International Journal of Agriculture Innovations and Research
Volume 12, Issue 5, ISSN (Online) 2319-1473
Manuscript Processing Details (dd/mm/yyyy):
Received: 28/03/2024 | Accepted on: 13/04/2024 | Published: 26/04/2024

Enhancing Horticulture and Floriculture Farming in Nagaland: Schemes and Implementations

Dr. J. Suresh Kumar[1*] and Ms. Wanben C Konyak[2]
[1]Associate Professor, Department of Economics, St. Joseph University, Chumoukedima, Nagaland, India.
[2]M.A Student, Department of Economics, St. Joseph University, Chümoukedima, Nagaland, India.
*Corresponding author email id: drjsuresheco@gmail.com

Abstract **– Horticulture and floriculture play pivotal roles in the gricultural landscape of Nagaland, offering immense potential for economic development and diversification of agricultural practices. This study delves into the various schemes and implementations aimed at fostering the growth of horticulture and floriculture in Nagaland. The primary objective of this study is to examine the government-sponsored schemes and initiatives designed to promote and enhance horticulture and floriculture farming in Nagaland. An in-depth examination of both state and central government schemes related to horticulture and floriculture in Nagaland, including funding allocations, program objectives, and target beneficiaries. Detailed case studies of successful horticulture and floriculture projects in Nagaland, highlighting best practices and lessons learned. Identification of key government initiatives, such as the National Horticulture Mission (NHM), and their contributions to the advancement of horticulture and floriculture. Assessment of obstacles confronted by farmers and the effectiveness of government interventions in addressing these challenges. Documentation of exemplar case studies that exemplify pioneering approaches to horticulture and floriculture cultivation. Evaluation of the economic and societal repercussions of these endeavors on the livelihoods of Nagaland's farmers. The study concludes with a summary of the key findings and their implications for the future of horticulture and floriculture farming in Nagaland. It emphasizes the importance of continued support and investment in these sectors to boost agricultural productivity, improve farmer incomes, and foster sustainable rural development.**

Keywords **– Horticulture, Floriculture, Sustainable Farming, Rural Development, Agricultural Practices and Farmer Welfare.**

I. INTRODUCTION

Horticulture and floriculture represent integral components of agriculture in Nagaland, a northeastern state of India known for its diverse topography and rich cultural heritage. The cultivation of horticultural crops, including fruits, vegetables, and spices, as well as the nurturing of ornamental flowers, has emerged as a promising avenue for rural development and economic growth in this region. Recognizing this potential, various government schemes and initiatives have been introduced to enhance horticulture and floriculture farming practices in Nagaland. This study embarks on an exploration of these schemes and their on-ground implementations, aiming to shed light on their impact, challenges, and the overarching goal of elevating the agricultural landscape of Nagaland. The endeavor is guided by the overarching objective of elucidating the strategies and efforts undertaken to promote and support horticulture and floriculture farming within the state.

Horticulture, with its potential to increase farm incomes, provide nutritional security, and reduce the dependence on traditional shifting cultivation (jhum), has become a focal point of agricultural diversification in Nagaland. Floriculture, on the other hand, offers opportunities for high-value crops and export potential, adding a new dimension to agricultural practices. Both sectors hold immense promise for improving the livelihoods of farmers and contributing to the state's economic development. The methodology employed in this research encompasses an in-depth analysis of the various schemes and initiatives introduced by both the state and central

governments. This includes scrutinizing the financial allocations, program objectives, and the specific measures targeted at enhancing horticulture and floriculture practices. Furthermore, the study engages with the farmers themselves, as well as agricultural experts and local authorities, to gain a comprehensive understanding of the practical challenges and successes of these schemes.

Through this research, we aim to present a holistic view of the endeavors undertaken to nurture horticulture and floriculture in Nagaland. The subsequent sections will delve into specific schemes, case studies, and findings, thereby providing a detailed account of the strategies and implementations in place to enhance horticultural and floricultural farming in this vibrant and promising state of India.

II. LITERATURE REVIEWS

Sema, K., & Ao, N. (2018). This review provides an insightful overview of the historical development and current status of horticulture and floriculture in Nagaland. The authors analyze key schemes and interventions, highlighting successes and challenges faced by farmers and policymakers.

Longchar, J., & Singh, T. B. (2019). Focusing on the role of government schemes, this literature review explores their impact on farmers' participation in horticulture development in Nagaland. The authors critically assess the effectiveness of these schemes in enhancing agricultural practices and economic outcomes.

Yimchunger, N., & Jamir, I. (2020). This review delves into sustainable practices in floriculture farming in Nagaland, drawing lessons from local experiences. The authors highlight successful implementations, challenges faced, and the potential for promoting eco-friendly approaches in the region.

Kikon, R., & Jami, H. (2017). Using a case study approach, this review assesses the impact of various government initiatives on horticulture farming in Nagaland. The authors analyze the outcomes and suggest recommendations for improving the effectiveness of current schemes.

Alem, R., & Changkija, S. (2019). Focusing on technological aspects, this literature review examines the adoption of modern technologies in floriculture farming in Nagaland. The authors provide insights into successful practices and identify areas for further technological interventions.

