subsistence agriculture system's downfall on the supply side is the increasing scarcity factor. However, farm management combined with emerging technology can help manage the scarcity of land and water (Pingali, 2001).

Commercial agriculture has been defined in various ways. Poulton et al. (2008) have defined "commercial" agriculture as being "production primarily for the market" and is not dependent on the scale of production or related to particular types of crops. Some definitions of "commercialization" also consider the degree of dependence on markets to supply production inputs (Von Braun & Kennedy, 1994). Pingali (1997) suggests that, over time, these two commercialization aspects will proceed broadly in tandem. Agricultural commercialization can be defined as farmers' increased responsiveness to and engagement with agricultural markets. A relative explanation of

agricultural commercialization is given by Jayne et al. (2011), "Smallholder commercialization refers to a virtuous cycle in which farmers intensify their use of productivity-enhancing technologies on their farms, achieve greater output per unit of land and labor expended, produce greater farm surpluses (or transition from deficit to surplus producers), expand their participation in markets, and ultimately raise their incomes and living standards."

Commercialization of Agriculture:

Over the last two decades, developing countries have witnessed a rapid increase in the commercialization of agriculture, particularly with the rise in income, changing tastes and preferences, lifestyles, demographic patterns, and the spread of modern supply chains. In many African and Asian countries, new markets have emerged for high-value commodities such as fruits, vegetables, flowers, livestock products, and fisheries. The growing demand for high-value agriculture and the rising importance of commercialized supply chains have posed many questions and challenges for developing country smallholder agriculture (Sharma et al., 2019). As urban populations grow, demand for marketed agricultural products increases. Infrastructure investment– also associated with the structural transformation –reduces the costs of transporting agricultural produce from rural to urban areas, encouraging smallholder farmers to increase their marketed output in response to this increased demand, often perhaps in competition with imports (Poulton, 2017). The World Bank (Byerlee et al., 2013) estimates that Africa's total domestic demand for food is just over $300bn per year, expected to triple by 2030. If urban areas account for around 40 per cent of Africa's population (World Bank, 2017), this equates to perhaps $150bn of food consumption per year. By contrast, agricultural exports are worth around $60bn annually, some of which feed urban populations in neighboring African countries. Rising demand for final products also encourages commercial private investments in agricultural supply chains, from input supply through petty trading to processing, which may facilitate smallholder producers' commercialization (Byerlee et al., 2013). For example, firms with processing capacity may support nearby smallholders in producing the varieties and qualities of the crops they want through input credit and/or extension advice and simply creating additional local demand for those crops.

Smallholder agriculture must be commercialized for rural economies to thrive (Ogutu et al., 2020). Despite international efforts to end hunger, at least 2 billion people globally suffer from micronutrient deficiencies, and over 800 million people are chronically undernourished (IFPRI, 2018; FAO, 2019). A significant portion of this population is smallholder farmers in developing nations that rely on agriculture for income and food (Ogutu et al., 2020). The availability of home-produced foods, gender roles in the home, and changes in income are just a few of the ways that commercialization may impact nutrition (Von Braun & Kennedy, 1994).

The West Indies islands have long been noted for their small farm subsistence agriculture. These small units of production surrounding the Caribbean homestead are a microcosm of the farming system: the embryo from which a commercial agricultural may develop. Its roles range from a farm family's primary source of subsistence to a minor source of income (Brierley, 1985). Agricultural commercialization in Ghana transformed capital, land, and labor relations, leading to significant changes in livelihoods and agrarian relations. The inflow of international and local capital in rural agriculture increasingly monetizes land and other transactions, changing the rural moral economy (Yaro et al., 2017).

When we look at India, Bangladesh, Pakistan, and Sri Lanka, agricultural policies in these countries are presently faced with several competing focus areas: the traditional concerns of poverty reduction and income redistribution among smallholder farmers are coupled with recent trends in growing demand for non-staple western dietary habits of the growing urban populations; rising household incomes; foreign investment in food markets; emergence of supermarkets; vertical integration of production and retail in agriculture. These policies capture the significant issues in triggering smallholder-led agricultural commercialization (Sharma et al., 2019). The crux of agricultural development in India is maintaining a rising level of foodgrain production and reducing rural poverty through speedy income and employment growth. The new seed-fertilizer-based technology has helped the farmers achieve the first goal of food security because the priority for foodgrain production is rightly compatible with the subsistence orientation of most farmers - mainly marginal and small farmers. The new technology helped modernization. Further, the increasing demand for money - to purchase most of the input off-farm leads to the growing sensitivity of farmers to

relative prices of agricultural commodities, which helped monetization and commercialization (Varadarajan & Elangovan, 1995).

However, significant regional disparities in commercialization rates exist in India despite the encouraging progress evident at the macro level. Regions that benefited from the Green Revolution witnessed significant movement towards commercialization, while in areas where agro-climatic risks were high, production systems remained semi-commercial due to lower surpluses. Transitioning from subsistence and semi-commercial farming to commercialized farming requires linkages to factor markets to access credit, inputs (seeds, fertilizers, and pesticides), and technology (Pingali et al., 2019). Home gardens are becoming commercialized in India, particularly in the uplands of northeast India. The roles of home gardens are well recognized across the globe for their significant contribution to food and nutritional security, agro-biodiversity conservation, economics, and socio-cultural and aesthetic values (Galluzzi et al., 2010). Home gardens have proved immensely helpful for household food security irrespective of rural and urban setup during the rapid outbreak of the COVID-19 pandemic and consequent lockdowns (Lal, 2020). Home gardens typically occupy a small space yet provide abundance. Providing a consistent supply of healthy and fresh fruits, vegetables, and other foodstuffs, sustaining social capital, boosting biodiversity, and maintaining ecosystems are just a few of the crucial roles. Over recent decades, home gardens have been commercialized in the developing world in response to market pressure (Abdoellah et al., 2006).

The tribes of India's northeast connect their families with forest ecosystems and animal husbandry through traditional home garden practices (Ramakrishnan, 1992). In the context of Meghalaya, traditional crops have been grown on the plateau for a long time but have only recently been commercialized. This initial cash-crop system, such as turmeric, pineapple, broom, areca nut, etc., was characterized by the cultivation of crops endogenous to the area aided by a traditional knowledge base and evolved in response to varying agro-climatic conditions prevalent in the plateau. Modern cash crops are new for the farmers and were recently introduced by governmental and non-governmental organizations in the state. They include rubber, tea, strawberry, cashew nut, and coffee (Behera et al., 2023).

Ginger is the main cash crop in the Northeast, helping many farmers support their families and improve their financial standing. Ginger is grown in almost every region; however, the most common states are Meghalaya, Mizoram, Arunachal Pradesh, and Sikkim. Due to its widespread availability, some products well-liked in developed countries, like ginger oil and ginger oleoresin, can be produced for export. Furthermore, the root or dried ginger powder can be produced and sold. Dried ginger or ginger powder makes ginger brandy, wine, and beer in many Western nations. Ginger oil is mainly used as a flavoring for soft drinks and candies. Additionally, ginger is utilized medicinally (Yadav et al., 2004).

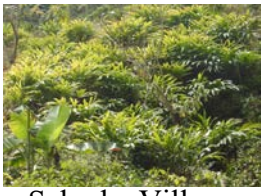
In Nagaland state, the terrain of the Chakhesang tribe's inhabited area is a mountainous, hilly region with rich bioresources. Subsistent agriculture is the predominant occupation of the people. Socio-religious life and economic development of the people revolve around the agricultural system. Farmers with a small surplus in their farming activities sell their crops for monetary gain. Farmers gradually started cultivating more from the market sales perspective with the presence of land and a favorable climate with rich soil. Traditional subsistent farming is progressively transforming into small-scale commercial agriculture. Bioresources are naturally available in and around the villages. Every village has its natural forest cover, and almost every clan conserves a forest area. They harvest wild fruits and crops and occasionally hunt animals and fish for market sale. Every household cultivates and has a land of its own. The farmers do both indigenous farming and small commercial farming. Some crops and fruits grown commercially are cabbage, potato, ginger, ground apple, cardamom, plum, and kiwi. Subsistence farmers worldwide play a significant role in maintaining agro-biodiversity by cultivating many crop species, especially in environments where high-yielding crops and livestock do not prosper (Chanda, 2012).

Figure 4.1: Commercial Farms:

Ginger farm

Thetsumi Village

Cardamom farm



Sakraba Village

Kiwi Farm

Lekromi Village

Yangchak farm

Chizami Village

Cabbage farm

Tsupfume Village

Ground Apple

Zelome Village

Dried Cardamom

Porba Village

Banana Farm

Zapami Village

Plum farm

Enhulumi Village

Naga Dal farm

Mesulumi Village

Gooseberry Farm

Chizami Village

Potato Farm

Zhavame Village

Source : Field Work

In the study area, some villages recognized by the Government of Nagaland in small commercial agricultural farming are listed below: Tsupfume Village as a 'vegetable village' in 2005, Zhavame Village as a 'Vegetable Village' in 2009, Gidemi Village was recognized as '*Yongchak* Village' in 2014. Sakraba Village was also recognized as 'Cardamom Village' in 2015. Lekromi Village as 'Cardamom Village' in the year 2017. Chakhesang Public Organization (C.P.O.) considered Zapami Village a 'Green Village' in 2021. Enhulumi Village, to be called 'Plum Village', is in its process.

Tsupfume village was recognized as the first 'Vegetable Village' in Nagaland by the Horticulture Department, Govt of Nagaland 2005. Tsupfume village is one of the eighty (80) villages of the Chakhesang tribe in the Phek district, which falls under the Razeba administrative circle of the Phek district. According to 2011 Census information, the village has approximately 260 households with a population of 1,070,

of which 570 are male and 500 are female. The literacy rate is 61.21%, of which 63.68% of males and 58.40% of females are literate. Pfutsero is the nearest town to Tsupfume for all major economic activities. It is approximately 8km away, and the distance from Pfutsero to Dimapur is 131 km, which is the commercial center of the Nagaland state. In the late 70s and early 80s, they started cultivating potatoes and cabbages from neighboring Poumai villages on the border of the Manipur and Nagaland states. Soil and climate favor these crops, which soon spread to most villagers. Most of the farms are one to four acres in size.

While sharing their views on the emerging trends of commercial farming, one of the respondents said, "*Since our village is a bit excluded and our habitat is in the Phek district's corner, we must depend on ourselves. My village is backward; most of us are uneducated, and they are left to themselves. We didn't have any exposure to the outside world, but with the blessings of God, we have abundant land, and so, to survive, we have to cultivate. We cultivate various crops and vegetables, but only for self-consumption. Initially, we were unaware of selling crops and vegetables. However, consequently, with the development and spread of the population, the farmers started a few roadside markets for the sale of cultivated crops. These crops have hit the market level successfully because all our cultivation is purely organic. We do not know the fertilizers nor have access to any of them. The methods used were traditional, and no modern farming tools were used. The labor force was purely household contribution, and hired labor was rarely used.*"[1]

Now, most villages participate in small commercial farming of these crops, which has become a boon to their villagers. Lately, the traditional cultivation of paddy fields and Jhum cultivation are not neglected, but farmers are more motivated towards this small-scale commercial farming. These farming practices give them more market links and exposure to the outside world. They received community appreciation and participated in farmers' workshops and exhibitions. Their social relationship and family

[1]Khazi Lea, Male, 66, Tsupfume Village. Former Village Council Chairman and the former President of the Phek District Farmers' Union.

ties have become more robust and expanded. Individually, they become more responsible and confident in themselves and participate in community and social solidarity through various contributions in kind and cash. They have filled up a lot in food security and production. Every year, truckloads of multiple crops, vegetables, and plantation fruits like kiwi and plum are transported to markets, especially Dimapur. The Nagaland government has also acknowledged and recognized their sincere hard work in mass participation in this cultivation. It earned the name "First Vegetable Village" in Nagaland.

Gidemi Village was recognized as '*Yongchak* Village' in 2014. The 2011 census shows this village as the smallest village among the Chakhesang tribe, with 65 households and a population of 246 people. The number of males and females is 123 people each, with the literacy rate of males at 79 per cent and females at 69.1 per cent. The village is about 20 km from Pfutsero town. Every household in the village owns a *Yongchak* (tree beans/ bitter beans) farm, though it is a small-scale farm that is usually 1-2 acres in size. As the other neighboring villages cultivate these beans for commercial purposes, it has become a trend. With the availability of land in their village, the follow-up of this farming has helped the villagers gain monetary profits and develop a culture of market practices. As per the respondents' statement, "*The villagers led a simple livelihood with the practice of subsistence farming. The village is small, so the villagers usually do not venture much into commercial agriculture. However, as stated earlier, with the trend of this farming, the whole village participated, and it has given them success in small commercial agriculture, especially Yongchak farming. We also practice ginger and cardamom farming; however, with the profits and convenience, the villagers were more motivated towards Yonchak farming. The methods and tools used in agriculture are traditional. Chemicals and fertilizers are banned to maintain organic cultivation as the soil is rich in nutrients and the climate is favorable.*"[2]

Sakraba Village was also recognized as 'Cardamom Village' in 2015 and is now known as an Organic Village. According to the 2011 census, Sakraba village consists

[2]Vezohu Thira, Male, 45, Gidemi Village.

of 236 households and a population of 754 people, with 377 males and 377 females. The literacy rate for males is 74 per cent, and for females is 65.3 per cent. The village is 16 km away from Pfutsero town. A respondent narrated that "*Cardamom cultivation started in the year 1986. However, in those early years, few farmers were engaged in it and were not too keen on its cultivation. Moreover, we were unaware and inexperienced with the purpose of the cultivation. As years passed, we slowly gained knowledge of it through awareness programs, Horti-department programs, and concerned friends. Eventually, it flourished, and farmers had a successful marketization. We could manage our children's education and financial burdens. We have experienced market strategies and farming. Many market agents and links were developed. This small-scale cardamom commercial farming trend has brought unity and solidarity to the village. We have even started our package brand (See Fig.4.2).*"[3]

In 2015, the village VDB, led by Kuhusheyi V. Vadeo, went on a tour to Sikkim and brought back home seeds and nurseries of Cardamom. This Sikkim Cardamom got infected, destroying the whole Cardamom plantation field in the village. The Cardamom cultivation has stopped due to this infection. After four years, one farmer named Mr. Ciekroveyi Vadeo revived the plantation and nurtured thousands of Cardamom seeds and nurseries. This has helped the Cardamom cultivation to restart in the village again. Farms are of individual household ownership. The labor and management of the farms were family household affairs, and no outside wage laborers were entertained. Men and women, young and old, work together in every aspect for the farm's success, which is purely commercial-oriented.

Figure 4.2. Local-made Cardamom bag tag and drying machine:

Cardamom bag tag

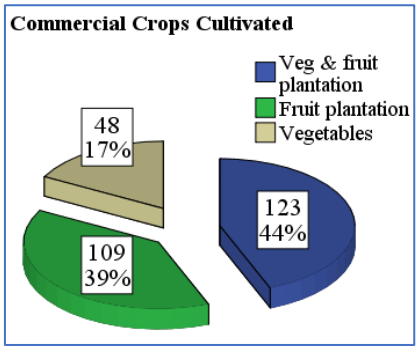
Cardamom drying machine

Source: Fieldwork

[3]Vesato Lohe, Male, 46, Sakraba Village.

Another farmer has stated that "*Cardamom and small commercial agriculture have brought me closer to the love of my village, giving me success in marketization. He stated that when we work sincerely, we need not venture out; with the soil fertility and favorable climate, we can do many small-scale commercial farms as land is available. Education is vital because we need to plant enough trees to conserve our biodiversity and have fertile soil. Through education, we learn many things and get inspired. It helps to expand our wisdom and skills.*"[4] One good example they have learned of the importance of education is the fateful event of Cardamom infection experienced in their village. Farmers have also developed their locally-made drying machines, as the market Cardamom drying machine is expensive and still very handy and efficient today.

