The Rise and Decline of Grape Cultivation in Hnahlan, Mizoram: Paving the Way for Settled Agriculture

[1]C. Zirnghakngura & [2]Dr. R. Ramthara

[1] Research Scholar at Mizoram University, Mizoram, India - 796004
[2] Associate Professor at Pachhunga University College, Mizoram, India -796001.
[1]czirnghakngura29@gmail.com & [2]ramthararalte2020@gmail.com

Abstract

This paper examines the rise and decline of grape cultivation in Hnahlan, Champhai District, and its implications for the transition to settled agriculture. By analyzing historical data, economic trends, and environmental impacts, the study aims to understand the factors contributing to the boom and bust cycles of grape cultivation. Additionally, the paper explores how these experiences have influenced local agricultural practices, leading to more sustainable and settled farming methods. The findings highlight the importance of adaptive strategies in agriculture and provide recommendations for promoting stable and productive agricultural systems in the region.

Key Words : Grape Cultivation, Rise and decline, Socio-Economic Impact, Settled agriculture, Sustainable development.

I. INTRODUCTION

Grape cultivation likely originated in Armenia near the Caspian Sea and spread to Europe and Asia, with evidence dating back to the Neolithic period (6000 BC). By then, selective breeding had produced the modern grapevines known today. Europe remains the leading grape producer, followed by Asia. Italy, France, and Chile are the largest producers and exporters, while the United States is the top importer (Food and Agriculture Organization [FAO], 2002). Approximately 71% of global grape production is used for wine, 27% for fresh consumption, and 2% for dried products.

India has a long history of grape cultivation, referenced in ancient texts like *Sasruta Samhita* and *Arthasastra*. It is believed that Persian invaders introduced grape growing in 1300 AD in northern India, which later spread southward. Presently, India has over 123,000 acres under grape cultivation, with 80% of production consumed as fresh table grapes and just 1% used for wine (National Research Centre for Grapes [NRCG], 2020).

Maharashtra contributes nearly 81% of total Indian grape production, followed by Karnataka and Tamil Nadu. The main varieties grown include Thompson Seedless, Bangalore Blue, and Anab-e-Shahi (Deshmukh et al., 2019).

Grape cultivation began in 1994 in Hnahlan, led by Mr. Thanzama, and by 1999–2000 it had spread to nearby villages like Champhai, Tualcheng, Khuangphah etc. This marked a significant shift in the region's economy, reducing dependence on shifting (jhum) cultivation (Zoramsanga, 2006). However, the enactment of the Mizoram Liquor Prohibition and Control (MLPC) Act in 2014 led to a downturn in grape production as it affected wine-making prospects (Lalramnghinglova, 2017).

Hnahlan, a village in the Champhai District of Mizoram, India, has experienced significant fluctuations in grape cultivation over the past few decades. On August 2023 they celebrated grape festival which is known as “The Grape Escape” for its thriving vineyards. Hnahlan faced numerous challenges that led to the decline of grape farming. This paper explores the economic and environmental factors that contributed to this rise and fall, and how the lessons learned from grape cultivation are guiding the transition to more sustainable, settled agricultural practices.

I.I OBJECTIVE OF THE STUDY

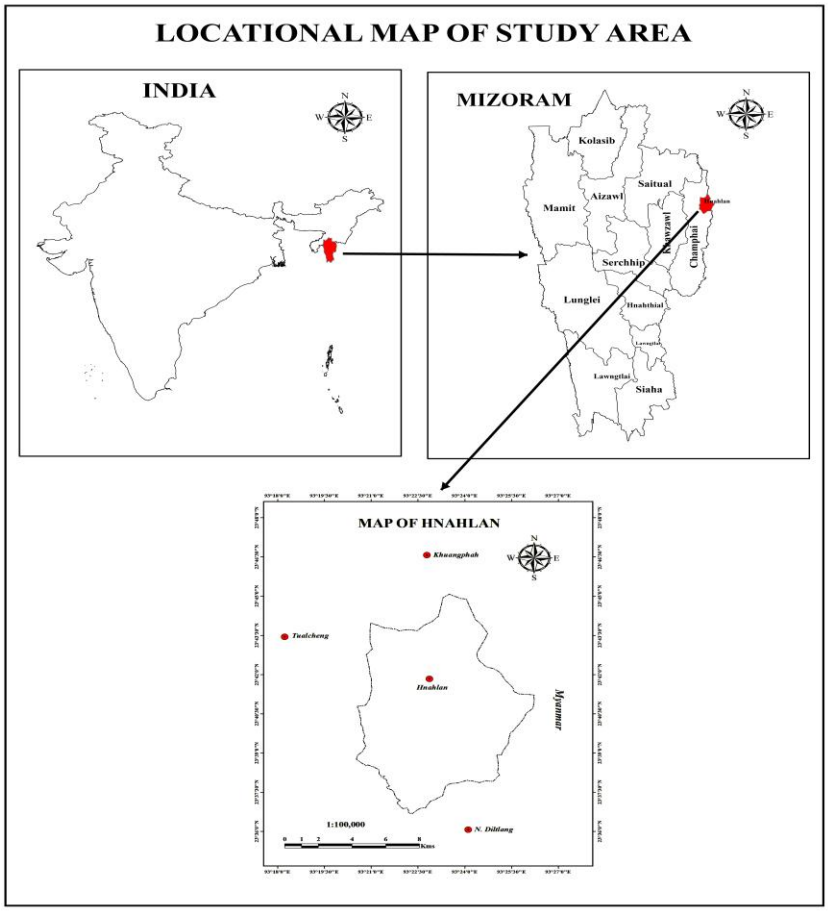
1. To examine the historical rise and decline of grape cultivation in Hnahlan.
2. To assess the socio-economic and environmental impacts of grape cultivation.
3. To explore its role in promoting settled agriculture.