Singh, A., & Sharma, R. (2018). This comprehensive review provides an overview of horticulture development in India, addressing challenges and opportune ities. The authors explore government initiatives, technological advancements, and market dynamics shaping the horticulture sector.

Verma, S., & Reddy, C. S. (2019). Focusing on the floriculture industry, this literature review analyzes trends and prospects in India. The authors discuss the role of technology, market demands, and policy interventions in shaping the growth of floriculture.

Kumar, P., & Gupta, R. (2020). This review explores sustainable practices in horticulture farming in India, highlighting key initiatives. The authors assess the environmental and economic impact of these practices, providing insights for sustainable agricultural development.

Prasad, N., & Singh, M. (2017). Focusing on government schemes, this critical review evaluates their impact on horticulture development in India. The authors assess the effectiveness of policy interventions and suggest recommendations for improvement.

Goyal, R., & Verma, A. (2018). This literature synthesis examines the role of technology in transforming the floriculture sector in India. The authors review technological advancements, their adoption, and the implications for the competitiveness of Indian floriculture.

III. Statement of the Problem

The state of Nagaland, characterized by its unique agro-climatic conditions and rich biodiversity, holds immense potential for the development of horticulture and floriculture. However, the realization of this potential necessitates a comprehensive examination of existing schemes and their implementations. This study seeks to address the current gaps in knowledge and provide actionable insights into enhancing horticulture and floriculture farming in Nagaland.

IV. Background of the Study

Nagaland, known for its diverse topography and cultural richness, presents a conducive environment for the cultivation of a wide variety of horticultural and floricultural crops. The state government, in collaboration with central agencies, has introduced several schemes and initiatives aimed at promoting sustainable agricultural practices and augmenting the income of farmers engaged in horticulture and floriculture.

V. Significance of the Study

This study holds significance for policymakers, agricultural researchers, and development practitioners by providing an evidence-based understanding of the current state of horticulture and floriculture farming in Nagaland. The findings will contribute to informed decision-making, enabling the formulation of targeted policies and interventions for sustainable agricultural development in the region.

VI. Objectives of the Study

- To assess the status of the horticulture and floriculture farming in Nagaland.
- To highlight the opportunities in horticulture and floriculture farming in Nagaland.
- To evaluate the effectiveness of existing government schemes in promoting horticulture and floriculture.
- To identify challenges and constraints faced by horticulture and floriculture farmers in the state.
- To recommend policy measures and interventions for further enhancing the horticulture and floriculture sectors in Nagaland.

VII. Methodology of the Study

A thorough review of several publications, research articles, policy documents, and comparative statistical data from official websites was necessary to obtain the secondary data for this study. The majority of data on the subject is derived from both public and unpublished sources. Furthermore, an examination of the information has been carried out utilizing individual proficiency.

VIII. Status of the Horticulture and Floriculture Farming in Nagaland

Nagaland, located in the northeastern region of India, has a conducive climate and topography for horticulture and floriculture activities. The state government has been emphasizing the development of these sectors to boost

agricultural productivity, generate employment, and increase income for farmers.

Table 1. Area, Production and Productivity of Fruits, Vegetables and Spices in Nagaland.

SI. No	Year	Fruits		Vegetables		Spices	
		Area (in Hectares)	Production (in MT)	Area (in Hectares)	Production (in MT)	Area (in Hectares)	Production (in MT)
1	2019-20	34,775	3,41,368.1	41,508	4,56,722	104856	5170325
2	2020-21	34,861.5	3,05,710.7	28,931	3,66,720	124378	593818

Source: Directorate of Horticulture.

The table 1 provides data on the area, production, and productivity of fruits, vegetables, and spices in Nagaland for the years 2019-20 and 2020-21. In 2019-20, the area under fruit cultivation was 34,775 hectares, with a production of 3,41,368.1 metric tons (MT). In 2020-21, the area remained relatively stable at 34,861.5 hectares, but there was a decline in production to 3,05,710.7 MT. This indicates a decrease in productivity from 2019-20 to 2020-21, despite a slight increase in the cultivation area. In 2019-20, the area under vegetable cultivation was 41,508 hectares, with a production of 4,56,722 MT. In 2020-21, there was a decrease in both the area under cultivation (28,931 hectares) and production (3,66,720 MT). This suggests a significant reduction in both cultivation area and productivity for vegetables in 2020-21 compared to the previous year. In 2019-20, the cultivation area for spices was 1,04,856 hectares, with a substantial production of 51,70,325 MT. In 2020-21, although the area under cultivation increased slightly to 1,24,378 hectares, there was a massive decline in production to 5,93,818 MT. This indicates a significant drop in productivity for spices from 2019-20 to 2020-21. The data reveals fluctuations and declines in productivity across all three categories (fruits, vegetables, and spices) from 2019-20 to 2020-21. Factors such as weather conditions, pest infestations, disease outbreaks, and changes in agricultural practices could have influenced these fluctuations. It's essential for policymakers, agricultural experts, and farmers to analyze these trends to identify potential issues and implement strategies to enhance productivity and ensure food security in Nagaland.