Figure 4.3. Commercial Crops Cultivated



Source: Field Work

Fig. 4.3 represents the crops cultivated commercially in the study area. Out of 280 households, 44 per cent are growing vegetables and fruit plantations, 39 per cent do only fruit plantations, and 17 per cent are in vegetable farming. The primary commercial vegetables cultivated are Cabbage, Potato, Ginger, Naga dal, King Chili, Maize, *Yongchak,* and Cardamom. Fruit plantations mainly cultivated are plum, Kiwi, Ground Apple, Gooseberry, Persimmon, Apple (Kashmir), Lemon, Orange, Mango, Banana, Pomegranate, Tea Leaf, and Coffee. Apart from these crops, anything marketable is brought and sold.

[4]Thevosa Lohe, Male, 63, Sakraba Village.

Table 4.1. Agricultural Cycle of Commercial Crops:

Name of commercial crops	Sowing season	Harvesting season
Maize	March - April	**August**
Yongchak	May-June	**Dec-Jan. (after 6/7 years of plantation)**
Gooseberry	May-June	**Jan-Feb. (after 7-8 years)**
Plum	January-March	**May-June (after 2/3 years of drafting)**
Kiwi	January-February	**Oct-Jan. (after 2/3 years of drafting.**
Persimmon	February-March	**Oct-Nov (After 2/3 years)**
Potato	January-February	**May-June**
Cabbage	December - March	**June – July (twice a year)**
Tea	May-June	**March-Dec (with intervals). After 4/5 years of plantation**
Cardamom	June-August	**Sept-Oct (after 2/3 years)**
Orange	May-June	**Nov-Dec (after 5/6 years)**
Banana	February-March	**Oct-April**
Ginger	March-April	**Dec-January**
Mango	May-June	**August-Sept (4/5years)**
King Chili	March-June	**Aug-Sept / Oct-Nov**
Coffee	June-July	**Aug-Sept (after 5/6 years)**
Apple	Jan-Feb	**Oct- Nov (after 5-6 years)**
Ground Apple	April-May	**Nov-Jan**
Lemon	May-June	**Nov-Dec (after two years)**
Naga Dal	August	**December**
Pomegranate	February-March	**August-October (after 2/3 years of planting)**

Source: Field Work

Table 4.1 describes the agricultural cycle of the cultivated commercial crops. *Yonchak*, known as tree beans and gooseberry, is a fruit plantation crop that usually takes six to seven years to harvest. Oranges, mangoes, tea, coffee, and apples take around five years to gather. Plum, kiwi, persimmon, cardamom, lemon, and pomegranate take three years to harvest. Maize, potato, banana, ginger, ground apple, and naga dal are annual crops, while cabbage and king chili are harvested twice a year.

Table 4.2. Number of Households per Commercial Crops:

Commercial Crop Name	Yes	No	Total No Households
Cabbage	89 (32)	191 (68)	280 (100)
Potato	98 (35)	182 (65)	280 (100)
Ginger	52 (19)	228 (81)	280 (100)
Naga Dal	5 (2)	275 (98)	280 (100)
King Chilli	9 (3)	271 (97)	280 (100)
Maize	22 (8)	258 (92)	280 (100)
Yongchak	51 (18)	229 (82)	280 (100)
Cardamom	105 (38)	175 (62)	280 (100)
Ground Apple	16 (6)	264 (94)	280 (100)
Gooseberry	3 (1)	277 (99)	280 (100)
Kiwi	121 (43)	159 (57)	280 (100)
Plum	91 (33)	189 (67)	280 (100)
Persimmon	33 (12)	247 (88)	280 (100)
Apple (Kashmir)	3 (1)	277 (99)	280 (100)
Lemon	9 (3)	271 (97)	280 (100)
Orange	18 (6)	262 (94)	280 (100)
Mango	2 (1)	278 (99)	280 (100)
Banana	62 (22)	218 (78)	280 (100)
Pomegranate	5 (2)	275 (98)	280 (100)
Tea	1 (1)	279 (99)	280 (100)
Coffee	11 (4)	269 (96)	280 (100)

Note: The figures in parentheses are percentages.

Table 4.2 shows the number of families growing a specific crop for sale. The largest number of homes cultivating a particular fruit plant is 121 families out of 280 farming families, who cultivate kiwi fruit. Cardamom is the second most popular crop grown in households, up to 105 families growing it. With 98 families, potatoes rank third in terms of household cultivation. Among these crops, naga dal, gooseberry, apple (Kashmiri), mango, pomegranate, and tea are the least grown, with less than five households cultivating them.

In the Chakhesang region, some crops and vegetables are traditionally grown by a small number of households and sold from one home to another. Many farmers have been inspired to follow in their footsteps by their success tales in turning a profit. The Nagaland government has also distributed numerous tree samples from village to village. The social relationship, the building of market agents, and the growth of small

markets have encouraged the farmers to produce their harvest in the markets, and farmers followed this trend in the small-scale commercialization of crops and vegetables. The orchards of Plum, Kiwi, and Persimmon are making profits in their cultivation, which is a trend now in most of the villages.

Table 4.3. Commercial Farming and Type of Land:

Farmers category	Type of Land		Total
	Individual	Both Individual & Clan	
Small farmers	68 (24.3)	0	**68 (24.3)**
Semi medium farmers	198 (70.7)	13 (4.6)	**211 (75.4)**
Medium farmers	1 (0.4)	0	**1 (0.4)**
Total	**267 (95.4)**	**13 (4.6)**	**280 (100)**

Note: The figures in parentheses are percentages.

Table 4.3 explains commercial farm cultivation in relation to the type of land ownership. In this study, it is found that 95 per cent of the households engaged in commercial farming are doing it on their own land, and five per cent are doing it on their individual and clan-owned land. Commercial farms are generally not encouraged in clan lands because the distribution of profits leads to conflicts and arguments due to the multiple ownership nature of clan land. Even the management and division of labor create problems in its cultivation as some members work more than others. Commercial farms are primarily cultivated on individually owned lands.

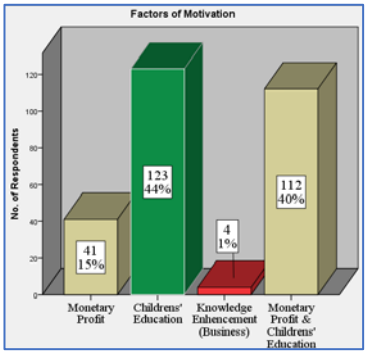
Table 4.4. Size of Commercial Farm:

Farmers category	Size			Total
	1 - 2 acres	2 - 4 acres	4 - 6 acres	
Small farmers	42 (15)	26 (9.3)	0	**68 (24.3)**
Semi medium farmers	97 (34.6)	111 (39.6)	3 (1.1)	**211 (75.4)**
Medium farmers	0	0	1 (0.4)	**1 (0.4)**
Total	**139 (49.6)**	**137 (48.9)**	**4 (1.4)**	**280 (100)**

Note: The figures in parentheses are percentages.

Table 4.4 describes the size of commercial farms across the category of farmers. Fifty per cent have one to two acres of a commercial farm, and forty-nine per cent have two to four acres. Only four households have a commercial farm of four to six acres.

Fig 4.4. Factors of Motivation for Commercial Farming:



Source: Fieldwork

Fig 4.4 presents the motivation factors for commercial agriculture. Among the respondents, 44 per cent stated that they are doing commercial farming to provide better education for their children. Another 40 per cent said it is for earning profits and children's education. Meanwhile, 15 per cent of farmers do it purely to gain profits. Only four households use it to enhance their knowledge of their agribusinesses. From the respondents' feedback, one farmer said, *"There is no other capable job for me to earn extra monetary profits to raise my children. I have three children: two sons and a daughter. My wife and I are farmers. However, we have land for small-scale commercial farming near the village with the approach motorable road. With success in the trend of Plum and Kiwi orchard marketization in the village, I got motivated, especially to do it for children's education."* [5] It shows some farmers' aspirations for their children's better education.

Another responded, *"My father was fond of cultivating fruit trees, especially Mango, Plum, Peach, and Banana. He sold the harvest, and with the money, he managed the family. After my dad's death, I expanded the farm to a small-scale commercial farm. Even though it is a one-time earning in a year, it gives us financial*

[5]Lhishete Naro, Male, 53, Chizami Village.

support. It is not an expensive farming practice, and management of it is affordable. We always get a good harvest. Our family is now dependent on it."[6] It brings into the inter-generational impact of commercial farming to earn more income.

Table 4.5. Commercial Farming Tools:

Farmers Category	Traditional tools	Both Traditional and Modern tools	Total
Small farmers	61 (21.8)	7 (2.5)	**68 (24.3)**
Semi-medium farmers	182 (65)	29 (10.4)	**211 (75.4)**
Medium farmers	0	1 (0.4)	**1 (0.4)**
Total	**243 (86.8)**	**37 (13.2)**	**280 (100)**

Note: The figures in parentheses are percentages.

Table 4.5 demonstrates the tools used by the respondents on commercial farms. It is found that 87 per cent of the farmers are using traditional tools and another 13 per cent of them using both traditional and modern tools. Some modern farming tools are power tillers, chain saws, grass cutters, nails, hammers, binding and iron wires, electric heaters, aluminum sheets, shovels, head pans, wheelbarrows, watering cans, and scissors. As they were more comfortable and made cultivation easier, farmers began utilizing these contemporary instruments. They save work and time. Additionally, farmers rent out the tools to others in need. As a result, expert labor becomes more necessary, while unskilled labor becomes less prevalent.

Figure 4.5. Power tiller.

Source: Mesulumi village

Figure 4.6. Cardamom Drying Machine

Source: Porba Village

[6]Vizakie Chirhah, Male, 55, Enhulumi Village.

Usage of Chemicals:

The small commercial farmers of this region, though considerably dependent on the yield of their farming harvest, do not practice using chemicals or fertilizers to grow their crops. It is a traditional custom where they uniquely follow the agricultural practice thus far. The village council announces to the villagers the mode of cultivation where organic cultivation needs to be maintained. The farmers' group made it mandatory not to use chemicals and fertilizers in their farms and to support organic cultivation of whatever crops or fruits they cultivated. To maintain the organic farming label, farmers use natural manures instead of any external ones. They get more respect, their cultivation tastes better, and they have easier access to marketplaces.

The village council will start the proper punishment for anyone who fails to comply with this rule, and any small-scale commercial farmers who do so will have their harvest ignored. By refusing to purchase their harvest, the community will not value their farming. Their reputations will eventually be damaged, which will prevent their harvest from being successfully sold. More organic produce is enjoyed by both farmers and consumers. and because of the organic products, even the market recognizes and accepts their harvest more rapidly. Everyone follows the traditional laws in the village of Chakhesang Naga, which still demonstrate the togetherness of the society.

Table 4.6. Marketing for Commercial Crops:

Farmers category	Marketing Place		Total
	Within Village	Both in the village and outside	
Small farmers	52 (18.6)	16 (5.7)	**68 (24.3)**
Semi medium farmers	146 (52.1)	65 (23.2)	**211 (75.4)**
Medium farmers	0	1 (0.4)	**1 (0.4)**
Total	**198 (70.7)**	**82 (29.3)**	**280 (100)**

Note: The figures in parentheses are percentages.

Table 4.6 displays commercial crop sales in the market, where 71 per cent sold agricultural commodities in their village. However, twenty-nine per cent sold their crops outside of the village. The commercial farming harvest is sold wherever possible. Most farmers sold their harvest to the market agents within the village itself. These

agents could be the farmers or market agents, who usually have a pickup truck and engage in marketization. They have experience, are good at other languages like Hindi and Nagamese, and maintain a market link with the outside world. The goods are mainly transported to Dimapur town, the commercial hub of Nagaland.

Figure 4.7 (a). Organic crops and vegetables on sale **Plum Fruit**

Source: Fieldwork

One outstanding practice found is the maintenance of the money box (fig. 4.7 b.) in the roadside market. The farmers could not be present in their vegetable shops every day due to the need to engage in their farms and household activities. They, therefore, with trust and faith in customers, arrange all the selling items on a price tag basis, and a money box is kept in their shop so that whoever buys their goods in their absence will put the money in the box. It displays the farmers' confidence and solidarity in society, especially within the Chakhesang tribe and the people in general. *"The farmers were honest about their organic produce, so there is no doubt about the genuineness of their goods, for which they expect the same from the customers, who will be honest in their purchases without the presence of the farmers. So far, no incidence of theft of their vegetable goods has been found, as narrated by one of the farmers."*[7]

Figure 4.7 (b). Practice of money box at a roadside market.

Source: Fieldwork at Pfutsero

[7]Ate, Male, 65, Pfutseromi Village.

Table 4.7. Awareness of Government Loans:

Farmers category	Yes	No	Total
Small farmers	65 (23.2)	3 (1.1)	68 (24.3)
Semi medium farmers	205 (73.2)	6 (2.1)	211 (75.4)
Medium farmers	1 (0.4)	0	1 (0.4)
Total	**271 (96.8)**	**9 (3.2)**	**280 (100)**

Note: The figures in parentheses are percentages.

Table 4.7 depicts farmers' awareness of government agricultural loans. Ninety-seven per cent of farmers are aware of the agriculture loan, and three per cent are not.

Table 4.8. Loan Availed Farmers Category Wise:

Farmers category	Yes	No	Total
Small farmers	0	68 (24.3)	68 (24.3)
Semi medium farmers	48 (17.1)	163 (58.2)	211 (75.4)
Medium farmers	1 (0.4)	0	1 (0.4)
Total	**49 (17.5)**	**231 (82.5)**	**280 (100)**

Note: The figures in parentheses are percentages.

Table 4.8 shows the loans that farmers have taken out for commercial agriculture. 83 per cent did not take out any loans for farming. 17 per cent have taken out Kisan Credit Card (KCC) loan. It is interesting to note that no household in the small farmer category took out any agricultural loan. Due to their modest farms, these farmers had little interest in bank loans. Others did not know about it or understand the loan procedure, some ignored it due to the copious amount of paper work, and some did not enjoy the repayments. One farmer narrated, "*I have come to know about the bank loans, particularly KCC loans, from my friends. Initially, I considered applying for it as I have a farm and all the documents needed. However, going through the long process of applying for the paperwork, selection, and waiting period made me deny it. The monthly repayment basis is also a headache for me. We need money for start-up and major issues, but the bank loan is completed for me. Moreover, we must travel long distances as there is no nearby bank. All these issues create a problem for availing*

bank loan." [8] It reflects the financial illiteracy and bureaucratic hurdles farmers face in availing bank loans for agriculture.

In case those farmers who took bank loans are delighted that whatever agricultural loan they claim has been liquidated and do not remain indebted to banks. One good practice the farmers help each other financially is the practice of money-circle. They engaged in a money-circle system among their friends, family, and farmers. This 'money-circle system' has been practiced in every village for five to ten years. The farmers always need financial help for their livelihood, and with the knowledge acquired from the 'outside world' regarding this money circle, they have copied it. A group of farmers will join this money pool practice in this system. Each member group has to deposit a certain amount according to their common limit, for example, Rs 1000/- each. The total amount will be rented to anyone in the group who needs it for specific months or years free of interest. Every member will be able to join this circle of the group. They make a monthly contribution of Rs 100/- or more, so their pooled money also grows as the year grows. Whenever they require more financial help, they can avail themselves of it from this system, which is exclusively for the member group farmers. One farmer responded, *"This money-circle system is very beneficial, as we do not avail any bank loan opportunities, so act as a mini bank. Even if we pay interest for the borrowed group money, it is of meager interest. It helps a lot."*[9] It is observed that such a system builds trust and strong bonds among the community members.