I.2. RESEARCH METHODOLOGY

The study employed a mixed-methods approach, combining both quantitative surveys and qualitative interviews to examine the drivers and impacts of agricultural change. A purposive sampling method was adopted to survey 100 grape-farming households. Primary data were collected through household surveys and interviews with farmers and local leaders, while secondary data were drawn from government reports, academic sources, satellite imagery, and ArcGIS 10.5. For analysis, descriptive statistics were applied to the quantitative data, and thematic analysis was used to interprete qualitative insights, focusing on economic, policy, and environmental factors.

II. STUDY AREA

Hnahlan is located in the northeastern site of Champhai District, Mizoram at the border of Myanmar about 6 KM (by road) from Hnahlan Village, Tiau river flows in North-South direction which marked the international boundary line between India and Myanmar (Burma). Hnahlan is one of the oldest village of Mizoram. It was established in the year 1897 by Chief Saithuama Sailo. They had celebrate 125 years (quasquicentennial) on 24–26. October. 2023. As on the day of 125 years (quasquicentennial) celebration there are 3448 persons residing at Hnahlan, 750 Male and 1674 female. Hnahlan was once occupied by *'Hnahkal'* (Sub tribe of Thado). The Hnahkal people are either raid or ruined and replace their area of settlement. Thus 'Hnah' – kal (Sub tribe of Thado) were 'lan' meaning replaced by the present residents. In simple word Hnahlan means the Sub- tribes of Thado-Hnahkal replaced by the current residents. It lies between 23˚ 41' 29 " - 23˚ 42' 17 " N Latitude and 93˚ 22' 48 " - 93˚ 23' 10 " E Longitude. (Primary data, 2024). Hnahlan sits at an elevation of 5,406 ft above mean sea level (@ Tourist Lodge Hnahlan. Neighbouring Villages of Hnahlan are Khuangphah in the north, Tualcheng in the North West, Murlen in southwest, Vapar and N Diltlang in the South and Myanmar in the East. Hnahlan is 54 Kms from the district Headquarter; Champhai and usually takes 2 -3 hours of journey. The temperature of Hnahlan range between 5°C - 28°C throughout the year.



III. DATA ANALYSIS

Primary data were collected from 100 households in Hnahlan village to analyze the rise and decline of grape cultivation and to assess its influence on the transition from shifting cultivation to settled agriculture. Using structured interviews, the study identifies patterns, trends, and key factors driving this transition, along with its socio-economic and environmental impacts. Descriptive tools such as tables, charts, and graphs are used to present the findings clearly.

Out of 100 respondents in Hnahlan, 71% were male and 29% female. Most belonged to the 45–55 (30%) and 55–65 (29%) age groups, followed by 65–75 (21%) and above 75 (6%), while only a small share were younger (15–25 at 5% and 25–35 at 3%). This shows that the majority were older, experienced farmers whose long-term involvement in agriculture provides reliable insights of the area Surveyed. In terms of education, most respondents (57%) had secondary education, 16% were graduates or above, 14% had only primary, and 13% had higher secondary education.