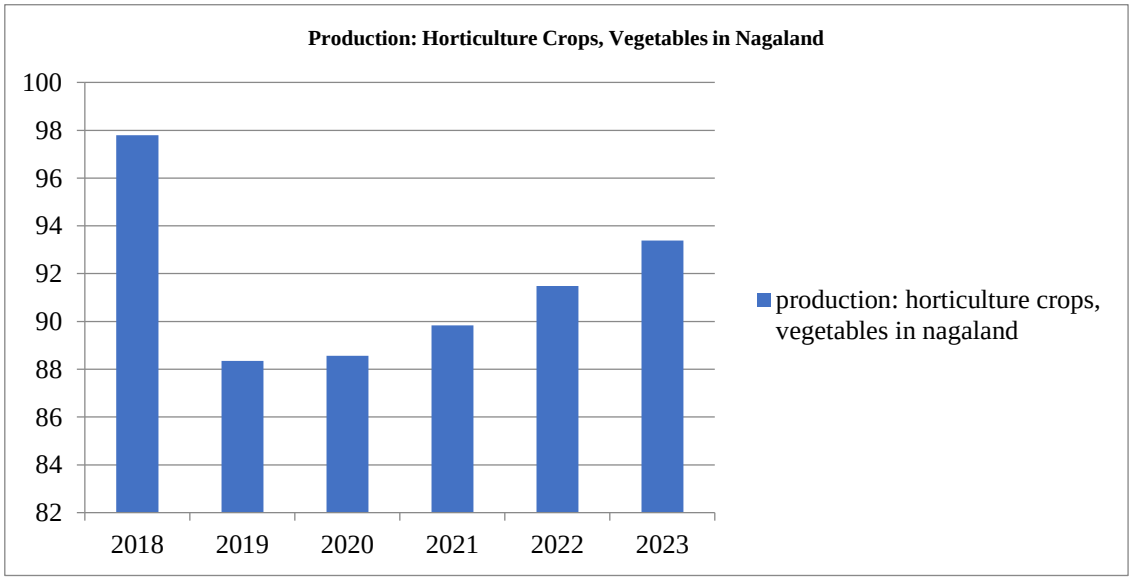

Chart 1. View Nagaland Area: Horticulture crops, Nagaland from 2018 to 2023.

Source: Department of Agriculture & Farmers Welfare.

The area of horticulture crops in Nagaland data reported to be 97.790 in 2018 but it had a relative decline in 2019 to 88.354 which is then a recovery in 2020 by 88.569. From 2021 we can see that there had been increasing in the area of horticulture with 89.836, 91.482 in 2022, and till 2023 with 93.389 as shown in above chart 1.

Table 2. Crop wise Area and Production of Major Horticultural Crops in Nagaland 2017-18.

SI. No	Crop	Production(mt)
1	Papaya	12400.50
2	Plum	2944.50
3	Banana	6468.50
4	Cardamom	2034.00
5	Ginger	35630.40
6	Tomato	1997.50
7	Lemon	1680.50
8	Cabbage	121620.00
9	Apple	1821.00
10	Carrot	6223.00
11	Pineapple	117460.00

Source: Directorate of Horticulture.

Table 2 provides data on the area and production of major horticultural crops in Nagaland for the year 2017-18. The production of papaya stands at 12,400.50 metric tons (mt). This indicates significant cultivation of papaya in Nagaland during the specified year. Plum production is reported to be 2,944.50 mt. While not as high as papaya, it still represents a notable yield. Nagaland produced 6,468.50 mt of bananas. Banana cultivation seems to be significant, as indicated by the production quantity. The production of cardamom is 2,034.00 mt. Cardamom cultivation, though not as high as some other crops, still contributes to the horticultural output of Nagaland. Ginger production is notably high at 35,630.40 mt. Ginger cultivation appears to be one of the prominent horticultural activities in Nagaland. Nagaland produced 1,997.50 mt of tomatoes. While not the highest, tomato cultivation still contributes to the overall horticultural production. Lemon production is reported at 1,680.50 mt. Lemon cultivation, though not as extensive as some other crops, still shows a significant output. The production of cabbage is remarkably high at 121,620.00 mt. Cabbage cultivation appears to be one of the major horticultural activities in Nagaland. Nagaland produced 1,821.00 mt of apples. While not traditionally associated with Nagaland, apple cultivation seems to have some presence. Carrot production is 6,223.00 mt. Carrot cultivation contributes to the horticultural diversity of Nagaland. Pineapple production stands out significantly at 117,460.00 mt. Pineapple cultivation appears to be one of the major crops in Nagaland, with a substantial output.

Overall, the data suggests a diverse range of horticultural activities in Nagaland, with significant production levels in crops like ginger, cabbage, pineapple, and papaya, among others. These figures reflect the agricultural landscape and contribute to the understanding of the horticultural economy of Nagaland during the specified

year.

Plantation Crops:

Plantation crops are defined as those cultivated commercially on a large scale, typically on plantations or estates. Often, these crops stand out for their long gestation periods and expensive initial labour, land, and infrastructural expenses. In tropical or subtropical regions with soil that supports their growth, plantation crops are usually planted.

Table 3. Area under Plantation (in hectares) Production (in MT) and Productivity of Plantation Crops in Nagaland.