Table 4.9. Agri-Training Attended:

Farmers category	Yes	No	Total
Small farmers	16 (5.7)	52 (18.6)	68 (24.3)
Semi medium farmers	67 (23.9)	144 (51.4)	211 (75.4)
Medium farmers	1 (0.4)	0 (0.0)	1 (0.4)
Total	84 (30)	196 (70)	280 (100)

Note: The figures in parentheses are percentages.

[8]Akha Movi, Male, 62, Zhavame Village.
[9]Zuluche, Male, 42, Sumi Village.

Table 4.9 represents the agricultural training attended by the farmers. Thirty per cent have attended agriculture training and workshops. Seventy per cent of farmers have not participated in any of the agriculture training. Most farmers who have attended the training and workshops are in the semi-medium farmers category. Some farmers have attended agricultural training and exposure trips. Some attended workshops on Horti-Agri farming at the district headquarters, Phek, for 2-3 days. Some went to Uttar Pradesh (UP) under the aegis of the Phek District Farmers' Union. Farmers have also attended five days of agriculture training at the Indian Council of Agricultural Research (ICAR), Dimapur. Some even went to the Indian Agricultural Research Institute (IARI), New Delhi, and Shimla for exposure and field visitation under state farmers' sponsorship. Due to information delays or a lack of availability, the majority of farmers did not attend any agricultural workshops or training programs. Some did not, as they could not follow up the training or apply it in real life, so they lost interest in it. The training is usually held in district headquarters or nearby towns, but the far-off farmers, who have financial problems and lack confidence, cannot attend the training. One farmer stated, *"If not for the language barrier, I would attend the training. As I could not comprehend other languages, it brings a lack of confidence in me."*[10]

Table 4.10. Opinion on soil degradation:

Farmers category	Opinion		Total
	Yes	No	
Small farmers	21 (7.5)	47 (16.8)	68 (24.3)
Semi medium farmers	46 (16.4)	165 (58.9)	211 (75.4)
Medium farmers	1 (0.4)	0	1 (0.4)
Total	**68 (24.3)**	**212 (75.7)**	**280 (100)**

Note: The figures in parentheses are percentages.

Table 4.10 displays the farmers' responses towards soil degradation due to agriculture. Seventy-six per cent do not agree with soil degradation due to agriculture, and 24 per cent agree with it. One farmer has justified the degradation of soil: *"The cultivation needs the clearance of the forest, which leads to deforestation and makes the soil exposed to sun and rain. Continuous land use for cultivation makes the soil lose*

[10]Cuvohu, Male, 64, Pholami Village.

nutrients and leads to soil erosion. Apart from these, monocropping and change of climate could be the causes of soil degradation."[11] Another farmer responded, *"Our cultivation is small-scale farming; we engage in Alder tree-based farming, green manuring, mixed cropping, and contour bunding. We practice afforestation and plant fruit trees, so soil degradation is not likely to happen."*[12] One respondent said, *"We do orchard farming in wasteland plots and fallow Jhum fields, and so instead of degradation, we rejuvenate the land."* [13] The study observes that some farmers are concerned about soil degradation due to the cultivation of commercial crops.

Table 4.11. Satisfaction on Commercial Farming:

Farmers category	Response			Total
	Yes	No	Cannot say	
Small farmers	20 (7.1)	3 (1.1)	45 (16.1)	**68 (24.3)**
Semi medium farmers	93 (33.2)	16 (5.7)	102 (36.4)	**211 (75.4)**
Medium farmers	1 (0.4)	0	0	**1 (0.4)**
Total	**114 (40.7)**	**19 (6.8)**	**147 (52.5)**	**280 (100)**

Note: The figures in parentheses are percentages.

Table 4.11 shows the farmers' satisfaction with commercial agriculture. Among the total respondents, 41 per cent acknowledged contentment in commercial agriculture, and seven per cent were unsatisfied. However, 53 per cent could not express their opinion about their satisfaction clearly. One family exclusively from the medium farmers' group was pleased in commercial agriculture. The significant justification for satisfaction with commercial farming, as stated by one farmer, is that *"we don't have any other source for additional income into the family. We are mere farmers. However, this small-scale commercial farm is sustaining our livelihood. We do not do large-scale commercial farms. Potatoes and cabbage are major crops, so labor and time are manageable. It is a household-managed farm, and we work on our convenient schedule. It releases us from financial burdens. We could somehow manage our children's education fees and repay our debts. Our traditional fields will always be cultivated as*

[11]Kodochu, Male, 47, Khezhakeno Village.
[12]Kekhrowe, Male, 44, Enhulumi Village.
[13]Kewetshelo Mero, Male, 51, Lekromi Village.

part of our heritage, but we need to earn additional income in this modern world. Even though we profit little, we feel satisfied with our commercial farming practices."[14]

Another farmer stated, "I am not satisfied with my commercial farming because I feel we should be able to do better than we are now. *The government's attitude towards commercial farming is not appreciated as their support in road maintenance, subsidies, grants, market assurance, relief, and overall market operation functions is not up to the standard or farmers friendly. The year before 2017, I had successful marketing with the Horti department in Ground Apple crop, but the following year, the department suddenly stopped the marketization of the said crop, and the whole of my crop got rotten and wasted. I faced a heavy loss in my farming."* [15] This reflects the lack of proper infrastructure in the region for better transport and marketing of the commercial crops grown by the farmers.

Table 4.12. Road Connectivity to Commercial Farms:

Farmers category	Road connectivity to commercial farm		Total
	Yes	No	
Small farmers	63 (22.5)	5 (1.8)	68 (24.3)
Semi medium farmers	183 (65.4)	28 (10.0)	211 (75.4)
Medium farmers	1 (0.4)	0 (0.0)	1 (0.4)
Total	**247 (88)**	**33 (11.8)**	**280 (100)**

Note: The figures in parentheses are percentages.

Table 4.12 indicates the road connectivity to commercial farms from home. Eighty-eight per cent have motorable road connectivity to their farmland, and 12 per cent do not have motorable road connectivity. The facility of a road connection to the farm is very important. It makes the farmers' life and work much easier. In the days of non-motorable roads, farmers struggled to harvest their farm crops, and bringing them back home was a burden. "*With the coming of the road, farmers can now sell their crops directly from their farms. This also helps the agents to purchase the harvest from the farmers in the village itself. We can now bring heavy machinery like power tillers*

[14]Motesou, Male, 55, Zelome Village.
[15]Neisalhou, Male, 52, Zelome Village.

for cultivation purposes, said one of the respondents."[16] One farmer stated, *"The government has helped the farmers by constructing the roads to the fields. In earlier days, the journey to and fro from the farm was a problem as we had to walk on foot. However, now, we make a group of farmers who cultivate in the same location and hire a pick-up truck just for the journey to and fro from the farm by paying meager money."*[17] For the farmers who don't have road connectivity, it was learned that they have to commute, cultivate, and harvest by physical labor.

Figure 4.8. A vehicle conveying farmers to the field:

Source: Fieldwork at Sumi Village

Table 4.13. Sale of Harvest in Dimapur Market:

Farmers category	Frequency of Harvest sales at Dimapur			Total
	Never	twice	more than twice	
small farmers	52 (18.6)	5 (1.8)	11 (3.9)	68 (24.3)
semi medium farmers	119 (42.5)	14 (5.0)	78 (27.9)	211 (75.4)
medium farmers	0 (0.0)	0 (0.0)	1 (0.4)	1 (0.4)
Total	**171 (61.1)**	**19 (6.8)**	**90 (32.1)**	**280 (100)**

Note: The figures in parentheses are percentages.

Table 4.13 depicts the sale of farmers' produce at Dimapur town, the commercial hub of Nagaland. Sixty-one per cent of the farmers have never gone to Dimapur to sell their crops. Seven per cent have gone twice, and 32 per cent have gone several times. One respondent stated that the farmers don't often go to Dimapur for commercial transactions of their crops: *"We are just village farmers. We don't know how marketization works. Moreover, language becomes problematic as we don't know their language. So many farmers are inexperienced in dealing with the agents. We will*

[16]Vezohu Ruho, Male, 47, Porba Village.
[17]Khrozote Wozah, Male, 53, Sumi Village.

be easily fooled. So, we don't have confidence. Apart from these, financial instability and time factors are added problems. Some farmers were just not interested in marketing at Dimapur due to illiteracy. "[18]

Dimapur is one of the 16 districts in Nagaland. Situated in the south-west direction of the state. It is the only district in Nagaland with an Airport and a Railway station connecting Assam state, the nearest border state. People from all walks of life dwell at Dimapur. All these features made Dimapur the commercial center for Nagaland as import and export in the business sector became more efficient.

To enhance the activities, develop the income of the farmers, and equally bring the opportunity and mold the farmers, especially the Chakhesang farmers, the Chakhesang Public Organization (CPO) in November 2021 have set up a private building providing them a space for their harvest market with a meager amount as rent fee. The CPO is the apex public organization of the Chakhesang tribe, comprising all the villages (approximately 80) of the Chakhesang tribe as its constituent members. Opening this market space at Dimapur has ensured the farmers in the village know the demand and supply of the harvested crop. It can help in link maintenance and increase the market strategies with the agents. Relationships from village to village and the market demand trend can engage more efficiently.

Figure 4. 9. Chakhesang Organic Market at Dimapur:

Opening of Organic Market in Chakhesang Public Organization Building at Dimapur

Chakhesang Organic Market. Dimapur.

[18]Wezote Wezah, Male, 46, Chizami Village.

Most motorable roads in agricultural land have recently been constructed, so heavy or modern machinery is not much used in farming, and pesticides and fertilizers for crops are also prohibited. Only organic farming is encouraged, and people respect the mandate for organic agriculture. The tools used are mostly traditional tools like Dao, spade, and bamboo implements (modified tools). The methods and techniques of cultivation are traditional knowledge handed back from generations. Farms are small, commonly 1 hectare, and are of a rainfed farming system.

In addition to other potential markets, the harvests are primarily delivered to the Dimapur market, the State's commercial center. Dimapur is around 220 km from Phek headquarters by road, and NH 29 passes through this route. Farmers live a subsistent and sustainable livelihood, and with little economic profits from small household commercial farms, their financial burdens are realized primarily in their children's education. They began selective farming, choosing specific products and fruits to grow because these are more in demand and marketable than random crops. Some of the significant small-scale commercial farming activities practiced by the Chakhesang farmers for livelihood sustenance are Cabbage farming, Potato farming, Ginger, Maize, Naga dal, King Chilly, Cardamom, Yongchak, Gooseberry, Plum, Kiwi, Persimmon, Banana, Orange, Lemon, Mango, Ground Apple, and varieties of traditional crops and vegetables. With a few exceptions, all these crops, vegetables, and orchard farming are carried out in every village within the study area. Lemon is grown on a small-scale commercial farm in Thetsumi village, Gooseberry is grown in Chizami village, Ground Apple is grown in Zelome village, and sporadically in nearby villages. Family members take the lead in the growing process, which is essentially a household affair, from field clearance to produce sales in the marketplace. Individuals or households are responsible for the upkeep, ownership, and duties of a farm. No wage workers from outside the household or immigrants are imported; instead, the division of labor is determined by the activities of household members. It was discovered that mostly women were involved in commercial farming. In the market, anything that is grown is sold. It will initially be offered for sale in the village before moving on to neighboring marketplaces and roadside markets. The majority of them are brought to the market in Dimapur.

Commercial Farming and Division of Labor:

The people who live in this region have long adjusted their lifestyles, habits, and means of subsistence to the state of the local environment. Their survival depends on subsistence farming, which requires the use and management of natural resources. In addition to cultivating different crops, farmers often employ bioresources, such as wild fruits and plants, to make household tools, for food and medicines.

The methods and techniques of commercial farming are primarily based on the traditional system, where basic equipment like traditional dao and spade are the main working tools instead of modern machinery, even though contemporary commercial farming has affected most of the farmers. Family members make up most of the workforce in commercial agricultural households. They don't have immigrant wage laborers; local or native farmers are the primary laborers and owners. One of the traditional practices of engaging the workforce in a farming system still widely practiced in group work is the reciprocal roster system, where labor is shared instead of paid in terms of money.

Although agriculture is under the domain of men (male gender), females or women are the primary workforce and the crops' caretakers. Despite their heavy engagement in managing household chores and family members, women's participation in the commercial farming system indicates successful farm production.

Division of Labor: The Chakhesang farmers mostly rely on family members for various agricultural activities as their farming land is usually small in size. Farms rely on family labor as the central workforce, and household members take on most of the workload related to agriculture production tasks and commercialization (Judit et al., 2023). Small farmers use different labor acquisition strategies when family labor is not enough. Farmers also sometimes hire seasonal workers and count on the support of relatives outside the household whenever needed. These strategies contribute to human capital and ease the workload of family members.

***Lehzekro (*Reciprocal group work system):** Commercial farming here is predominantly a household-based activity where family members are the primary

workforce for various agricultural tasks. They engage friends and relatives, wage laborers, and other farmland owners if required. One traditional workforce in the farming system still widely practiced is the reciprocal roster system, where labor work is mutually shared between households instead of wage payment. This system is locally known as *lehzekro*, where a group is formed by five to six individual farmers or more, irrespective of clan or khel. Once the working group is formed, work is done for every member's field one after the other, where work can be done, and only after sharing labor to all the members' fields will the work be stopped. In this way, the hiring of the labor force for farm work is reduced. As they work together, they sing songs and execute traditional farming practices where, as the song goes faster, work also goes quicker, and as the music slows down, work also slows down. During rest, they exchange traditional stories, events, and happenings of present and yesteryears.

Role of Self-Help Groups (S.H.G.):

Self-help groups (S.H.G.s) are associations of people comprising only poor women folks between the age group of eighteen (18) to fifty (50) years. To find ways to improve their living conditions, eight (8) to twelve (115) female members of similar socio and economic backgrounds come together and form one (1) S.H.G. Various government departments like Horti, Land Resource, Agri, NABARD, and NGOs from their department helps them in forming SHG by granting minimum of Rs 2000 as start-up for account opening and Rs 15000 as revolving money. Each group should have only one member from one single family. Every village now has several S.H.G.s. These S.H.G.s function under the Village Level Organization (V.L.O.) headed by the Block Level Federation (B.L.F.). S.H.G. is constituted by a president, secretary, and treasurer for three (3) years.

With over a million self-help groups (SHG) in operation in 2004, self-help group programs have become the most widely adopted approach for empowering women in India. It is often linked with other NGO or government agency development initiatives. This may include reproductive and child health programs, creches, water and sanitation initiatives, and gender awareness training. (Jakimow & Kilby, 2006). The SHG model was introduced as a core strategy to achieve empowerment in the Ninth

Plan (1997–2002) to ‘organize women into Self-help groups and thus mark the beginning of a major process of empowering women’ (Planning Commission 1997).

It is found that in the study area, these S.H.G.s work together to raise money through various agricultural farms where they cultivate potatoes, cabbages, peas, green leafy vegetables, poultry, and other activities like knitting, tailoring, etc. Small-scale agricultural farms are cultivated on individual land donated for cultivation by group members. The group members themselves perform the work and manage the farm. The profits from the farming produce go into the group’s savings account. Government organizations and agencies also provide financial support in terms of hard cash through the operation of bank accounts. The pool of money is lent to the group members who need it in times of emergency, financial problems, etc., and it needs to be repaid at a particular time. In addition to savings and credit, it asserts access to resources, identity, political engagement, information, justice, and similar things. It is dedicated to acting as a catalyst for social change, development, and women's empowerment.

Women from the Chakhesang community, through participation in SHGs in every village, have benefitted in various ways such as poverty alleviation, where they can manage to ease their financial burdens through this group’s financial help by participating in various agricultural commercial activities, for example, selling fruit juice, fruit chips, and crops. SHGs mold women in financial matters by engaging them in bank paperwork and seeking information which in return helps them in commercial management. Women also get exposure to outside experiences through this group in exhibitions, sales, and workshops. This also helps in building up women’s confidence and participation in decision-making at the household as well as the community level. Collective support is necessary to address the issue of illiteracy and skill gaps that the Chakhesang farmers, particularly women, suffer. This SHG promotes self-employment and serves as a change agent for deprived farmers.