A. Agriculture Practice 20 Years Ago and Start of Settled Agriculture at Hnahlan

Agricultural practices in Hnahlan two decades ago, Shifting cultivation was the most common (37%), followed by settled agriculture (31%), a combination of both (19%), and other forms (13%). Shifting cultivation, a traditional slash-and-burn method, was widely practiced due to its low cost and subsistence nature. Settled agriculture began gaining traction, driven by market opportunities and environmental concerns, introducing improved techniques like irrigation and soil management. The presence of respondents practicing both methods indicates a gradual transition. A few respondents engaged in non-agricultural occupations but still participated in settled farming.

Start of settled agriculture at Hnahlan that start between the year 2000 and 2005 are 27 respondents, marking the peak of the transition. Before 2000, 19 had already adopted it, and between 2005–2010, 21 more followed. A decline began after 2010, with 15 starting between 2010–2015, 11 between 2015–2020, and only 7 after 2020. This trend suggests that the early 2000s were a

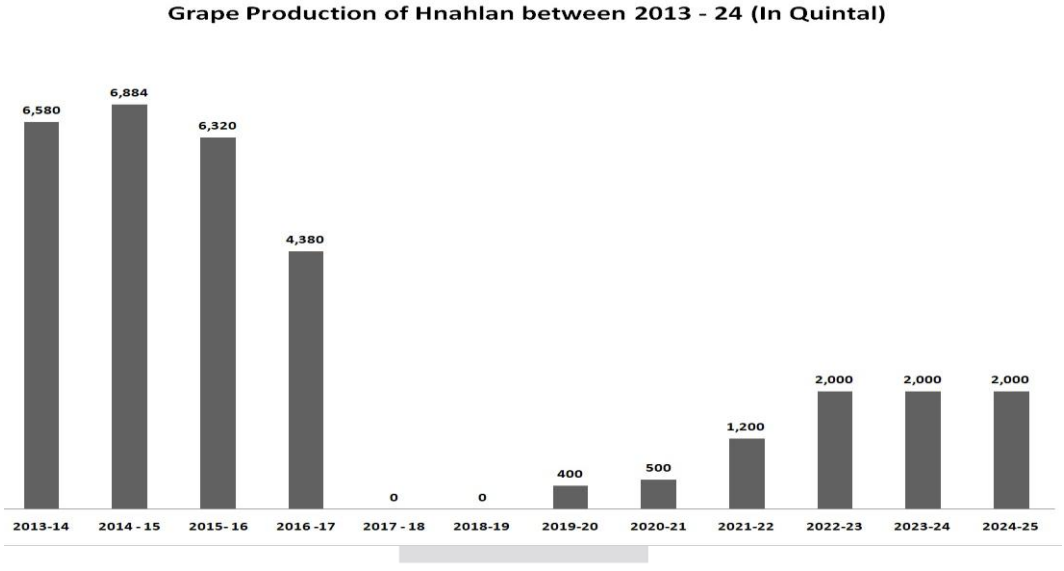
key period for the shift, likely influenced by government policies, market forces, and environmental concerns. The decline in later years indicates that most households had already transitioned.

B. Rise and Fall of Grape Production at Hnahlan

The rise and fall of grape production in Hnahlan reflects both the promise and challenges of agricultural transformation in the region. Grape cultivation was first introduced in the late 20th century, encouraged by favorable climatic conditions and supported by government incentives. In its early years, the crop brought significant prosperity to local farmers, who enjoyed high yields and steady profits. The economic benefits extended beyond farming, as the establishment of local wineries in 2007 created jobs and stimulated tourism, strengthening the village economy.

The early 2000s marked the peak of grape cultivation in Hnahlan, when production and profitability were at their highest. However, this period of success proved to be short-lived. Overproduction soon led to market saturation, causing a surplus of grapes that drove prices down and diminished farmer incomes. At the same time, the reliance on monoculture made vineyards highly vulnerable to pests and diseases, which spread quickly and caused heavy crop losses. Moreover, the intensive farming practices adopted during this period placed severe pressure on the environment, leading to soil depletion and water scarcity. Together, these factors gradually eroded the sustainability of grape cultivation, bringing about its decline after an initial phase of rapid growth.

Figure 1 Grape Production of Hnahlan between 2013 -2024



The data on grape production in Hnahlan between 2013 and 2024 reveals a dynamic trend marked by an initial boom, a sharp decline, and a period of recovery followed by stabilization. During the early years, from 2013 to 2015, grape cultivation flourished significantly, with production peaking at 6,884 quintals in 2014. These were evidently the most productive years, indicating a period of high agricultural activity and perhaps strong market demand or government support. However, a noticeable decline began in 2016, with production falling to 4,380 quintals. This downward trend culminated in a complete halt in production during 2017 and 2018, when the output dropped to zero.