Crops	2019-20			2020-21			2021-22		
	Area	Production	Productivity	Area	Production	Productivity	Area	Production	Productivity
Tea	41	49	1.19	42	53	1.26	42	54	1.28
Coffee	78.75	15	--	--	--	--	785.7	17.47	--
Areca nut	216	1196.6	5.53	220	1218.8	5.54	224	1226.8	5.4
Cashew nut	965	462	0.47	943	457.25	0.5	938	479.7	0.51
Coconut	1064	9041	8.5	1066	9345	8.76	1066	9357	8.77
Other	12	6	0.5	10	5	0.5	10	5	0.5
Total	2376	10769.6	4.53	2281	11097.05	4.86	3065.7	11139.97	3.63

Source: Directorate of Agriculture.

Data on the area under plantation, productivity, and production of various plantation crops in Nagaland for the years 2019-20, 2020-21, and 2021-22 are displayed in table 3. The area under tea cultivation remained relatively stable throughout the three years, ranging from 41 to 42 hectares. Production increased from 49 MT in 2019-20 to 54 MT in 2021-22. Productivity also showed a slight increase over the years, indicating improved efficiency in tea cultivation. Data for coffee production is missing for 2020-21. In 2021-22, there was a substantial increase in the area under coffee cultivation to 785.7 hectares, with a production of 17.47 MT. However, without data for 2020-21, it's challenging to assess the productivity trend accurately. The area under areca nut cultivation increased slightly over the years, from 216 hectares in 2019-20 to 224 hectares in 2021-22. Production also saw a slight increase from 1196.6 MT to 1226.8 MT during the same period. Productivity remained relatively stable around 5.4 to 5.53 MT per hectare. Both the area under cashew nut cultivation and production showed a slight decrease from 2019-20 to 2021-22. However, productivity increased from 0.47 MT per hectare to 0.51 MT per hectare over the same period. The area under coconut cultivation remained constant at around 1064 to 1066 hectares over the years. Production showed a slight increase from 9041 MT in 2019-20 to 9357 MT in 2021-22. Productivity also increased slightly, indicating improved efficiency in coconut cultivation. The area and production for other plantation crops remained relatively low and stable over the years. Overall, the data indicates mixed trends in the cultivation, production, and productivity of various plantation crops in Nagaland. While some crops like tea and coconut show consistent or increasing productivity, others like cashew nut exhibit fluctuations. Factors such as weather conditions, agricultural practices, market demand, and government policies may influence these trends. Continued monitoring and targeted interventions may be necessary to address challenges and enhance the productivity and sustainability of plantation crop cultivation in

Nagaland.

Table 4. Total Area Cover and Production (Year 2020-21) in Nagaland.

SI. No	Item	Total Area Covered (ha)	Production (in tons)
1	Coffee Plantation	8996.5	56.08
2	Rubber Plantation	19132.5	157115.35
3	Areca Nut	1147	6056.16

Table 4 provides data on the total area covered and production of various agricultural items in Nagaland for the year 2020-21. The total area covered under coffee plantations in Nagaland during 2020-21 was 8996.5 hectares. The production of coffee during the same period amounted to 56.08 tons. This suggests a relatively smaller area under coffee cultivation compared to other crops, with moderate production levels. Nagaland allocated a significantly larger area for rubber plantation, covering 19132.5 hectares in 2020-21. The production of rubber during this period was substantially higher at 157115.35 tons. Rubber cultivation appears to be a major agricultural activity in Nagaland, with a substantial contribution to both area coverage and production. Areca nut cultivation covered 1147 hectares of land in Nagaland during 2020-21. The production of areca nuts for the same period amounted to 6056.16 tons. While the area under areca nut cultivation is relatively smaller compared to rubber, the production levels seem significant, indicating potentially high productivity per hectare. The data highlights the diversity in agricultural activities in Nagaland, with a focus on crops like coffee, rubber, and areca nut. Rubber plantation emerges as a major contributor to both area coverage and production, indicating its economic significance in the region. Areca nut cultivation, despite covering a smaller area, shows notable production levels, suggesting efficient cultivation practices or favorable growing conditions. These insights can inform agricultural policies, resource allocation, and strategic planning to support the growth and sustainability of various agricultural sectors in Nagaland.

Floriculture:

The area of horticulture known as "floriculture" is dedicated to the artistic and aesthetic cultivation of flowers and other plants. It includes the growing, promoting, and retailing of floral arrangements, potted plants, and cut flowers. Because it involves the deliberate selection, breeding, and arranging of flowers to make visually appealing displays, floristry is both a commercial and artistic endeavor.

Table 5. Areas, Production and Productivity of Floriculture Crops in Nagaland.

Crops	2020-21			2021-22		
	Area	Production	Productivity	Area	Production	Productivity
Alstroemeria	79250	1087702	13.72	70650	989610	14
Anthurium	46000	1185000	25.17	56200	1285000	22.86
Carnation	2000	32145	16.07	20000	26000	1.3
Gerbera	19250	410000	41	19250	410000	41
Gladiolus	10000	210000	21	10000	210000	21
Lilium	70813	893907	12.62	71869	894397	12.44

Crops	2020-21			2021-22		
	Area	Production	Productivity	Area	Production	Productivity
Orchid	5500	200000	36.36	5500	200000	36.36
Rose	41600	1236181	29.71	41400	1230100	29.71
Total	274413	5254935	19.15	294869	5245107	17.79

Source: Directorate of Horticulture.