Role of Women in Commercial Farming:

According to the National Agricultural Policy, improving the circumstances of female laborers and farmers will help increase household food security. This is because,

in contrast to males, women typically spend most of their income on family expenses, which could enhance children's nutrition (GOI, 2003). Between 60 and 80 per cent of the food produced globally is generated by women, who are also inherently better stewards of the environment than men. Millions of women worldwide are employed in agriculture, making them a diversified group with a vast array of opportunities, challenges, and realities. As a result, their obligations are altering in the modern world due to their constantly changing social, environmental, cultural, and economic conditions (Wanjiru, 2021). Rural women make up a significant portion of the agricultural workforce. Women work in nearly every aspect of agriculture, from sowing seeds to promoting agricultural products in the markets. They have a record of producing high levels of both intellectual and physical output. Around the world, rural communities depend heavily on women. They have varying degrees of control over income and resources and perform a range of tasks, including decision-making. Historians have long speculated that the science and art of farming were initiated by women, who were the first to domesticate agricultural plants. While their husbands hunted, women in those primitive times harvested seeds from local plants and then started farming. Ultimately, women have played a crucial role in various agricultural domains, including cattle rearing, gardening, harvesting, forestry, fishing, farming, and more (Sharma, 2022).

Chakhesang women have historically been viewed as inferior to men. However, the situation is somewhat the opposite in commercial agriculture. From the kitchen to the market, women are involved in every aspect of food production and play a significant role in food safety and livelihood. From clearing the land to harvesting and preserving the crops and seeds, women oversaw the agricultural system and took care of the seed crops. Women not only harvest but also take the lead in selling produce in the available markets, The Women farmers carry out hard agricultural labor for little compensation, but they support their families with it. They clean the house, tend to the needs of their children, and either work in or make money from subsistence farming. Daughters frequently take on extra work for free or help around the house. Women folks spend more time on activities that are stereotypically associated with them than men do. They are the cornerstone of attaining food security and the alleviation of poverty.

Women happen to know more about crops, wild or cultivated, their names, their tastes, and even their habitats. They handle most of the manual labor-intensive tasks in agriculture, including managing cattle, gathering fodder, etc. They manage the monetary transactions of their farm market and are good money keepers. They are also the store bank of traditional knowledge from pre-harvest to post-harvest and keepers of custom and heritage. Their strength and determination in housekeeping and cultivation have become the backbone of the farming system. Globally, there is empirical evidence that women are decisive in ensuring food security and preserving local agro-biodiversity. To meet everyday family needs, rural women must manage and exploit a variety of natural resources (Wanjiru, 2021). The role of rural women in community administration promotes the extension of local knowledge and exchange. Participants in capacity-building exercises acquire the self-assurance to assume leadership roles to address development issues, take part in local governing communities, and improve government initiatives. Women-elected delegates will be better prepared to address village issues and organize women into Women Farmer Groups. These qualities make them the forerunners of commercial agriculture and improved living standards. It fosters leadership chances, raises their involvement in social equality and equity, and advances social improvements, primarily in the areas of gender equality, health, and unemployment. The women and the community as a whole are elevated by commercial production. It lowers local unemployment, boosts women's economic status, and promotes their children's education.

Figure 4.10: Women participating in the agriculture market:

Source: Fieldwork at Enhulumi village

Compared to men, women are more inclined to allocate their income towards their families' well-being, which includes providing healthier meals, paying for their kids' education, and providing for their health. They have a variety of functions and produce both food and cash crops. They labor on both their own and other people's

plots; they work as wage laborers; they work as employers and employees; they work for pay or without pay. Although there is not much evidence about women's independent role in small-scale commercial farming, the available data shows that they make substantial contributions; for instance, in Tsupfume village in the Chakhesang area, women in commercial farms work 80 per cent more than men. In other cases, women also provide more labor and management to farms than men. As women better understand how seed exchange networks are maintained, genetic losses are avoided through years of learning and oral tradition (Krishna, 2012). When we take the evidence from the Chizami village of the Chakhesang tribe, Women farmers created seed banks to conserve and circulate the indigenous varieties of seeds. They mentioned how the seed bank has given them a place to share information and close the generational gap. They prioritize establishing connections with outside markets and encouraging the sharing of seeds between farming and non-farming populations. The Chizami Women's Society connects the female farmers to the market, even empowering them politically to be a part of the village council, thus significantly allowing them to play a significant role in the decision-making process. Chizami was the first village among the Chakhesang tribe to induct women members into the village council and the Village Development Board (VDB). The capacity of women to engage in markets with knowledge and effectiveness is another factor that determines their success in commercial agriculture. Women undoubtedly have a crucial role in increasing agricultural output and rural communities' economic development.

One of the sad realities about women's recognition, particularly in the agricultural sector, is that they were not given due recognition as they do not have land ownership rights. For the Chakhesang, whatever credit the family gets, be it for women's effort, due recognition, or the name goes to the head of the family due to the custom and tradition of the tribe, where everything concerning land is registered against their husband's name. the female respondents in this study did not want to write down their names, but their husbands' names for the land they cultivate belong to their husbands' ownership.

CHAPTER V
SOCIO-ECONOMIC IMPACT OF COMMERCIALIZATION OF AGRICULTURE

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When the industrialization of agriculture and the consolidation of capitalism as the dominant global socio-economic system began to push small farms to the corners, several agrarian questions emerged, debating the survival and viability of peasantry. (Akram-Lodhi, 2021; Bernstein, 2006). Researchers from different perspectives have been trying to address the question of how peasants and small farmers 'hung on to their farms and their way of life' (Holt-Giménez et al., 2021) under the threat and pressure of industrial agriculture and the capitalist economy (Bernstein et al., 2018). The globalized economic system is an increasing challenge for small and peasant farms (Hazell, 2005). The production model of prominent producers and retailers is forced upon them (Aubert & Perrier-Cornet, 2009), and they are vulnerable to land encroachment and loss of resources due to extractive industries (Holt-Giménez et al., 2021).

Although small farms comprise only 12% of global farmlands, they house most of the world's poor and food insecure, employ over 2 billion people, and produce 80% of food in Asia and Africa (Lowder et al., 2016; FAO, 2015). Therefore, smallholder agricultural expansion and progress are essential for poverty reduction, food security, and improving social and economic development in underdeveloped and developing countries (Pingali et al., 2019). Given the current situation of smallholder farmers in developing countries, they are generally faced with the following two options: to "move up" or "move out," where either smallholder farmers commercialize and increase their market orientation to emerge as a profitable commercial activity or be supported to exit agriculture towards non-farm employment (Fan & Rue, 2020). Commercialization occurs when farming systems move from subsistence and semi-subsistence-oriented agriculture towards a production system based on profit maximization (Pingali et al., 2017).

However, the peasantry remains, and small farmers still engage in alternative strategies that give them autonomy from the capitalist market (Holt-Giménez et al.,

2021; Van der Ploeg, 2018). Peasant and small farms, hand in hand with agroecology, are pointed to as a pathway to more sustainable food systems (Akram-Lodhi, 2021). Peasant agriculture is defined as a distinct mode of farming carried out by small farms, based on family labor, and guided by a moral economy (Chayanov, 1966). In peasant farms, the owners manage and work the farm; the farms are intimately linked to the farm's family unit (or akin social group). Some autonomy from the market characterizes these farms and relies on internal resources, which are fundamentally self-reproduced and self-controlled (Bern-stein et al., 2018). The goal of their economic activity is not only the generation of profit but also the reproduction of the farm itself (Van der Ploeg, 2013) and thus, maintaining farming as their livelihood, in which the economic goal is sustaining agriculture as a means of living and a way of life.

Agricultural transformation in developing countries may be described as the gradual and sustained transition from subsistence to diversified and specialized production (Todaro, 2001). If development is to take place and become self-sustaining, it must include the rural areas, in general, and the agricultural sector. The core problems of widespread poverty, growing inequality, and rapid population growth originate in rural areas' stagnation and often retrogression of economic life (Todaro & Smith, 2015). Most marginal farmers in developing countries practice traditional agriculture using very little or no agrochemicals. By adopting organic agriculture, which requires less financial input while placing more reliance on natural and human resources, farmers could move towards more sustainable agricultural practices (Scialabba, 2000). Improving the sustainability of the farming production system in marginal areas and providing market access for the deprived hold the key to the mass reduction of poverty (Jimenez, 2006).

It is widely reported that while most states of India are gradually moving away from a traditional agriculture-based economy towards a more service or industry-oriented economy, North East India (Assam) is still heavily dependent on agriculture. The Upper Brahmaputra River Basin is prone to natural disasters and environmental stresses (floods, droughts, bank erosion, and delayed rainfall, among others), creating an environment of uncertainty and setting the basin back regarding socio-economic development. Nevertheless, they are the primary source of livelihood that supports a large proportion of residents of the tributaries of the Brahmaputra River Basin (Amoako

& Hutton, 2014). The entire Himalayan range is favorable for growing various fruits, vegetables, and cash crops. Small areas with their micro-climatic conditions provide suitable sites for growing particular crops, such as citrus fruits, plums, bananas, and pineapples; vegetables such as tomatoes, potatoes, and cabbage; other cash crops like ginger, chillies, and cardamom; and flowers such as orchids, marigolds, and chrysanthemums. The current trend towards horticultural crop expansion will benefit the food and financial security of the hill farmers. (Partap, 2011).

Impact of Commercial Farming in Chakhesang Community:

For the Chakhesang, it is customarily said that it is a shame to beg for food, which means we should not be lazy. In one way, agriculture is not an option but a livelihood. Commercial agriculture has redefined the work culture in the lives of the community. Most households in a village have a farm and a field to cultivate. Even the slogan "Work and Eat" has been promoted. As the population lives in a world of demand for food, commercial agriculture has motivated and moved the community into a work culture for food security. It mobilized the whole village, and the entire village participated in farming activities; the agricultural department and Nagaland government recognized the villages accordingly. In 2005, Tsupfume village was recognized by the Horticulture Department as the first 'Vegetable Village' in Nagaland. Zhavame Village as a 'Vegetable Village' was recognized in 2009. Gidemi Village was recognized as 'Yongchak Village' in 2014. Sakraba Village was also recognized as 'Cardamom Village' in 2015 and is now known as an Organic Village. Lekromi Village was recognized as 'Cardamom Village' in 2017. Chakhesang Public Organization (C.P.O.) considered Zapami Village a 'Green Village' in 2021. Enhulumi Village, to be called 'Plum Village,' is in its process.

Farming not only sustains them in their diet and nourishment but also the income or profit from the sale of crops, which helps them with children's education fees and household maintenance. They also become economically more robust. As they get exposure to outside village life and build relationships, it assists them in improving farming practices, e.g., using modern farming tools (grass-cutter, power tiller) and cultivating exotic crops (kiwi, persimmon). This also helps in expanding their market system. They no longer constrain themselves in their villages, but through marketing channels and contacts, they learn and get inspired. As the use of any chemicals is

restricted, organic crops bring more dividends and are more customer-friendly. With many health issues, customers are more into organic goods, which helps promote organic crops and market exchange. Knowledge expansion has also taught them the importance of ecological conservation and the need to protect nature.

SOCIAL IMPACT

With the onset of commercial agriculture, farmers began to concentrate more on it than traditional farming. Most village households have shifted their interest to commercial farming due to various beneficial results in their daily life, predominantly monetary profits. This has led to the trend of commercial farming in this study region. Commercial farming in the Chakhesang community resulted in several aspects of social life, as explained below:

Impact on Family: Commercial farming for the Chakhesang brings unity to the family; as farmers learn to work together, they become closer, and family ties are expanded. They respect and serve each other as they unitedly work for the common good. Evidence shows that the relationship between Kith and Kins is becoming more robust. One respondent asserted that *"with the gain in financial support, we could manage ourselves in courtesy visitations to our families, kith, and kins with gifts and presents, in times of uncertainties also. This brings closeness and solidarity to the family."*[19] This shows that with the additional income generated through commercial farming, the bonds within the families are being strengthened.

Impact on Social Status: As the farmers gain more access to the markets and people, they feel elevated even though their position remains the same as farmers. With the money, they feel proud and satisfied after their hard labor. They become more knowledgeable and more competent. Hard work and dedication in farming give rich dividends and confidence, which, in return, builds and boosts one's stature. It pushes them to get involved in social events and creates an environment where farmers can lead. The community recognizes and regards them as successful farmers and looks up to them for farming skills. One farmer responded, *"We are farmers and will be life-long farmers. We do not need a high-end lifestyle, but we feel appreciated when we get*

[19] Vizakie Chirhah, Male, 52, Enhulumi Village.

respect and recognition through community participation, where we are invited to share the prospects of commercial farming. When our commercial products get exposed to the outside world through fairs and sales-days."[20] Commercial agriculture brings social unity and growth. Through interdependence and a common goal for the advancement and well-being of their village, along with sympathy and loyalty to one's companion, the society becomes more robust, and commercial farming also contributes these attributes to the community.

Table 5.1. Commercial Farming and Better Social Status:

Farmers category	Response		Total
	Yes	Cannot say	
Small farmers	15 (5.4)	53 (18.9)	**68 (24.3)**
Semi medium farmers	42 (15.0)	169 (60.4)	**211 (75.4)**
Medium farmers	1 (0.4)	0	**1 (0.4)**
Total	**58 (20.7)**	**222 (79.3)**	**280 (100)**

Note: The figures in parentheses are percentages.

Table 5.1. gives the data for a better status of the commercial farmers. Twenty-one per cent of the respondents agreed to improve their position in society. Seventy-nine per cent could not say anything about the change in their status position. The excerpts from the respondents; *"Yes, we can feel and see the acceptance and regard from society. The network with the people is improved, and the public's acknowledgement and support greatly strengthened us."*[21] Another respondent says, *"As the experience goes on, we connect more with the outside world. We feel proud of our honesty and yield of our hard work, which is purely organic, and people regard us for that."*[22] As mentioned by one farmer, *"A little success in commercial farming changes the condition of our living style, like the clothes we wear, the knowledge and exposure we get, and the attitude to honesty and hard work, which brings a better position in society than before."* [23] It has been found that commercial farming benefits self-esteem, a better lifestyle, and an improved social network among the Chakhesang farmers.

[20] Vezo Nakro, Male, 54, Phola Village.
[21]Lonyi, Male, 45, Mesulumi Village.
[22]Wekhro, Male, 57, Lasumi Village.
[23]Mikha, Male, 63, Zapami Village.

Table 5.2. Commercial Farming and Better Life Style:

Farmers category	Opinion		Total
	very much	not much	
Small farmers	59 (21.1)	9 (3.2)	68 (24.3)
Semi medium farmers	194 (69.3)	17 (6.1)	211 (75.4)
Medium farmers	1 (0.4)	0	1 (0.4)
Total	**254 (90.7)**	**26 (9.3)**	**280 (100)**

Note: The figures in parentheses are percentages.

Table 5.2 shows the farmers' responses towards a better lifestyle due to commercial farming. Ninety-one per cent fully agreed to a better lifestyle, and the rest did not. Some of the farmers considered that commercial farming helps them have a better lifestyle; as stated by one respondent, *"commercial farming brings better financial income and helps in asset buying. He managed to buy a second-hand car, renovate his house, and improve his household diet. He found that his family relationship had grown better. It has also brought cleanliness, a healthy mind, and a healthy body as they inculcate good practices, respect for nature, physical fitness, mindset expansion, work culture, healthy competition, and enhancement of traditional knowledge."*[24] This shows that commercial farming leads to enhanced knowledge and material wealth for the farmers.