Recovery began modestly in 2019 with just 400 quintals and gradually improved over the next two years. By 2021, production had risen to 1,200 quintals, suggesting that efforts to revive grape cultivation—possibly through replantation, better farming practices, or renewed policy support—were beginning to bear fruit. From 2022 onwards, production stabilized at 2,000 quintals annually, marking a new phase of consistency in grape farming. Although this level remains significantly lower than the peak years, it suggests a shift towards a more sustainable and manageable scale of cultivation, reflecting adjustments made by farmers and the community in response to past challenges. Overall, the pattern demonstrates both the vulnerability and resilience of grape cultivation in the region.

The disruption in grape production during 2017 and 2018 could be attributed to the impact of Mizoram's liquor policy, which significantly altered the local market dynamics. The introduction and expansion of licensed alcohol sales during this period undermined the grape wine industry, as the availability of commercially produced liquor began to dominate the market. This policy shift likely reduced the demand for locally produced grape wine, leading to a market failure that discouraged farmers from continuing grape cultivation. As a result, many vineyards were abandoned or left uncultivated, causing a complete halt in production for those two years.

C. Impact on Environment

The shift to settled agriculture has affected Hnahlan's ecosystem and biodiversity. **47 respondents** felt it brought improvements through better land use and soil conservation, while **37** believed it worsened the environment due to deforestation, chemical use, or habitat loss. A smaller group (**16 respondents**) saw no major change. Overall, the findings suggest that the ecological impact of settled farming varies depending on practices, land management, and policy support.

D. Income Stability and Percentage Increase Among Respondents

The table shows that **94% of respondents reported higher income** after shifting to settled agriculture, while only 2% saw a decrease and 4% no change. Nearly half (45.74%) experienced a moderate **20–40% rise**, the largest group. About 13.83% reported a **40–60% increase**, 10.64% saw a **60–80% rise**, and 15.96% experienced an **80–100% boost**. Only 5.32% reported gains below 20%. Overall, the transition has led to substantial improvements in income stability for most farmers, with only a small minority facing stagnation or decline.

Table 1. Income Stability and Percentage Increase

Income Stability Respondents		**Income Increase In Percentages (%)**	**No of Respondents**	**Percentages (%)**
Yes	94	Below 20%	5	5.32%
No	2	20 -40%	43	45.74%
No Change	4	40- 60%	13	13.83%
Total	***100***	60- 80%	10	10.64%
		80- 100%	15	15.96%
		More than 100%	8	8.51%
		Total	**94**	**100%**
Source : Field Survey,2024				

E. Types of Benefits After Transitioning from Shifting To Settled Agriculture

The table shows that transitioning from shifting to settled agriculture in Hnahlan has significantly improved household well-being. The most common benefit is **investment in children's education**, followed by **housing construction**, reflecting financial security and aspirations for upward mobility. Fewer respondents reported motor vehicle ownership, suggesting it is less of a priority. Notably, **9% of households achieved all three benefits—education, housing, and vehicles—indicating substantial economic progress**. Overall, the shift has enhanced long-term stability and living standards for many families.

Table 2. Type of Benefits gain

Types of Benefits	**Number of Respondents**
Constructing House	6
Children's Education	38
Own Motor Vehicles	2
Constructing House & Children's Education	25
Constructing House & Own Motor Vehicles	3
Children's Education & Own Motor Vehicles	17
All of the Above	9
Total	**100**
Source : Field Survey,2024	

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F. Pest Management and Farmers' Training Programs

A majority of farmers (98%) in Hnahlan reported facing pest-related issues, with most depending on government-supplied inputs, while others supplemented these with market purchases or local methods. This indicates a pressing need for integrated pest management support to ensure sustainable farming practices. Alongside this, training programs have been introduced to build farmers' capacity, though most respondents noted that sessions were held only yearly or occasionally, with very few experiencing frequent training. While these programs were regarded as beneficial, farmers emphasized the importance of making them more regular and structured to effectively address the challenges of settled agriculture

IV. RESULT AND DISCUSSION

The survey findings reveal that farmers in Hnahlan are increasingly diversifying crops alongside grapes, cultivating oranges (15%), apples (10%), rice (9%), and pineapples (4%). This demonstrates the region's strong horticultural potential, supported by favorable soil, climate, and local market conditions, and highlights opportunities for expanding fruit-based agriculture to strengthen economic resilience.