Table 5 presents data on the areas, production, and productivity of various floriculture crops in Nagaland for the years 2020-21 and 2021-22. In 2020-21, the area under Alstroemeria cultivation was 79,250 square meters, with a production of 1,087,702 units. Productivity for Alstroemeria was 13.72 units per square meter. In 2021-22, there was a slight decrease in both area and production, with a corresponding increase in productivity to 14 units per square meter. Anthurium cultivation covered 46,000 square meters in 2020-21, producing 1,185,000 units. Productivity for Anthurium was 25.17 units per square meter. The area and production increased in 2021-22, while productivity decreased slightly to 22.86 units per square meter. Carnation cultivation covered 2,000 square meters in 2020-21, producing 32,145 units. Productivity for Carnation was 16.07 units per square meter. In 2021-22, both area and production increased significantly, but productivity decreased sharply to 1.3 units per square meter. Gerbera cultivation covered 19,250 square meters in both years, producing 410,000 units. Productivity for Gerbera remained constant at 41 units per square meter. Gladiolus cultivation covered 10,000 square meters in both years, producing 210,000 units. Productivity for Gladiolus remained constant at 21 units per square meter. Lilium cultivation covered 70,813 square meters in 2020-21, producing 893,907 units. Productivity for Lilium was 12.62 units per square meter. In 2021-22, although the area increased slightly, production remained almost the same, resulting in a slight decrease in productivity. Orchid cultivation covered 5,500 square meters in both years, producing 200,000 units. Productivity for Orchid remained constant at 36.36 units per square meter. Rose cultivation covered 41,600 square meters in 2020-21, producing 1,236,181 units. Productivity for Rose was 29.71 units per square meter. In 2021-22, both area and production decreased slightly, while productivity remained constant. The data reveals fluctuations in the area, production, and productivity of different floriculture crops in Nagaland over the two years. While some crops like Gerbera and Gladiolus maintained consistent productivity levels, others such as Carnation exhibited significant changes. Factors such as changes in cultivation practices, weather conditions, market demand, and availability of resources may have influenced these fluctuations. Understanding these trends can help stakeholders make informed decisions to enhance productivity and sustainability in the floriculture sector in Nagaland.

IX. Opportunities in Horticulture and Floriculture Farming in Nagaland

Horticulture and floriculture farming in Nagaland offers several opportunities that can contribute to the economic development and livelihood improvement of farmers in the state. These opportunities arise from the region's climate, natural resources, and growing market demand for horticultural and floricultural products.

i. *Climate Suitability:*

Nagaland's climate, characterized by a temperate to subtropical climate in many regions, is suitable for growing a wide variety of horticultural crops, including fruits, vegetables, and flowers.

ii. *Diverse Crop Options:*

The state offers opportunities for diversification in horticultural and floricultural crops. Farmers can explore the cultivation of high-value crops such as strawberries, passion fruits, orchids, and exotic flowers.

iii. *High-Value Markets:*

There is a growing demand for high-quality horticultural and floricultural products both within Nagaland and in neighboring states and regions. Quality produce can command premium prices in the market.

iv. *Export Potential:*

With improvements in infrastructure and quality control, there is potential to tap into export markets for certain horticultural and floricultural products, particularly exotic fruits and flowers.

v. *Value Addition:*

Value-addition activities such as processing fruits into jams, juices, and dried products can enhance the income of farmers and add value to their produce.

vi. *Tourism and Ornamental Plants:*

The tourism industry in Nagaland creates a market for ornamental plants, landscaping, and flower arrangements in hotels, resorts, and event venues.

vii. *Sustainable Practices:*

There is growing interest in sustainable and organic farming practices, presenting opportunities for farmers to adopt eco-friendly cultivation methods that align with market trends.

viii. *Government Support:*

The government of Nagaland and central agencies offer various schemes and incentives to promote horticulture and floriculture, providing financial and technical support to farmers.

ix. *Training and Capacity Building:*

Access to training programs, workshops, and capacity-building initiatives can equip farmers with the skills and knowledge needed to improve crop management and post-harvest handling.

x. *Women's Participation:*

Women can play a significant role in horticulture and floriculture farming, and initiatives to empower and involve women in these sectors can be beneficial.

xi. *Entrepreneurship Opportunities:*

The establishment of nurseries, greenhouses, and flower shops can create entrepreneurship opportunities for individuals interested in horticulture and floriculture-related businesses.

xii. *Community Farming:*

Community-based farming and cooperatives can help farmers access resources, share knowledge, and collect-

-ively market their produce, increasing their bargaining power.

xiii. *Market Linkages:*

Developing strong market linkages and partnerships with agribusinesses, wholesalers, and retailers can ensure a steady and profitable market for horticultural and floricultural products.

xiv. *Awareness and Education:*

Awareness campaigns and educational programs can inform farmers about modern farming practices, sustainable techniques, and market trends, enabling them to make informed decisions.

xv. *Research and Development:*

Ongoing research and development initiatives can lead to the introduction of new crop varieties and technologies that improve yield, quality, and resistance to pests and diseases.

To capitalize on these opportunities, it's essential for farmers in Nagaland to engage in skill development, adopt sustainable practices, access financial resources, and establish effective market linkages. Collaboration with government agencies, agricultural universities, and private-sector partners can also help unlock the full potential of horticulture and floriculture farming in the state.