In response to better living conditions, one respondent stated, *"Yes, because of this cultivation, only we are surviving. Our village, our area, can also become the food bowl of Nagaland. We are small farmers, but we have good land, a favorable climate, lots of nature's gifts, and hard-working people who are dedicated and honest. We cannot always look for govt jobs; if we want to be rich and developed, farming is one area where we can create it, so we need to cultivate, generate, and spread the power of commercial farming."*[25] Some farmers disagree with a better lifestyle due to their priorities. One farmer responded, *"Small-scale commercial farms cannot bring many lifestyle changes. They mainly depend on it for daily basic needs and children's education. When we look at the expenditure, time, and money involved, we cannot see*

[24]Vezoshayi, Male, 55, Sakraba Village.
[25]Khazi Lea, Male, 63, Tsupfume Village.

many changes in our lifestyle." [26] This reflects the varied experiences of the Chakhesang farmers as a result of commercial farming in their lives.

Exposure to External Market: As farmers experience goods transactions, they learn about the market system and build and maintain trustworthy relationships with the customers and the outside world, like the market agents and stakeholders. One respondent expressed, *"Commercial farming alone is not enough; one needs to know about the market and the trend, and one should keep in touch with the market agents and maintain good relationships with them. This ultimately leads to successful farming."*[27]As they gain lost and profit experience in farming, communications and relationships with the outside world have become stronger, more confident, and prominent. They have more contacts and more access to markets and dealers now. They even find ways to face repercussions by building trust and learning business ethics. All these bring closeness to one another, solidarity, customary laws, and community support.

Impact on Education: Education helps search for jobs and plays a deciding role in commercial farming. Educated farmers are better at their farming operations and in applying skills. This brings the farmers closer to the importance of education, where they invest in their children. Teaching them how commercial agriculture may lead to a better understanding of resource management in this region. Most farmers in this region are literate and have at least a minimum educational background.

Table 5.3. Importance of Education.

Importance of Education in Commercial Farming			
Farmers category	Response		Total
	Very important	Not so important	
small farmers	66 (23.6)	2 (0.7)	68 (24.3)
semi medium farmers	208 (74.3)	3 (1.1)	211 (75.4)
medium farmers	1 (0.4)	0 (0.0)	1 (0.4)
Total	**275 (98.2)**	**5 (1.8)**	**280 (100)**

Note: The figures in parentheses are percentages

[26]Wezulhi, Male, 44, Enhulumi Village.
[27] Yiethsulhi Ngatsi, Male, 57, Enhulumi Village.

Table 5.3 shows the farmers' response to the importance of education in commercial farming. It was found that 98 per cent of the farmers responded to the importance of education in commercial agriculture. Every farmer stresses the implications of education and that modern farming and marketing are becoming more problematic without education. Farmers need to know how to communicate and maintain a relationship with the outside world, get information and use modern technologies, handle market links, and stay competitive for the development and betterment of livelihood. At the same time, we must preserve and conserve the bioresources, which are the lifeline of food security. One respondent conveyed, *"Nowadays, without education, living is hard. Even in farming practices, education plays a major role, especially in commercial farming. We need to know how to read and write, how to use the technology, how to access the information and applications, etc., So we invest in the education of our children from our farming incomes."*[28]

Impact on Self-Confidence: Farmers, with their experiences within and without their farming operations, have built trust in their agri-businesses. As he gains more contacts, deals, and exposure to the market agent and the system, it helps the community to rely on him. It brings community responsibility into its materiality. Farmers' attitudes towards commercial agriculture have grown so strong that they tend to neglect traditional farming systems like the Terrace and Jhum Cultivation, where more attention is given to commercial farming. With the experience of the income from commercial agriculture, almost all the farmers are shifting towards it, though not abandoning their traditional farms. Though the farmers supported commercial farming, most were found to have a moderate level of motivation, possibly due to their lack of efficiency and financial burdens.

Small-scale commercial farming encourages the growth of agriculture, food security, and the nation's livelihood. The future of sustainable agriculture depends on the performance of small and marginal farmers, as they play a crucial pillar in modern agriculture. Commercial agriculture enables the cultivation of high-demand commercial crops like cabbages, potatoes, maize, bananas, plums, and kiwi. This has also helped solidify the Chakhesang farmers' presence in the market system. One of the

[28] Vesato Lohe, Male, 46, Sakraba Village.

respondents stated, *"Our village, our area, can also become the food bowl of Nagaland. We are small farmers with good land, a favorable climate, lots of nature's gifts, hardworking people, dedication, and honesty. We cannot always look for government jobs. If we want to be rich and developed, farming is one area where we can create it, so we need to cultivate, teach, and spread the power of commercial farming."*[29]

Community Support: One significant inspiring and desirable aspect felt by commercial farmers is the acceptance and support of the community for their commercial organic cultivation. As it is a small-scale commercial farm, not much of the land area and forest cover are used, and still, the profits gained could free the farmers from their financial burdens. The community also invites them to seminars and workshops, sales days, and exhibitions supporting the cultivation. Farmers are the knowledge storehouse of the traditional methods of cultivation. Despite diverse modern applicable cultivation methods, these commercial farmers still exhibit, cultivate, and propagate the conventional ways and techniques that otherwise diminish. This earns them the support and appreciation of the community.

Farmers are also invited and encouraged to participate in local sales day and environment awareness programs, where they showcase their crop harvest. This helps propagate traditional farming methods and conserve diminishing local species. It also creates and stimulates entrepreneurship and employment. One of the respondents commented that *"for commercial agriculture, the scope is huge, developed nations started with agriculture, whether we are late or not, regarding agriculture there is nothing to do with backward or not. To move forward, we need the government to coordinate with all the stakeholders and work together for development. Our state is so blessed with land, water, and nature that no family ever experiences dire poverty, which may be the problem of not becoming a tycoon agriculturist, especially in our area. If not, we have everything from the farmer's side to farm."*[30]

[29] Khazi Lea, Male, 66, Tsupfume Village
[30] Neisa Puro, Male, 49, Enhulumi Village.

CULTURAL IMPACT

Personal Habits: Commercial farming has impacted many individual approaches, too. It has raised the value of appreciation for nature and food. Concern for the growth of one's health, environment, personal hygiene, and work culture can be felt when one experiences commercial agricultural practices.

Farmers have become more aware of healthy and hygienic lifestyles, such as cleaning the body, washing hands before and after handling crops or things, properly using toilets, and caring for sicknesses, contributing to their farm marketing. As Khrocha, one respondent, said, *"We as village farmers do not usually care much about personal hygiene, but through commercial farming practices, one gets exposure to and acquires many hygienic practices. Proper bathing and wearing of clean clothes. Cleanliness in the house, even on the farm, are a few examples which consequently lead to farming success."*[31]They visit hospitals for checkups, buy medicines, and store them for expected illnesses. They became more hygienic than before in their daily farming transactions.

One thing one can admire is the cleanliness of the commercial workplaces, particularly the health and hygiene they maintain. Farmers are more confident as their relations with the outside world expand. Their increased knowledge of farming and the ethics and ethos of commercial farming gained through their experiences have brought them more reliability in commercial agriculture. Even though the farmers cannot maintain much pride in their status formation, commercial agriculture has given them the leverage toward communities' appreciation and consideration. One respondent stated, *"Farming is farmers' livelihood, but the traditional farming system brings no development, and with the commercial farming trend, every village participates in it because it brings dividends, mostly in financial help to the farmers. The people have no problem with land ownership, so commercial agriculture affects the lives of the regional farmers."*[32] They feel proud and satisfied when the community discusses their impact

[31] Zhonyi Khrocha, Male, 55, Zhavame Village.
[32] Neikhrolo Mero, Male, 63, Leshemi Village.

on livelihood. They felt very obliged as they were exposed to workshops, fairs, and seminars throughout the development of their commercialization.

Business Ethics: Commercial agriculture has brought to the community business ethics, which helps them in their transactions, such as hard work, punctuality, honesty, trustworthiness, accountability, patience, responsibilities, and non-discrimination. It helps to teach the nature of equity and respect. One respondent stated, *"Farmers have learned many business ethics with commercial agriculture. Some simple facts like hard work, honesty, accountability, and responsibility are seen in the lives of commercial farmers. Changes in farmers' practical being through business ethics can be appreciated."*[33] For the Chakhesang, it is customarily said that it is a shame to beg for food, which means we should not be lazy. In one way, agriculture is not an option but a livelihood. Commercial agriculture has redefined the work culture in the lives of the community. Most households in a village have farms and fields to cultivate. A slogan that says "work and eat" has even been promoted.

Food Habits: With the shift from traditional farming to commercial farming, changes in food habits have also shifted. How they prepare their food, the recipe, the dishes they use, the food items, and the style of preparation have changed. Though the traditional way is not forgotten, it is being neglected. Many non-local food items are incorporated into the dietary habits of the farmers, such as varieties of noodles, packaged food, juices, and ready-made canned food, etc. The way of life, eating habits, and diets have also changed. Farmers can be seen not forgetting the changes in food recipes, too, where they tend to follow the cooking style of the outside world. They are even smoking simple cigarettes instead of traditional smokes and cooking away from conventional styles, using lots of spices and oils.

[33] Ibid.

Table 5.4. Change in Food Habits.

Change in food habits:			
Farmers category	With commercial farming, do you observe any change in food habits		Total
	Yes	No	
small farmers	66 (23.6)	2 (0.7)	68 (24.3)
semi medium farmers	211 (75.4)	0 (0.0)	211 (75.4)
medium farmers	1 (0.4)	0 (0.0)	1 (0.4)
Total	**278 (99.3)**	**2 (0.7)**	**280 (100)**

Note: The figures in parentheses are percentages.

Table 5.4. depicts the changes occurring in the farmers' food habits. It shows that 99 per cent agreed to changes to their food habits due to commercial agriculture. One respondent stated, *"We were unaware of outside or modern food like noodles and fast foods. Our meals were always simple and easy, but little profits from commercial farming gave us access to these food items and a little copy of the outside preparation of food. All these have changed our food habits, and in one way, we like it too."*[34] This is a direct result of the farmers' exposure to the nearby urban center while visiting the markets to sell their commercial crops as part of globalization.

Dress Patterns: Commercial agriculture helps improve and uplift the standard of living. Food habits and clothes have become more modernized and polished than traditional. Aesthetic living, cleanliness, and sanitation are encouraged. Better socializing and maintaining relationships have improved the farmers' world and the outside circle of life. All these help improve livelihoods and attract more people to commercial agriculture. Dress patterns are also one of the cultural aspects that cannot be discarded from cultural impact due to commercial agriculture. From their farming clothes to formal clothes, change can be seen. They started using gummy rain boots, umbrellas, plastic raincoats, modern backpacks, hats, and hand gloves. One farmer narrated, *"With little monetary gains through commercial farming, we could manage ourselves in availing of new clothes. This has led to a change in dress patterns, even in cultivation. We did not use or have gummy boots, backpacks, plastic raincoats, hand gloves, etc., but now, the dressing pattern has completely changed."*[35] Women began wearing short pants and sleeveless shirts to fields, and farmers started avoiding the

[34] Wepulhi Letro, Male, 64, Mesulumi Village.
[35] Ibid.

traditional dress codes in their formal dress. Traditional wears are replaced with modern style.

Language Spoken: The exposure trips, sale of their farming commodities, market undertakings, and relationships created have brought about a significant change in the use of language. Farmers mostly use '*Nagamese*,' a lingua franca language for the Nagas, in their daily farming activities. Their ventures to various villages and places and customer contacts have helped them improve their business activities. One farmer responded, *"Language is one of the biggest challenges farmers face in market transactions. This has demotivated them, but now, with practice and experience, the use of Nagamese is helping them market their goods."*[36] No matter how illiterate they may be, every farmer can now somehow speak Nagamese.

Impact on Land Use and Cropping Pattern:

Land tenure remains the same, where ownership is individual/private or communal. However, land usage has changed, and farmers, big or small, are shifting towards commercial cultivation, where land is used for commercial practices instead of being reserved for Jhum farming. One farmer responded, *"Land ownership will remain the same, where we have community and individual land, and we can cultivate in any land, but the land usage is changing towards commercial farming practices. The farmers are aligned more towards cultivating cabbages, potatoes, and fruit trees, which gives them better financial income."*[37] According to the study, more wastelands are used for commercial farming, and more forest areas are cleared for agriculture.

The growth of commercial agriculture has changed the land use patterns. The result of the interaction between man and the environment increases the usage of agricultural land. Besides physical factors such as relief, climate, and soil, land uses are also affected by socioeconomic and technological factors (Sarkar, 2018). More trees and forest lands are cut down and cleared for plots of commercial farms. The rise of individual ownership of commercial farms has made them utilize wasteland, forests, and fallow lands. As the population grows, human settlement also grows, and this leads

[36] Kuvepoyi, Male, 67, Gidemi Village.
[37] Vetezu Nuh, Male, 55, Thetsumi Village.

to the usage of more forest, woodland, and agricultural land. The production of food crops like maize and paddy, industrial raw materials like rubber and sugarcane, wood, and numerous other goods make agriculture the most fundamental human endeavor. Even though traditional agriculture, like wet terraces and jhum cultivations, is not abandoned, farmers make more use of their land for commercial farming. One farmer narrated, *"In the initial period, we did commercial cultivation in the wastelands and Jhum fields, but now, with the successful trend of commercial cultivation, farmers have expanded their fields. Population growth, market demand, and the development in road connectivity have allowed the farmers to cultivate in far-off distances, which leads to acquisition and clearance of more land for farming."*[38] Therefore, deforestation and anthropogenic interferences like commercial agriculture, urbanization, logging, use of bioresources, and construction of roads and houses lead to changes in land usage patterns.

The region's geo-climatic, socio-economic, historical, and political factors influence the cropping patterns. Patterns of cropland use in a region manifest the combined influence of the physical and human environment (Sujatha et al., 2011). The gain in monetary profits and the other positive changes commercial agriculture brings, like work culture, responsibility and care of bio-resources, and growth of organic food supply, make the community shift more towards commercial agriculture from the traditional one. The land is used more for commercial cultivation, such as *Yongchak* and cardamom planting, orchards, and vegetable cultivation. Wasteland and fallow lands are now being converted to commercial farms.

The selectivity of crops with more market demand and better yields is the most cultivated. Mixed and intercropping have changed to mono-cropping due to commercial farming of cabbages, potatoes, and gingers. Orchards and plantations like Plum, Kiwi, Cardamom, and *Yonchak* have emerged, cutting down the traditional cropping system. Though cultivations for both Rabi and Kharif crops along with seasonal crops are practiced, the base commercial crops are potatoes and cabbages and Horti-plants like cardamom, plum, and kiwi. Farmers cultivate whatever they can do initially, irrespective of the land profile. Now, they select and grow the market-demand

[38] Kedulhitso Kupa, Male, 63, Kami Village.

crops and yield the best. One farmer agreed, *"We cultivate and sell any crops, but now we check which crop gives better yield and income. So, we mostly cultivate cabbages, potatoes, Yongchak, and horticultural fruit trees like Plum, Persimmon, and Kiwi."*[39] Different perspectives on the degree of wealth and technology in rural areas have led to shifts in priorities. It was found that the Razeba range was more into vegetable farming, like potatoes and cabbages. The Chizami range was more into fruit tree plantation, and the Sakraba range was more into cardamom plantation.

Table 5.5. Improvement in Irrigation:

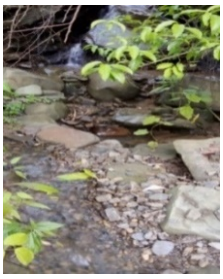
Improvement in Irrigation			
Farmers category	Improvement in irrigation channels		Total
	Yes	No	
small farmers	5 (1.8)	63 (22.5)	68 (24.3)
semi medium farmers	29 (10.4)	182 (65)	211 (75.4)
medium farmers	1 (0.4)	0 (0.0)	1 (0.4)
Total	**35 (12.5)**	**245 (87.5)**	**280 (100)**

Note: The figures in the parentheses are percentages

Table 5.5 demonstrates the improvement of irrigation channels. It shows that 13 per cent could bring progress to their irrigation channels. Eighty-eight per cent could not do much to improve the irrigation channels in their fields. Most of the farmers who brought improvement to their irrigation channels were in the semi-medium group. Most commercial farmers do not pay much attention to their irrigation channels because those are primarily for terrace-paddy cultivation. They are putting more effort into commercial farming. It does not need heavy improvement for some farmers as their channels are well structured.