However, the transition from shifting to settled agriculture has not been without challenges. The most pressing concern reported by farmers was limited access to credit and financial support (40%), followed by poor market access (20%) and water scarcity (17%). These issues reflect the financial and infrastructural demands of modern farming and emphasize the need for stronger institutional support.

Government interventions have played an important role in facilitating the shift. Under the New Land Use Policy (NLUP, 2011), 32% of respondents benefitted, with grape cultivation (31.25%), pig rearing (28.13%), and wet rice farming (21.88%) being the most supported trades. Similarly, the Socio-Economic Development Policy (SEDP, 2012) reached 37% of respondents, supporting activities such as grape (35.14%), ginger (16.22%), orange (13.51%), and chicken farming (13.51%). Both schemes provided material and financial assistance, encouraging income-generating activities aligned with sustainable rural development.

Despite these supports, agricultural marketing in Hnahlan remains largely localized. Nearly half of the farmers (49%) sold their produce only in local markets, while 23% accessed inter-district markets and 12% reached district headquarters. Very few expanded to state or inter-state markets, indicating a localized economy with limited integration into broader networks. Improving transportation and market linkages is therefore critical for scaling up commercial agriculture.

When asked about their support needs, farmers highlighted the establishment of market chains (57%) as the most pressing requirement. Other priorities included access to quality seeds and saplings (25%), pest control inputs (17%), and fencing materials (1%). These responses point to the immediate needs of a transitioning agricultural system and underline where government intervention could have the greatest impact.

The environmental effects of this transition were perceived in mixed ways. About 47% of respondents believed that settled agriculture improved biodiversity and land quality through better management, while 37% noted negative outcomes such as deforestation and rising chemical use. Another 16% reported no major changes. These perspectives suggest that ecological outcomes largely depend on the farming practices adopted and the intensity of input use.

Pests and diseases were identified as a near-universal challenge, affecting 98% of farmers. Many relied on departmental supplies (41.84%), others on market purchases (32.65%), and some used both, while traditional methods were least common. This reliance highlights the urgent need for timely and adequate provision of pest management resources.

Capacity building has been provided but remains irregular. Almost half of the respondents (47%) reported receiving training once a year, while 45% noted occasional sessions. Very few had more frequent opportunities, though most found the training helpful. This suggests the importance of increasing both the consistency and frequency of training programs to strengthen farmers' skills in modern agricultural practices.

Economically, the transition has been highly beneficial. A majority of farmers (94%) reported higher incomes after adopting settled agriculture. The largest share (45.74%) experienced moderate gains of 20–40%, while 8.51% more than doubled their income. These improvements translated into better livelihoods, with many households spending more on children's education and

housing, while 9% reported improvements across education, housing, and vehicle ownership. Overall, the results affirm the economic viability of settled farming in Hnahlan and its positive impact on household well-being.

V. MAJOR FINDINGS

In Hnahlan, most farmers have moved away from jhum (shifting cultivation), largely because of government support, declining soil fertility, and the low productivity associated with the practice. This transition has been strongly influenced by state initiatives, market demand, and the promise of better income opportunities through settled agriculture. Among the various options, grape farming has emerged as the dominant choice due to its profitability and suitability to the local climate and soil conditions. As a result of this agricultural shift, household income and livelihood stability have improved significantly. Many farmers report better access to education, healthcare, and housing, with a greater sense of financial security compared to the uncertainty of shifting cultivation. Government schemes have been crucial in this process, offering training, subsidies, and market linkages that helped farmers adopt new practices.Environmental benefits have also been observed. The reduction of jhum has meant less forest clearing and soil erosion, while more sustainable land-use practices are slowly being adopted. However, the reliance on fertilizers, pesticides, and manure has led to rising input costs, which cut into profitability and create new challenges for farmers.

The shift to settled farming has also fostered a stronger sense of ownership and responsibility over land, helping reduce conflicts and migration pressures. At the same time, the high-altitude location of Hnahlan creates irrigation challenges, which in turn increase vulnerability to plant diseases and lower overall crop yields.

VI. CONCLUSION

The study reveals a significant transformation in Hnahlan from traditional *jhum* to settled agriculture, particularly grape farming. This shift, encouraged by government support and market incentives, has led to improved incomes and environmental outcomes. However, the experience also exposes the vulnerabilities of monoculture systems, especially under conditions of market saturation and environmental stress.

While the initial boom in grape production brought economic benefits, its decline emphasized the importance of adaptive, diversified, and sustainable agricultural strategies. The transition to settled agriculture, despite its challenges, marks a promising step toward more resilient rural development in Mizoram.

VII. *ACKNOWLEDGMENT*

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