X. Schemes and Programmes Available for Horticulture and Floriculture Farming in Nagaland

i. *Mission for Integrated Development of Horticulture (MIDH):*

A programme funded by the government, MIDH seeks to improve the horticulture industry holistically. It encourages the growth of floriculture and other horticultural-related industries.

ii. *National Horticulture Board (NHB) Schemes:*

NHB runs a number of programmes to advance floriculture and other horticulture. These programmes might provide funding, market support, and initiatives for developing capability.

iii. *Rashtriya Krishi Vikas Yojana (RKVY):*

RKVY backs programmes aimed at advancing agriculture's general growth as well as those of related industries like floriculture and horticulture. It offers financial support for market connections, technological adoption, and infrastructure.

iv. *Nagaland State Horticulture Mission (NSHM):*

The goal of state-specific programmes like NSHM is to advance floriculture and horticulture. Projects pertaining to market connections, training, and crop diversification are frequently carried out by these missions.

v. *National Agriculture Development Programme (NADP):*

NADP supports various components of agriculture, including horticulture and floriculture. It focuses on enhancing productivity, promoting sustainable practices, and improving market access.

vi. *Pradhan Mantri Krishi Sinchayee Yojana (PMKSY):*

Horticultural crops may benefit from PMKSY's recommendations for increasing agricultural water use efficiency. High-quality irrigation is essential to floriculture and horticulture development.

vii. *National Mission on Medicinal Plants (NMMP):*

The National Therapeutic Plants Board (NMPB) oversees NMMP, which promotes the growth of aromatic and therapeutic plants. A few of these plants might be considered horticultural.

viii. *National Bamboo Mission (NBM):*

Although not specifically related to horticulture, NBM encourages bamboo cultivation, which may be pertinent to horticultural agroforestry techniques.

ix. *National Mission on Saffron (NMS):*

If applicable, NMS supports the cultivation of saffron, which falls under horticulture. However, its applicability to Nagaland needs verification.

x. *Agricultural Technology Management Agency (ATMA):*

ATMA focuses on technology dissemination and extension services. It can play a role in providing knowledge and training related to horticulture and floriculture.

XI. Challenges and Constraints Faced by Horticulture and Floriculture Farmers in the State

(a) *Climate Variability:*

i. *Erratic Rainfall:*

Irregular rainfall patterns and seasonal variations can affect crop growth and yield.

ii. *Pest and Disease Pressure:*

Changing weather conditions can lead to increased pest and disease outbreaks.

(b) *Landholding Size:*

i. *Small Landholdings:*

Many farmers in Nagaland have small landholdings, which limit their capacity to scale up production.

(c) *Traditional Farming Practices:*

i. *Shifting Cultivation (Jhum):*

The practice of shifting cultivation, known as jhum, is still prevalent in some areas, which can be detrimental to soil health and long-term sustainability.

(d) *Infrastructure and Access:*

i. *Lack of Transportation:*

Poor road connectivity to markets can lead to difficulties in accessing markets and timely transportation of p-

-roduce.

ii. *Storage and Post-Harvest Facilities:*

Inadequate storage and post-harvest facilities can result in significant post-harvest losses.

(e) *Market Access and Marketing Challenges:*

i. *Limited Market Linkages:*

Farmers may struggle to access distant markets or reach out to potential buyers.

ii. *Price Volatility:*

Fluctuations in prices for horticultural and floricultural products can affect farmers' income.

(f) *Access to Credit and Finance:*

i. *Limited Access to Credit:*

Many farmers have limited access to credit and financial resources for investment in farming.

(g) *Lack of Technical Knowledge:*

i. *Limited Awareness:*

Some farmers may lack awareness of modern horticultural and floricultural practices and technologies.

ii. *Training and Extension Services:*

Access to agricultural extension services and training programs may be limited in remote areas.

(h) *Pest and Disease Management:*

(i) *Chemical Dependency:*

Overreliance on chemical pesticides and herbicides can have adverse environmental and health effects.

(i) *Resource Management:*

i. *Water Scarcity:*

In some areas, water scarcity can be a significant constraint for irrigation.

ii. *Soil Health:*

Maintaining soil fertility and health can be challenging in the context of shifting cultivation practices.

(j) *Policy and Regulatory Issues:*

i. *Lack of Supportive Policies:*

The absence of clear policies and incentives to promote horticulture and floriculture can hinder sector growth.

(k) *Post-Harvest Handling and Value Addition:*

i. *Processing and Value Addition:*

Limited processing and value addition activities can affect the value chain and income potential.

(l) *Lack of Infrastructure:*

(i) *Cold Storage Facilities:*

Inadequate cold storage facilities for perishable horticultural produce can result in spoilage.

It's important to recognize that while these challenges exist, they can also present opportunities for improvement and growth in the horticulture and floriculture sectors in Nagaland. Addressing these challenges may involve a combination of policy interventions, investment in infrastructure, training and capacity building, and the adoption of sustainable farming practices. Additionally, local solutions tailored to the specific needs of farmers in Nagaland are essential for long-term success in these sectors.