[39] Ashuli Lea, Male, 55, Tsupfume Village.

Fig. 5.1. Improved Irrigation facilities at Enhulumi Village:




Source: Fieldwork

Some improvements to irrigation channels include cementing their water channels, enhancing their watershed resource centre, and using plastic water pipes to transport water to their fields. Most farmers rely on rainfed water systems for orchards, plantations, and Jhum production.

ECONOMIC IMPACT

Food Security: Commercial agriculture has inspired and pushed the community into a work culture for food security because of the world's population's constant need for food. Society is dynamic rather than stagnant. A dynamic community is altered for its development by the hard effort, sincerity, compassion, loyalty, patience, faith, and trust that commercial farming frequently demonstrates. One respondent claimed, *"Farmers from their village never go hungry, even though they do not eat the best and most expensive food. They take pride in the fact that they are helping to ensure global food security."*[40]

Employment Generation: It gives the farmers' families financial relief regarding their children's education and household expenditures. It also brings employment and encourages entrepreneurship and agri-business opportunities in the community. It can become their primary occupation. They can sustain their livelihood. As farmers experience goods transactions in the market, they learn about the market system and build and maintain trustworthy relationships with the customers and the outside world, like the market agents and stakeholders. One of the farmers proudly stated about the outcome of commercial agriculture, *"Why not? Only because of this cultivation do we*

[40] Ibid.

not survive. Traditional agriculture can no longer sustain us. As we are unemployed and no other befitting jobs available, the small-scale commercial farm has become our sole bread earner, where we can only rely upon."[41] This indicates the best available livelihood opportunities for the people in the region.

Financial Gains: Unlike subsistent agriculture, commercial agriculture brings more profit in terms of money. As farming practices are faster and more accessible, more monetary gains come alongside commercial cultivation. The benefits of economic gains assist them with children's education fees, household maintenance, and other financial burdens. One of the farmers responded, *"Traditional terrace paddy-rice cultivation will always be practiced, but more farmers are leaning towards small-scale commercial farming in vegetables and fruits. This farming brings quick monetary relief to the family, especially regarding small income from market sales."*[42] Another farmer narrated, "*Small-scale household farming is essential at this current juncture. Unemployment is everywhere, and when you have your land, why not start a small farming business? It brings you financial gains, broadens your mindset, gives you a better outlook and experiences, enhances your skills, and leads to development. Farming helps to manage our resources*."[43] A significant contribution from commercial farming is the monetary profits, which relieve the farmers' financial burdens. These profits assist them in their household expenditures, apart from children's education dues and the maintenance of their farms. With their modest profit, they could still get a few economic reliefs like repayment of emergency borrowings, house repairments, and maintenance. A few managed to own two-wheelers and cars, too. No farmers are found financially indebted to anybody or any organization.

[41] Khrotezo Wezah, Male, 44, Chizami Village.
[42] Rokovi Zholia, Male, 43, Zelome Village.
[43] Kerelhi Lohe, Male, 44, Enhulumi Village.

Table 5.6. Utilization of Farm Income:

Farmers category	Utilization			Total
	Household Maintenance/Education	Household Maintenance/ Education/Reinvest in Farm	Household Maintenance/ Reinvest in Farm	
small farmers	37 (13.2)	18 (6.4)	13 (4.6)	68 (24.3)
semi medium farmers	104 (37.1)	76 (27.1)	31 (11.1)	211(75.4)
medium farmers	0 (0.0)	1 (0.4)	0 (0.0)	1 (0.4)
Total	**141 (50.4)**	**95 (33.9)**	**44 (15.7)**	**280 (100)**

Note: The figures in parentheses are percentages.

Table 5.6 shows the utilization of extra earnings category-wise for farmers. Fifty per cent use their additional income for household maintenance and children's education. Thirty-four per cent use it in household maintenance, education, and farm reinvestment. Sixteen per cent was used in household maintenance and reinvestment in farms. One farmer in the semi-medium category narrated, *"The monetary profits from cabbage and potato farm, though small, is spent mostly in children's education fee and basic household maintenance. For the management of the commercial farm, as it is a small-scale and a household project, it becomes a family affair. All the necessary work of the farm is managed through family labor."*[44] Another respondent stated, *"Commercial farming has contributed much to the family. Along with the farm income, I managed to buy a second-hand pickup truck, which is used for farm activities and in building a storehouse for the farm crops."*[45]

Commercial Agriculture and the Livelihood:

Agriculture has continued to be the primary source of livelihood in the Chakhesang region, though lately, development is slowly creeping in through education and job opportunities. Nevertheless, the benefit from agriculture is still the bastion of all growth. Commercial agriculture has grown in this region even though it is small-scale farming in nature. Commercial agriculture is simply farming where crops and livestock are raised for sale in turn for profits. Urbanization, globalization, and

[44]Khou Lea, Male, 52, Tsupfume Village.
[45]Kopelo, Male, 44, Enhulumi Village.

population growth have changed the way of life of urban dwellers and significantly impacted rural life, and its implications can be felt in agriculture.

In rural farming, the farmers' access to marketplaces for purchasing and selling goods is crucial in enhancing livelihood and food security. It also increases the hope for cash income and bridges the marketing gap, thus improving their overall living standard. Trade agriculture for local farmers would be one approach to achieve this goal. Even though most farmers in the Chakhesang region are subsistence farmers, small-scale commercial farming has become more common recently, primarily in every farming household, since all farmers engaged in small-scale commercial agriculture as either owners or workers.

Regional Development: As the agricultural sector develops, the entire region also develops. Development in society and culture follows economic progress. It increases literacy rates, longer life expectancies, and improved living standards. It challenges the populace's priorities while fostering greater responsibility, awareness, and attributes for better livelihood. Throughout history, the local population has adjusted its traditions, customs, lifestyles, and means of subsistence to the state of the environment. Farmers employ bioresources, such as wild plants and fruits, for household tools, medicines, and food in addition to cultivating various crops. With the proximity of their villages to the forest area, farmers always take advantage of nature's wealth. They forage wild herbs for food, healing wounds, and medicine. Fruits, berries, mushrooms, medicinal herbs, etc., are brought to the market. They also benefit financially from forest tree timber and firewood.

Over time, there has been a decrease in shifting cultivation and a corresponding utilization of the fallow land for permanent cultivation for market sale. Fruits, including plums, kiwis, and persimmons, are grown in orchards on wastelands. As an extension of the family garden, home gardens have long been a dependable supply of fresh vegetables. As they generate an annual revenue, which is significantly required, they now qualify as commercial assets. To diversify their commercial farming, they cultivate and domesticate wild species, do nurseries, etc., in their private gardens. Another additional revenue source is animal husbandry, which includes the cultivation of pigs and poultry. For many farmers, it serves as insurance in times of need.

CHALLENGES OF COMMERCIAL FARMING

Globalisation:

Indigenous agriculture is subsistence-oriented, where crops and fruits are rich in nutrients, vitamins, and values and are naturally adapted to their climate, soil, and environment. On the other hand, as the demand for food security increases, the market demands more production of food crops. In the era of globalisation, the focus is shifting to modern technologies, such as high-yield variety (HYV) seeds, chemical fertilisers, and pesticides, to achieve higher production levels in agriculture. It may also affect the mindset of indigenous people migrating to towns and cities for better employment opportunities. The profits made by their crops and exposure to nearby towns have allowed them to gain more knowledge in modern agriculture methods, such as the use of modern technologies, market systems, and the price and value of the crops. In this process, they were exposed to modern lifestyles, eating habits where exotic crops are consumed, packaged food, etc., all of which made them feel inferior in the agriculture system. All these factors lead to diminishing indigenous knowledge practices in agriculture in the region.

Population Growth:

The population of the villages was low; they lived simple lives with no development. It is a life of low input with low output, but as the population increases, so does the development of wants and needs. Population explosion demands faster cultivation and more production. At the same time, traditional cultivation is only a small family farming system where production is small, and harvest is done only once a year. This may compel the farmers to modernise their farming system, where gradually, they may lose their indigenous approach to the farming system. One farmer in Atsumi (local dialect) village has remarked explicitly that in the olden days, the population of their village was below one hundred households. Now, it has more than 200 households, so as the population increases, so does the demand for food, which they need to cultivate more and faster. This scenario poses a threat to indigenous cultivation methods with low crop productivity.

Climate Change:

Human activities and lifestyle in the use of minerals, deforestation, transport and vehicles, industrial wastes, farming systems, etc., have brought the condition of the climate into a dilapidated state, where a shift in climatic conditions has created an enormous hurdle to the system of application of Indigenous knowledge. Indigenous farmers have certain instincts about the environment and the climate, but due to unprecedented climatic changes, many complications arise in their farming system. Sakraba and Zhavame village farmers are known for crops like potatoes, cabbages, and large cardamom. Still, they are facing climatic problems like visiting pests and insects, irregular rain, and increased temperatures lately.

Post-harvest Losses and Storage Challenges:

Due to negligence, an easygoing attitude, poor hygiene, lack of proper storage facilities, etc., farmers usually have many post-harvest losses. Without adequate knowledge of handling, packaging, and storing crops and fruits, the quantity and quality of the produce are degraded. This not only decreases availability but also attracts pests and diseases.

Commercialisation of Agriculture:

It is found that farmers who practice and use modern technologies and exotic crops and fruits earn more than other farmers. With the introduction of exotic crops like Cabbages, Potatoes, Yongchak (tree beans), Cardamom, tea and coffee and fruits like Kiwi, Persimmon, Lemon, Apple, Plum, Ground Apple, etc. and the use of chemicals and fertilisers, growth in production, attraction, fashion becomes more. Changes occur in the farming system where indigenous crops and fruits are looked down upon because of their low productivity, sustainability, slow growth, etc. Exotic crops gain them more financial position, so more people tend to leave the indigenous crops, leading them to extinction.

Lack of awareness among the younger generation:

The village's younger generation regards farming as a low-level job due to fewer profits and hard physical labour. As they venture out of their villages for education, they lose contact with their indigenous farming system. Their unconsidered attitude toward indigenous farming creates a significant gap in the development of IK in agriculture.

IK survives only through word of mouth, and the store of knowledge is only with the elderly farmers; the ageing and death of these older farmers slowly diminish indigenous knowledge.

PROSPECTS OF COMMERCIAL FARMING

Food Security:

The farmers of this region do not have major modern agricultural tools and machinery. They work with simple indigenous tools like spades, dao, bamboo weeders, and baskets. Nevertheless, with Indigenous knowledge, they always grow their food without few resources or high technical knowledge. Even though production is low, their crops are rich in nutrients and minerals. The Indigenous farming system provides food security to the hilly communities by cultivating crops like millet, job's tear, maise, pumpkin, yam, banana, etc. They grow varieties of crops and engage in agroforestry, polyculture, horticulture and plantations without any chemicals.

Environmental Conservation:

One of the outstanding indigenous farming practices of this tribe, specifically in Kikruma village, is Zabo farming, which means "water impounding" and is where a vast forest area is conserved for cultivation. The forest hilltops are preserved for water catchment areas, and on the next level, ponds are dug for water collection, which serve as reservoirs. The water is then channelled through cattle yards and the paddy fields below. This water carries the cattle's dung, urine, and wastes to the areas and fisheries, adding nutrients to the soil again. Another method is the Alder-based farming system, where farmers use the ability of the Alder trees to retain soil fertility. Trees are pollarded, leaves and twigs are burnt down, and ashes are mixed with the soil. Fields are secured with buns, and the Alder roots help in soil fertility through the nitrogen fixation method. This system also protects against soil erosion. Like orchards, cardamom farming, banana plantations, etc., Horticulture contributes to environmental conservation. These contribute to controlling temperature, sunlight effects, soil, wind and rain, ultimately securing agriculture.

One of the advantages of indigenous farming is that crop production is organic. Though production may be low in quantity, the quality of crops earns them money, as well as nutrient supplements. Farmers do not need any fertilisers, pesticides, growth regulators and additives for their crops; the natural composition of the soil and the way they cultivate by using green manure and compost, rain and air composition by default helps them in farming. It reduces soil erosion, recycles animal waste into the farms, makes soil healthy and fights global warming. It is a critical factor for sustainable agriculture.

Women Empowerment:

Chakkhesang women in these villages work tirelessly with their male partners. They do more work daily from the kitchen to the farm to sell their farm produce in the markets. Women are seen as more active and better at handling and participating in agriculture, if not in another profession. Women in developing countries, especially in tribal regions, experience many social and economic constraints daily. Even though their wages were lower than their male counterparts, they became the backbone of family farming. They take care of the house, family, and many other activities for their livelihood, yet contribute to agriculture. They have better knowledge than men and have closer connections to their fields. Chakhesang women actively cultivate and sell their crops in daily markets, roadside stands, and door-to-door. All these activities empower them and also provide them with financial independence.

Economy and Health Benefits:

Farmers of the Chakgesang community manage to sell any varieties of their crops and fruits due to the organic cultivation system. This money earned helps them to realise from financial shortages and daily expenditures. Indigenous crops are high in nutritional value due to the abundance of vitamins, minerals, and proteins and their medicinal benefits in curing ailments. It provides many economic benefits by selling them, improving living standards in families, and helping with children's education and family maintenance. Cultivating and tolerating abiotic and biotic stresses also takes a short period, which again reduces the maintenance cost and extra inputs for the cultivation. There is no need for additional agricultural inputs for cultivation using the indigenous method, thus relieving the farmers from the financial burden.

CHAPTER VI
SUMMARY AND CONCLUSION

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Indian agriculture faces both potential for expansion and challenges due to the country's expanding population and shifting demand. Small farms' potential to expand production and diversify in response to shifting demand will depend on their capacity to commercialize (increasing involvement with input and output markets) and diversify at the farm level (Pingali et al., 2019). The nation's rapidly rising rates of urbanization and population expansion, along with its accelerating rates of income growth, offer a wide range of opportunities in local and regional markets, which helps in economic growth and demand prospects. Since there has been a noticeable improvement in the business environment recently, priority is being given to investments in essential infrastructure, including communications, power, water, and roads. The rural populace's capacity to participate in their development and protect their interests has increased due to decentralization efforts and civil society growth. As a result, independent producers and other business groups have thus begun to find more room. While providing chances for investors to have the security of tenure, customary rights were also safeguarded. Improved macro and sectoral policies, heightened demand, and a better business environment will boost agricultural returns and encourage more regional and foreign investment.

Nagaland is an agrarian economy, making the most significant contribution to the state economy from agriculture and its allied sectors. The State has a vast potential for organic farming. Therefore, there is an urgent need to explore and promote organic farming methods in the State. Phek is the eighth district of Nagaland. In terms of area, the district occupies the second most prominent place among the sixteen state districts. The terrain of the Phek district is very severely undulating, full of high hills and deep gorges. Most of the high hills are steep. Mid hills with 50-100% slopes are suitable for orchards and plantation crops. Jhum cultivation is also practiced in mid-hills; lowlands with a 20-50% slope are best suited for paddy cultivation. In the foothills, paddy is

predominantly taken. However, nowadays area under paddy cum fish culture is also increasing.

The Chakhesang tribe is one of the prominent tribes of the Nagas, generally referred to as "Eastern Angamis," as they were separated from the Angami tribe in the eastern part (Hutton, 1921). Chakhesang's name amalgamates three significant sub-tribes: Chokri, Khezha, and Sangtam. It is a name unanimously selected by the leaders of the three sub-tribes in order of the alphabetical arrangement series, giving full recognition and equal respect to each sub-tribe entity. The social structure of all Naga tribes is patrilineal, patrilocal, and patriarchal, and they all have nuclear households. Typically, a Chakhesang village is split up into khels, or clans. Clan members are not allowed to marry one another since it is regarded as incest, and those who do so face social rejection (Thingnganing et al., 2017).

The main target of the sociological investigation on the commercialization of agriculture among the Chakhesang tribe of Nagaland is to comprehend the process of agricultural change through commercialization. The research not only considered the commercialization of agriculture but brought varied facts about the differences between traditional and modern agriculture practices. It aims to find the factors responsible for peoples' inclination towards commercialization and its socio-economic impact on the indigenous tribal community of Chakhesang Nagas.

Chakhesang is a unique tribe among the Naga family, consisting of three sub-tribes: *Chokri*, *Khezha*, and *Sangtam*. It is distributed in the Pfutsero, Chozuba, and Phek sub-divisions of Phek, bordering Mao, Poumai, Tangkhul, Sumi, Angami, and Pochury. The tribe's earliest settlements are connected to Khezhakenoma village, which served as a dispersing place for the Lotha, Sema, Chakhesang, and Rengma tribes. Chakhesang speaks different dialects, including Angami's *Tenyidie*, *Chokri*, and *Kheza*, and is known for its rich traditions, culture, folklore, songs, and other traditional practices. A head of the enemy brought home from the battle was a source of pride for Naga warriors, notably the Chakhesang, who were previously ardent head-hunters. Men's primary responsibility was to defend the women, kids, and hamlet against invading attackers. This position fostered patriarchy – a system in which the father is

regarded as the head of the family and male domination in their society. He is the one who provides for the family's necessities, takes all crucial decisions, looks after the family's belongings, and keeps them safe.

The Chakhesang are skilled craftsmen and patrimonial, with women holding high status in their families. Traditional laws are unwritten but passed down through generations, and older people decide on disputes and community matters. The village's socio-economic structure is simple, with land use determining social prestige and wealth accumulation. Family is crucial for teaching moral principles and social cohesion. Men dominate in all aspects of life, leading to a patriarchal structure. Family members are divided into work groups based on age and sex, with women handling household chores and men handling trade and business. Children's ages also influence their roles, with girls learning domestic chores and boys learning hunting. The father or clan man made the final decision on marriage. Divorce was rare, but remarriage was allowed if divorcees wanted to. After the divorce, the father was responsible for looking after children, with sons going to the father and daughters to the mother.

The Chakhesang people historically practiced animism and believed in ghosts. The villagers make sacrifices at the appropriate time to prevent disturbance. Priests used animal sacrifices as a way to ask for their graces. The Chakhesang community adhered rigorously to taboos or limitations related to festivals, crops, illnesses, and seasonal shifts. The idea of *Kenyi* or *Kenyu* was observed to curb wicked deeds that resulted in sicknesses, deformities, and unnatural death. It was forbidden to be assaulted by wild animals, tear down sacred trees, cause fires or landslides, anger gods or spirits, have accidents, or make fun of orphans.

Chakhesang is an appealing region with various events and rich cultural traditions. All of these celebrations center on agriculture, the people's primary source of income. People who held feasts of merit and brave soldiers were respected and admired. The Chakhesang people celebrate various festivals throughout the year, including *Khuthonye*, which is celebrated in July after completing terraced field

cultivations; *Turhinye*, which preserves crops from wild animals; and *Thurinye*, which is celebrated in December after harvest. The most significant event, *Sukrunye,* is held in January and guarantees the community's health for the upcoming year. Celebrated in February, *Ngunye* is a festival of celebration that includes traditional wrestling, dances, and sports. The annual cultivation cycle begins with *Tukhanye*, which is celebrated in April. Both men and women participate in joyful, openhearted celebrations of these festivals among the Chakhesang people.

With farming households embracing various techniques like home gardens, shifting cultivation, terrace rice cultivation, and firewood reserve forests, Nagaland's traditional agriculture is elaborate. These techniques were influenced by biotic and abiotic variables, soil, altitude, temperature, and precipitation. These methods have developed throughout the ages and reflect the experiences of native farmers without the use of outside resources or contemporary scientific understanding. Rain-fed agriculture is people's primary source of income. Although shifting cultivation is common, it is declining, and Chakhesang farmers are adapted to terrace cultivation. Agriculture is the primary occupation due to the district's uneven landscape, which includes deep valleys and high hills. The main crops include rice, maize, millet, cabbage, yam, pulses, ginger, bananas, passion fruit, peach, etc. With dispersed and fragmented land holdings, monocropping is the typical cropping system.

Customs were the governing principles of the ancient people's socio-ethical lives, followed as laws by the populace. It has been practiced constantly since the prehistoric age and continues today. It is the oldest legislation because it predates the others. The customs are quite different and adhere to the rules of nature. It is a common law among all Chakhesang tribal members and their communities. The traditional court in each community has the authority to punish people who break customary law (CPO, 2020). Public interest lawsuits may be brought for infringement in reserved forest areas and when someone blocks a road or irrigation canal. The landholding system is governed by distinct customary laws encompassing many facets of life. The Nagas place the highest emphasis on land since it confers political and economic power. Tribal customary rules gave the state special status and self-governance in 1963. In Nagaland,

the people own most of the land; the government has no authority. Approximately 98 per cent of the state's land is owned by the people. Individual and community land are the two categories of land. Community land includes village and clan land.

Traditionally, there are three major land ownership practices: (1) Individual Ownership of Land, where Land ownership is private property, allowing total usage by the rightful owner, originating from a patrilineal inheritance system. He can use the land at his whims and wishes, except those against the customary laws or the village council regulations. (2) Clan Ownership Land, where land is used by clan members based on their terms and conditions, including cultivation, harvesting, and firewood harvesting, and (3) Community Ownership Land, where land is used according to village council regulations, directing cultivation, reserved areas, and durations. The Village Council primarily regulates development, hunting, legal and illicit farming, and community rights.

Types of Agricultural Land among the Chakhesang:

The terrain is hilly, and the climate is tropical. Farmland surrounds most of the villages, which are situated on the hills. The farmers farmed their land from the settlement to the section of the river that ran down the mountain bed.

***Ekhulo* (Terrace field):** *Ekhulo* is a land used for paddy cultivation. Every household is the owner and caretaker of its terrace field. Terrace fields come in two varieties: *Kedaloh* and *Ketsholoh.* The name *Kedaloh* refers to the wet terrace field. The wealthy village farmers own and cultivate them. These fields hold water all year round by directing water from several sources. They promote aquaculture, which contributes to the enjoyment of planting and harvesting. *Ketsholoh* is a dry terrace farming that relies on monsoon rains.

***Zabo* System:** In Chakhesang Kikruma village, a unique integrated watershed management system is known as the *Zabo* cultivation system. It is sometimes referred

to as the *Dzudu* or *Ruza* indigenous farming system. It entails preserving large tracts of forest for farming, gathering water in ponds, and directing water through paddy fields and cow yards. This approach cultivates crops like pumpkin, yam, cucumber, beans, chillies, maize, naga-dal, etc., while simultaneously promoting the development of water resources, water management, and environmental protection.

***Meluloh* (*Jhum* field):** Jhum fields are not permanent and are cultivated for two or three years, with a fallow period of ten or more. They are typically done in forests and sloppy areas, using slash-and-burn cultivation. Ash from burned areas is used as fertilizers and manure, eliminating pathogens and pests. Traditional zero tillage methods include stick dibbling and felled trees. Upland paddy is mixed with other crops to create a barrier against insect pests and provide a food source. Jobs tear is sparsely cultivated to avoid birds and rodents. After harvest, the field is left for ten years to recover fertility. Jhum fields are cultivated on individual, clan, or village land.

***Chükhe* (Agro-forestry):** *Chükhe*, or agro-forestry, is agricultural land owned by individuals or clans where flora and fauna are freely collected and shared. Firewood is cut twice yearly, once in January and again in December, for *erünye* and Christmas festivals and used for construction, art, and wood crafts.

***Kecü* (Kitchen Garden):** Every household owns its own *Kecü* or kitchen garden in the backyard of its immediate house compound. Seasonal vegetables, mainly mustard seeds, cabbage, garlic, cucumber, beans, chillis, eggplants, ginger, peas, etc., are cultivated in this garden. Most households plant squash crops in this garden. This *Kecü* also provides a space for the domestication of pigs, fowl, rabbits, goats, and cows.

Subsistence and commercial farming are two distinct farming practices. Subsistence farming relies on farmers for survival, while commercial farming involves growing crops and raising cattle for market profit. Commercialization emphasizes profit maximization, influencing product choice and input use decisions. It entails

transitioning from subsistence farming to producing speciality crops and farm animals. The Chakhesang with abundant bioresources are selling their crops for monetary gain, and with land and a favorable climate, they are transforming into small-scale commercial agriculture. They cultivate various crops and fruits, gather wild fruits and crops, and occasionally hunt animals and fish for market sale. The farmers do both Indigenous and small commercial farming. Some crops and fruits grown commercially are cabbage, potato, ginger, naga dal, king chilli, maize, yongchak, banana, ground apple, cardamom, persimmon, plum, and kiwi.

Some major factors that motivated the farmers to do commercial farming are providing better education for their children, earning profit, and providing financial relief. The Chakhesang farmers have land for commercial cultivation, and the inspiration from the trend of commercial farming gives them monetary profit for their children's education. In addition to subsistence farming, the farmers are looking for additional methods to help them financially. Their friends' and families' encouragement led them to participate actively in commercial agriculture. The Chakhesang commercial farmers gain inspiration from the success stories of other farmers, workshops, and exhibitions of commercial farming. Small farmers are moving towards commercial agriculture to support their families better and improve their standard of living because commercial agriculture offers more significant opportunities for profit-making and exposure to the agriculture sector. Many small farmers have been motivated and engaged by the status gained, such as appreciation and recognition on social platforms of the crops sold, the assets purchased from the profits, such as two and four-wheel cars, and the outside knowledge gained from this commercial agriculture.

It was observed that most of the farmers expressed satisfaction with these commercial farming practices. Farms are small in size and are of household activity, and this small-scale commercial farming helps sustain the farmers' livelihood. The harvest brings monetary profits and releases the farmers' financial burdens. In the study area, some villages recognized by the Government of Nagaland in small commercial agricultural farming are stated below: Tsupfume Village as a 'vegetable village' in 2005, Zhavame Village as a 'Vegetable Village' in 2009, Gidemi Village was

recognized as '*Yongchak* Village' in 2014. Sakraba Village was also recognized as 'Cardamom Village' in 2015. Lekromi Village as 'Cardamom Village' in the year 2017. Chakhesang Public Organization (C.P.O.) considered Zapami Village a 'Green Village' in 2021. Enhulumi Village, to be called 'Plum Village', is in its process.

Despite the advent of modern technology, commercial farming still uses age-old practices and basic instruments like a dao and a spade. The local farmers are the principal proprietors, and family members comprise most of the labor force. Women contribute the most to farming activities, and the reciprocal roster system of workforce is still in operation. Small farmers employ seasonal laborers and rely on related family members' assistance when family labour is insufficient. These approaches lessen family members' anxiety and boost human investment. Families in this region do most of the commercial farming and the reciprocal labor arrangement (*Lehzekro*) practices, sharing labor amongst families instead of paying money. As a result, productivity rises as fewer workers are hired. Folk music and folktales were shared during manual work in the field and are two farming traditions that promote harmony and productivity.

From seed sowing to product marketing, rural women are fundamental to agriculture. They are indispensable to rural communities and have a high ability for both intellectual and physical output. Despite their historical marginalization in commercial agriculture, Chakhesang women's contributions to food safety and subsistence methods have evolved in modern society. They oversee market sales, manage agricultural operations, and tend to the seed crops. They also manage their families, keep up their homes, and care for their kids. From a young age, their daughters assist them in the housework, contributing to food safety and poverty reduction. Agriculture, financial transactions, manual work, and the preservation of traditional knowledge are all areas in which women play a vital role. They are in control of managing different natural resources and ensuring food security. Through the extension and sharing of knowledge, women's management of rural communities fosters social equality and equity. Through capacity-building exercises, women gain the confidence to take on leadership positions, engage in committee work, and enhance government efforts. Commercial production lowers local unemployment, promotes children's education, and raises women's status economically.

Women contribute significantly to small-scale commercial farming; in Tsupfume village, for example, they work eighty per cent harder than males. They also offer management and additional labor. To preserve native seeds, share expertise, and close generational gaps, women farmers in the village of Chizami created seed banks. They also engage in decision-making and build relationships with external markets. Women in the agricultural sector are often denied recognition because they lack the rights of landowners. Since the land is registered in their husband's name, the female respondents from the Chakhesang tribe do not want their names to be listed.

Following traditional practices, small commercial farmers in Chakhesang communities cultivate their crops organically without fertilizers or pesticides. The farmers are advised to use natural manures and follow the village councils' mandate for organic farming. Penalties and ignored harvests are the results of violations. Farmers and consumers alike value organic produce, which accelerates market acceptance. The community's steadfast commitment to upholding customary laws demonstrates respect for customs and solidarity among the group. Wherever possible, the produce is sold. Most of the farmers sold their produce to the village's market agents. These agents, who usually drive pickup trucks and work at the market, could be outside market agents or the farmers themselves. They have experience, speak various languages like Hindi and Nagamese, and have a close relationship with the outside world. Dimapur town, the commercial hub of Nagaland, is the major destination for the commodities. In November 2021, the Chakhesang Public Organization (CPO) set up a private building in Dimapur to house their harvest market. The organization aims to improve the farmers' livelihood, expand their opportunities, and mould the farmers, particularly the Chakhesang farmers.

Chakhesang emphasizes agriculture as a source of livelihood and feels ashamed to beg for food. The work culture is redefined by commercial agriculture, as homes are now involved in fieldwork and farming. The community, by the phrase "Work and Eat," encourages a work ethic for food security. Farming provides rural residents with food, income, and economic security. Exposure to modern farming tools and exotic crops improves techniques and expands market systems. Organic crops are more consumer-

friendly and promote market commerce. Education encourages ecological conservation and the importance of protecting the environment. This reduces health issues and promotes commercial agriculture. Traditional farming has lost focus due to commercial agriculture's financial benefits, while villages have grown more involved and use commercial agriculture more frequently.

Among the Chakhesang farmers, commercial farming brings family closeness, respect, unity, and services. Giving gifts and visitations to family members strengthens them, especially during uncertain times. Family harmony and confidence are also restored through financial support. Commercial farming fosters farmers to build agricultural trust, extend their network through exposure, and enhance their community responsibilities. As they gained more confidence, they preferred commercial agriculture, not neglecting traditional agriculture like terrace and Jhum cultivation. Commercial farming improves livelihoods, agricultural progress, and food security. It encourages the community to cultivate crops of high demand, like cabbages, potatoes, kiwis, plums, and bananas. With their excellent land, climate, hard work, and integrity, Chakhesang farmers have the potential to become Nagaland's food bowl. They should cultivate, educate, and disseminate commercial farming power for prosperity and development. Education improves farmers' skills and knowledge and significantly impacts job search and commercial farming. Farmers with education invest in their children by encouraging resource management and deepening their understanding of commercial agriculture.

Farmers work hard to gain access to markets and people. Their commitment and diligence instil faith in them and elevate their status. They are acknowledged as progressive farmers and take part in social gatherings. Commercial agriculture promotes loyalty, interdependence, and shared goals while bringing society together and growing. This strengthens society by fostering the growth and well-being of the community. Farmer acquire experience in the market by trading goods and developing relationships of trust with stakeholders and customers. Their relationships and communication improved with experience, giving them more access to dealers and marketplaces. Solidarity and support for the community are fostered by establishing

trust and studying business ethics. Since organic farming allows them to use less land and forest cover, commercial farmers are grateful for the community's approval and support. They get invitations from the community to talks, workshops, sales events, and exhibitions, and this supports species preservation and traditional farming practices. Engaging in neighborhood sales, events, and environmental education initiatives encourages job creation and entrepreneurship.