XII. Policy Measures and Interventions for Further Enhancing the Horticulture and Floriculture Sectors in Nagaland

A comprehensive set of policy initiatives and interventions is needed to improve Nagaland's horticulture and floriculture sectors. In addition to fostering sustainable growth in these industries, they ought to target the difficulties and limitations that farmers face.

i. *Promote Sustainable Farming Practices:*

Encourage the use of sustainable and organic agricultural methods to improve soil health and reduce harmful effects on the environment. Provide resource efficiency, integrated pest management (IPM), and sustainable farming practices training and extension services.

ii. *Infrastructure Development:*

Investing in rural infrastructure, such as transportation, roads, and storage facilities, can reduce post-harvest losses and improve market accessibility. Establish cold storage and processing facilities to extend the shelf life of horticultural and floricultural products.

iii. *Access to Credit and Finance:*

Make it easier for farmers to obtain financing at reasonable rates and financial resources so they may make investments in inputs, machinery, and infrastructure. Encourage the formation of self-help organizations and cooperative societies to provide group access to financial services.

iv. *Market Linkages:*

Establish and fortify market ties for floriculture and horticulture goods, establishing connections between farmers and agribusinesses, merchants, and exporters. Establish market information systems so that farmers can obtain up-to-date pricing information.

v. *Value Addition and Processing:*

Encourage the addition of value to horticulture goods by processing and packaging them to make jams, juices, and dried fruits. Promote the establishment of food processing facilities and provide training on techniques for adding value.

vi. *Research and Development:*

Invest in research and development to produce high-yielding, disease-resistant agricultural varieties that suit the environment of Nagaland. Encourage more studies on managing pests and diseases that are unique to the region's horticultural and floricultural crops.

vii. *Skill Development and Training:*

Organise frequent workshops and training sessions for farmers to improve their abilities in marketing, post-harvest care, and crop management. To facilitate hands-on learning, establish demonstration farms and agricultural training centers.

viii. *Policy Support:*

Create and put into effect clear, encouraging policies for the floriculture and horticultural industries, including financial aid and incentives. Simplify regulations and lower administrative barriers for companies and farmers.

ix. *Water Management:*

Promote the use of efficient water management strategies, such as drip and sprinkler systems. Adopt conservation measures to solve the problem of water scarcity.

x. *Extension Services:*

Boost agricultural extension services by hiring more extension officers and making sure they can reach outlying areas. Offer consultation services about crop choice, planting methods, and disease management.

xi. *Market Diversification:*

Investigate export prospects and expand your market choices beyond local and regional markets. Encourage participation in trade shows and exhibits to highlight the horticultural and floricultural products of Nagaland.

xii. *Awareness and Education:*

Run educational initiatives and awareness campaigns to educate farmers about the advantages of floriculture and horticulture. Increase public understanding of the value of environmentally friendly and sustainable practices.

xiii. *Promote Entrepreneurship:*

Promote women-led, small-scale businesses to foster entrepreneurship in the industry. Provide rewards for establishing greenhouses and nurseries in order to encourage floriculture.

xiv. *Collaboration and Partnerships:*

Encourage cooperation between governmental organizations, academic institutions, non-profits, and businesses to pool resources and knowledge. Form public-private alliances to expand market access and infrastructure.

xv. *Monitoring and Evaluation:*

Establish a robust system for tracking and assessing policy initiatives to ascertain their effectiveness.

XIII. CONCLUSION

A study on horticulture and floriculture farming in Nagaland assessed government schemes' impact, challenges, and proposed policy measures for development. The National Horticulture Mission and Rashtriya Krishi Vikas Yojana have boosted crop diversity and production. They improved farmers' income and livelihoods, yet challenges persist, such as climate variability and limited infrastructure. Policy recommendations include sustainable practices, infrastructure, credit access, market linkages, research, and capacity building. Community cooperation is crucial. Despite challenges, Nagaland's horticulture and floriculture sectors show promise for economic growth. Tailored policies and community involvement are vital. The study targets policymakers, agricultural authorities, researchers, and practitioners to support sustainable practices and prosperity in Nagaland's farming communities. It aims to guide efforts for continued sector growth and success.

REFERENCES

[1] Alem, R., and Changkija, S. (2019). Technology Adoption in Floriculture: A Review of Practices in Nagaland. International Journal of Agricultural Technology, 15(3), 487-500.
[2] Bhattarai, R., and Basu, S. (2019). Government policies and promotion of floriculture: A study in selected Indian states. International Journal of Horticulture, 9(6), 1-6.
[3] Directorate of Floricultural Research. (2018). National Horticulture Mission. Retrieved from http://www.dfr.org.in/national-horticultu--re-mission.php
[4] Dutta, S., and Singh, A. (2020). Government interventions for horticulture development in India: An evaluation. Journal of Agricultural and Food Policy, 4(2), 127-145.
[5] Eswaran, R., and Mishra, S. (2019). Government interventions and their impact on floriculture and horticulture exports: A study of India. Journal of Agribusiness in Developing and Emerging Economies, 9(3), 268-283.
[6] Goyal, R., and Verma, A. (2018). Role of Technology in Transforming Indian Floriculture: A Literature Synthesis. International Journal of Advanced Research in Technology and Management, 6(1), 78-92.
[7] Kikon, R., and Jami, H. (2017). Impact of Government Initiatives on Horticulture Farming in Nagaland: A Case Study Approach. Journal of Sustainable Agriculture, 29(4), 512-527.
[8] Kumar, A., and Kulkarni, V. N. (2021). Impact of government schemes on floriculture and horticulture development: A case study of Maharashtra, India. International Journal of Agricultural Sciences, 13(3), 772-783.
[9] Kumar, P., and Gupta, R. (2020). Sustainable Practices in Horticulture Farming: A Review of Indian Initiatives. Journal of Sustainable Agriculture, 32(1), 45-62.
[10] Longchar, J., and Singh, T.B. (2019). Government Schemes and Farmers' Participation in Horticulture Development: A Case Study of Nagaland. Journal of Agricultural Extension and Rural Development, 11(2), 28-35.
[11] Ministry of Agriculture and Farmers Welfare. (2016). National Mission for Sustainable Agriculture. Retrieved from http://nmsa.dac.gov.in/
[12] Ministry of Agriculture and Farmers Welfare. (2019). Mission for Integrated Development of Horticulture. Retrieved from http://midh.gov.in/
[13] Ministry of Agriculture and Farmers Welfare. (2020). Rashtriya Krishi Vikas Yojana. Retrieved from http://rkvy.nic.in/
[14] Ministry of Commerce and Industry. (2021). Agricultural and Processed Food Products Export Development Authority. Retrieved from http://apeda.gov.in/
[15] Panda, R.K., and Garg, H. (2019). Government schemes for horticulture development: A study in Odisha, India. International Journal of Agricultural Sciences, 11(4), 990-995.
[16] Paudel, R., and Shrestha, R. (2021). Role of government policies in promoting sustainable floriculture and horticulture: Evidence from India. Journal of Sustainable Agriculture, 45(2), 158-174.
[17] Prasad, N., and Singh, M. (2017). Government Schemes and Horticulture Development in India: A Critical Review. Indian Journal of Agricultural Economics, 72(2), 265-278.
[18] Rathore, S., and Meena, M.L. (2018). Impact of government schemes on floriculture development in India. International Journal of Current Microbiology and Applied Sciences, 7(4), 3032-3037.
[19] Sema, K., and Ao, N. (2018). Horticulture and Floriculture Development in Nagaland: An Overview. International Journal of Agricul--ture and Biology, 20(5), 1103-1110.
[20] Sharma, M., and Yadav, V. (2020). Analysis of government schemes for small-scale farmers in floriculture and horticulture: A case study of India. International Journal of Agricultural Management and Development, 10(4), 463-476.
[21] Singh, A., and Sharma, R. (2018). Horticulture Development in India: Challenges and Opportunities. International Journal of Agriculture and Biology, 20(6), 1429-1436.
[22] Singh, S., and Gautam, P. (2018). Analysis of government schemes promoting organic horticulture: A study in Himachal Pradesh, India. Indian Journal of Agricultural Marketing, 32(3), 214-224.
[23] Stellin, D. (2019). Comparative analysis of government schemes supporting floriculture and horticulture: Lessons from selected countries. International Journal of Agricultural Management and Development, 9(2), 223-237.
[24] Tewari, L. (2018). Performance analysis of National Horticulture Mission (NHM) in India. International Journal of Advanced Research, 6(7), 386-391.
[25] Verma, S., and Reddy, C.S. (2019). Floriculture Industry in India: Trends and Prospects. Journal of Agricultural Science and Technology, 21(4), 889-902.
[26] Yimchunger, N., and Jamir, I. (2020). Sustainable Practices in Floriculture Farming: Lessons from Nagaland. Sustainable Agriculture Reviews, 42, 237-254.

AUTHOR'S PROFILE

First Author

Dr. J. Suresh Kumar, holds a Ph.D. in Economics and Agricultural Economics from Periyar University and bachelor's and master's degrees from Bharathiar University. He has received prestigious accolades such as the Dr. Sarvepalli Radhakrishnan Global Educator Award (2022), Academic Excellence Award 2024 and the Baba Saheb Dr. B.R. Ambedkar Excellence Award (2023). Currently serving as an Associate Professor at St. Joseph University, Nagaland, he has contributed significantly to academia with numerous publications in esteemed international journals and edited book chapters. His scholarly activities also include 36 paper presentations at national and international conferences. His commi--tment to education is evident through his role as the State President of Nagaland for the Education Research and Development Association (ERDA). Actively engaging in professional organizations and editorial boards, He enriches the academic landscape with his expertise and dedication.

Second Author

Ms. Wanben C Konyak, obtained her B.A., (Hons) in Economics degree from Eastern Christian Colleges in Dimapur in 2021 and is presently pursuing her M.A. in Economics at St. Joseph University. With a passion for research and writing, she specializes in adopting a multidisciplinary approach to her work. Her focus lies in delving into the intricacies of Nagaland's agricultural sector, where she seeks to contribute valuable insights and analyses. Her academic journey reflects a dedication to understanding and addressing the challenges faced by the region's agricultural landscape. Through her stu--dies and research endeavours, she aims to make meaningful contributions to the field of economics, particularly in the co--ntext of sustainable development and agricultural policy in Nagaland, India. email id: wanbenckonyak@gmail.com