Commercial farming had a significant influence on farmers' beliefs and methods, and it has made respecting food and the environment even more important. As a result, more people are aware of healthy lifestyle choices, such as keeping the workplace tidy and practicing proper hygiene. This movement, which promotes a more sustainable and environmentally friendly agricultural system, has improved the lives of farmers. Noodles, packaged foods, juices, and canned foods are examples of non-local foods included in eating habits due to the shift from traditional to commercial farming. Furthermore, by replacing traditional cooking methods with recipes and spices, farmers adapt to outdoor cooking and alter their diets and lifestyles. Commercial agriculture has increased sanitation and hygienic living environments, influencing modern social interactions, fashions, and nutritional preferences. Livelihoods have improved as a result, and commercial agriculture has gained popularity. Additionally, fashion has changed. Farmers now carry umbrellas, plastic raincoats, and gummy rain boots and wear sleeveless shirts and short skirts. Traditional clothing styles have undergone a complete transformation. Despite being illiterate, farmers increasingly engage in regular farming tasks using "Nagamese," the lingua franca of the Naga people. As a result, the communication barriers have been broken down, and marketing has improved, forging better linkages with customers.

The community's business integrity has developed through dedication, patience, accountability, honesty, reliability, and non-discrimination through commercial agriculture. It has also promoted justice and reverence. There are still private, communal, and individual landowners. Land use patterns have changed as farmers switch to commercial farming. Among the factors contributing to this shift are the development of roads, urbanization, and the use of bioresources. Economic,

historical, political, and meteorological factors all affect cropping patterns. As for the benefits and financial advantages, the community is moving toward commercial agriculture. The principal commercial crops are horticulture fruit trees, kiwis, plums, persimmon, and crops like potatoes and cabbages. Farmers cultivate whatever they can, regardless of land contour, and then focus on crops that yield more and provide more income.

Commercial agriculture has transformed communities into work cultures emphasizing effort, compassion, loyalty, and trust to secure food security. Commercial agriculture profits help farmers manage their resources more effectively and alleviate financial pressures. It covers household maintenance, children's education fees, and other expenses. Commercial farming offers immediate financial relief, particularly from market sales. Nevertheless, farmers can repay emergency loans, repair houses, and maintain their farms despite the meagre returns. Some even own two-wheelers and cars, demonstrating the importance of small-scale farming in today's unemployment-ridden world. Commercial agriculture encourages entrepreneurship. Farmers that actively participate in commercial farming become the primary source of revenue. The community could make the most money with these farming practices.

As they gain experience in loss and profit in their farming practices, communications and relationships with the outside world have become stronger, more confident, and noticeable. They may now access more suppliers, bazaars, and acquaintances. To cope with the fallout of the market, they acquired corporate ethics and learned confidence-boosting strategies. Not entirely giving up on traditional farms, farmers are increasingly shifting to commercial farming due to the financial advantages and knowledge prosperity. Despite monetary income, some farmers were only moderately motivated due to their inefficiencies and financial obligations. On the other hand, small-scale commercial agriculture is gaining popularity. It has been predicted that as farming develops and competition increases, it will become more commercialized. Moreover, the region's agricultural commercialization may benefit significantly from investments made in rural agrarian infrastructure. Another benefit is a potential increase in high-value agricultural products, an advantage for smallholder

involvement. Thus, agribusiness and this new agricultural farming trend could significantly increase the region's capacity to produce income and jobs. In addition to supporting subsistence farming, the government can make tremendous changes in shifting to commercial farming by prioritizing and promoting agricultural diversity.

In this setting of paradigm shifts, the government's proactive and full support for the commercialization of agriculture is fundamental. The region's socioeconomic development revolves around agriculture, and practical strategies are essential to raising living standards, health, and education and ensuring farmers' well-being because, as is evident, low-income, impoverished, and vulnerable groups in rural society place a unique value on agriculture.

Recommendations:

Undoubtedly, the commercialization of agriculture has greatly benefited the agricultural sector. However, policymakers still have much work to maximize commercialization's positive effects and minimize its negative implications. The need-based suggestions derived from the analysis of the study are discussed below:

- Farmers must get a lump sum subsidy for each acre of agricultural land they cultivate to ensure the State's much-needed food security. This would help to safeguard the high cost of crop cultivation.
- It is essential to check the nutrition and food quality issues. This requires the use of organic insecticides and fertilizers while growing food crops.
- Agricultural interest-free loans must be offered. Enhancing farm income and turning agriculture into a successful endeavor is possible by providing financial incentives, technical assistance, and subsidies for high-value agricultural practices, including raising fish, poultry, honey bees, and other animals and cultivating crops.
- Agroforestry can also diversify the crop cycle. Additionally, it will aid in the prevention of soil erosion and support environmental preservation.

- More work must be done on the canal system to improve agricultural irrigation. The government must try to educate farming communities about appropriate agricultural practices.
- Farmers should be able to get their agricultural loans easily and quickly. Cutting down as much paperwork as it can help to minimize procedural problems. The distribution of loans must be justified, and banks should assess the farmers' needs honestly.
- The employment of ITK in sustainable agricultural methods, which have developed over time, may hold the key to solving the crop protection dilemma facing today's agriculture industry. For this reason, the agricultural community, researchers, academicians, administrators, and policymakers must have a broad understanding of ITK regarding crop cultivation.
- Through proper policy interventions, the State Government must establish an enabling environment to integrate this expertise into mainstream agriculture.

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ANNEXURE

Annexure 1

INTERVIEW SCHEDULE

on

COMMERCIALIZATION OF AGRICULTURE IN PHEK DISTRICT, NAGALAND: A CASE STUDY OF CHAKHESANG TRIBE

GENERAL BACKGROUND OF THE RESPONDENT/INTERVIEWEE

1. Name :
2. Gender : M ☐ F ☐
3. Village :
4. Clan :
5. Post office/police station :
6. District : Phek
7. State : Nagaland
8. Religion : Christian
9. Age group :
   a. 20 – 30 ☐
   b. 30 – 40 ☐
   c. 40 – 50 ☐
   d. 50 – 60 ☐
   e. 60 – 70 ☐
   f. 70 above ☐
10. Marital status :

    Married ☐ Unmarried ☐
    Widow ☐ Widower ☐ Separated ☐
    Height & Weight ☐
    If married, no. of children: ☐ M ☐ F ☐
11. Type of family : Nuclear ☐ Joint ☐
12. Occupation : Primary ☐ Secondary ☐
13. Educational qualification : a. Non-literate ☐
    b. Primary Level ☐
    c. High School Level ☐
    d. Graduate Level ☐
    e. & above ☐
14. Demographic Details of the House Hold (H.H):

Name	Gender	Relation with H.H	Age	Edu	Occupation	Religion	Contact No

I. To explore the traditional practices of agriculture among the Chakhesang Tribe.

1. What type of cultivation do you mainly practice?

(a) Terrace wetland cultivation (b) Jhum cultivation. (c) Both.

2. No. and Size of fields (approximately) and certain field characteristics.

Farm ownership table

No. farmland	Crops cultivated	Size of farmland	Ownership (individual/ family/clan/village partnership)	Distance from the residence (Km)	Purpose (code) 1. Self-consumption 2. Market 3. Both
1					
2					

3. Which crops are cultivated for subsistence and commercial purposes?

Subsistent crops	Commercial crops

4. Agricultural cycle among traditional crops

Traditional crops	Sowing season		Weeding season		Harvest season	
	Month	Labor	Month	Labor	Month	Labor

5. Use of chemicals in traditional crops, if any

Chemical Name	Crops Name	Reasons	Source of Purchase

6. How do you preserve soil fertility?

a. ☐ Fertilization (Chemicals, animal manure, green manure, etc.)
b. ☐ Crop rotation (Cultivation of a series of dissimilar types of crops in the same area in sequential seasons)
c. ☐ Intercropping (Cultivation of two or more dissimilar types of crops in the same area in the same season)
d. ☐ Others (specify)

7. Role of family members in the cultivation of traditional crops

Role of males		Role of females		Whole family
Adults	Children	Adults	Children	

8. Are the women considered one of the main cultivators/owners or just a mere helper?

9. Can you tell me about the land tenure/land-use pattern (rights to use, control & transfer) of agriculture in your village?

   a. What are the different types of land in the village? Who are the owners?
   b. What type of cultivation is this land used for?
   c. Can you enumerate the rules and regulations on using such land systems?
   d. How does ownership pattern vary among clans / khel / in the village?
   e. Is there any tax system paid by the cultivators? If yes, please elaborate.
   f. What is the relationship between land ownership and customary laws?
   g. Can you explain the inheritance rights of men and women in your village?

10. How many times do you harvest in a year? How much is usually the harvest?

11. Traditionally, do you have a marketplace for selling agricultural produce?

    a. Yes b. No

    If yes,

Crop Name	Market Location (distance)	Buyers	Remarks (challenges)

Is there any government/private/donated storage facility for agricultural produce?

12. Were the roads from your village to your fields connected and reliable?

13. How far is your field from your habitat? How do you go to your fields?

14. Apart from agriculture, what do you do for your livelihood? What type of live-stock/animal husbandry do you manage?

15. Did you attend any training programs conducted by government departments or NGOs? If yes,

Program attended	No. of days	Venue & year	Contents of the program	If helpful, in what ways

Do you maintain any irrigation channels to your fields/farms?

a. Yes b. No

16. If yes/no, please explain. What is the distance from the source to the field?

17. Do you practice any pre and post-harvest management? (Care of seeds/nursery and handling of fruits/crops).

a. Yes b. No If yes, How?

18. Is there any hurdle in your farming system? What has slowed you down/ pushed you up?

19. Do you follow or celebrate any festivals for crops/ agriculture? Yes or not?
If yes,

Kinds of agriculture/ crop	The Festival attached to it	Tools used in traditional agriculture	Purpose of the tools/nature of work	Brief description of the festivals

II. To examine the changes in the agricultural practices.

1. Profile of commercial crops.

No. farmland	Crops cultivated	Size of farmland	Ownership (individual/family/ clan/village/ partnership)	Distance from the residence (Km)	Type of land
1					
2					
3					

2. Do you use modern technological tools in cultivation? If yes,

Name of the tool	Details of the tool for crops	Purpose

3. Agricultural cycle for commercial crops

Name of commercial crops cultivated	Source of information about the crops	Sowing season		weeding season		Harvesting season	
		Month	Labor	Month	Labor	Month	Labor

4. List of chemicals/fertilizers used.

Chemicals/fertilizers used/ manure	Crops name	Purpose	Source of chemicals (purchased)

5. Market for commercial crops.

Crop Name	Market Location (distance)	Buyers	Remarks (challenges)

6. What motivated you to cultivate commercial crops?

a. Profit b. Prestige c. Peer group pressure

d. Knowledge enhancement e. if any.

7. Are they indebted to anyone in terms of cash or kind regarding commercial agriculture farming?

8. Are you aware of any governmental loans and subsidies in commercial agriculture?

a. Yes. b. No. If yes, details please,

9. Did you ever avail of any of those government loans?

a.Yes b. No. If yes, details please,

10. How do you use those loans, and what about the recovery?

11. Have you attended any NGOs or Government awareness campaigns regarding the commercialization of agriculture? Is there any incentive given or any joint venture done as an individual or with the whole village?

Name of commercial agriculture campaign attended	No. of days, year & venue	Brief description of the content	Any incentives are given & follow up

12. Does commercialization of agriculture lead to degradation of soil quality and changes in environmental settings?

a.Yes. b.No. c. Not much.

If yes, in what ways and how should it be dealt with?

13. Do you visit Dimapur? If yes, for what purpose?

14. Do you think traditional agriculture is shifting towards commercial agriculture in the modern contemporary world?
a.Yes. b. No If yes, why?

15. Are more land areas being cleared for commercial farming in your village?

a. Yes. b. No. c. Not much.

16. Is there any restriction on the clearance of forests?

a. Yes b. No

If yes, what type of restriction? Was there any resistance from the village community to forest clearance?

17. Are there any rules and regulations imposed by any organizations in your village regarding the practice of any form of commercial agriculture?
a.Yes b. No.
If yes, what are the conditions and why?

18. Any challenges while shifting towards commercial crops?
a.Capital b.Knowledge c. Agriculture Inputs d. Market e. Land
How do you manage it?

19. What are the changes in land use patterns for commercial crops?

20. Is there any change in folk songs in agriculture due to their commercialization?

21. Is there any change in festivals as a result of commercialization? If yes, what are the changes?

22. Do you agree that commercialization increases farm productivity and raises household incomes?
a. Yes b.No c. Not much

23. Do you harvest more when you put chemical fertilizers? How do people respond?

24. Has the farmer become more selective regarding crop cultivation for commercialization?
a.Yes. b. No. c. Not much. If yes, why?

25. Do you have a Self-Help Group (SHG) in your village?
a.Yes. b. No. c.Not much.
If yes, do they engage in commercial agricultural activities, and what kind? Not much.

26. Does any clan in your village practice any form of commercial agriculture?
a. Yes b. No. If yes, what kind of farm, and if not, why?

27. Are the irrigation channels more standardized due to commercial crops?
a. Yes b. No. If yes, details please.

28. Do you face any hardship while selling off your farming produce?
a. Yes b. No. If yes, what are they?

29. Which type of farming do you prefer more,
a. subsistence or b. commercial?
Why so? Please give some reasons.

30. How does education help in agricultural commercialization?

31. After considering all your expenses, are you satisfied with your income from commercial farming?
a. Yes b. No. Why so? Please specify the reasons.

32. How do you compare this year's yield with the last five years?
a. Increase b. decrease c. No change. Please give reasons.

33. How do you find the other farmers engaged in commercial farming?
a. Friendly. b. Competitive. Can you elaborate on it?

34. Do you go for any extra earning/off-farm work? If yes, what do you do?
a. Yes. b. No.

35. How do you utilize these extra earnings?
a. Buy household goods b. Reinvest in farming
c. Education d. Any other

III. To analyze the socio-cultural and economic impact of the commercialization of agriculture.

Social Impact:

1. Does commercial agriculture help you to do things better in your daily life?
   a. Yes. b. No. How?

2. Does commercial agriculture bring any change in your family relations/clans/khel?
   a. Yes b. No How?

3. Do you think it brings changes in your status in society?
   a. Yes b. No. How?

4. Has the confidence level of the relationship been strengthened more with the outside world? If yes, in what ways?

5. Does it encourage more modern education?
   a. Yes b. No. How?

6. So, do you agree that the lifestyle of farmers has changed with the change in agriculture from subsistence to commercial farming?

Cultural Impact:

1. Has the mindset of the people changed in the traditional patterns of land usage practices with exposure to outside markets due to agricultural commercialization?
   a. Yes. b. No. c. Not much. Briefly explain it.

2. Do you observe any changes in your food habits due to the cultivation of commercial crops? Details please:

3. Do you think commercial agriculture impacted your traditional religious belief systems?
   a. Yes b. No. How?

4. Is it true that the commercialization of agriculture has changed the settings of traditional agriculture? If yes, in what ways?

Economic Impact:

1. Do you find improvement in your income due to commercialization? Yes / No. How?

2. Is there any significant change in your lifestyle regarding possession of material wealth like dress/car/house, etc? Yes / No. How do you see this change?

3. What linkages may be created by commercialization to create additional jobs and income in the rural economy for those not commercializing?

4. How do commercializing small farms interact with larger-scale businesses in farming and supply chains? What is the scope for complementary outcomes through contracting and other forms of cooperation?

5. Can you please elaborate on commercial agriculture's positive and negative impacts?

Positive Impact:

Negative Impact: