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Review Article

# GRAPEVINE (*Vitis vinifera* L.) PRODUCTION IN NIGERIA-ACHIEVEMENTS, CHALLENGES AND FUTURE PROSPECTS: A REVIEW

*[1]Musa M.Y., [1]Magaji Y.T. and [2]Manza E.A.G.

[1]Department of Crop Science, College of Agriculture and Environmental Sciences, Kaduna State University, Kafanchan Campus, Nigeria
[2]Department of Agricultural Economics, College of Agriculture and Environmental Sciences, Kaduna State University, Kafanchan Campus, Nigeria

*Corresponding Author Email Address: musamonday025@gmail.com

**ABSTRACT**
This paper is a review of grapevine (Vitis vinifera L.) production in Nigeria, achievements, challenges, and prospects. Grapevine is a globally significant horticultural crop, primarily valued for its fruits, which are consumed fresh, dried as raisins, or processed into juice, jam, and wine. Table grapes are among the most traded fruit types in the world. Grapevine production in Nigeria, though currently small-scale, holds significant promise for agricultural diversification and economic growth. The review highlights that while the country possesses suitable agroecological zones and a growing domestic market, several critical challenges impede widespread, high-quality production. These include climatic constraints, rampant pests and diseases, limited access to improved planting materials, and inadequate research and extension support. However, opportunities abound, particularly in exploiting rising domestic demand, pursuing value addition, adopting climate-smart agricultural practices, and investing in focused research and development. Kaduna State is Nigeria's grape farming hub, with the Kudan Local Government Area accounting for 85% of the country's grape production, largely due to its favorable climatic and soil conditions, with farms yielding 25 t/ha twice a year. To mitigate climatic challenges and maximize the land's inherent potential for grape production, site selection is paramount. By addressing the identified challenges through concerted efforts from researchers, policymakers, extension agents, and farmers, Nigeria can cultivate a more robust and sustainable grapevine industry, contributing to food security, income generation, and economic development.

**Keywords**: Grapevine, Production, Achievement, and Yield

## INTRODUCTION

Grapevine (*Vitis vinifera* L.) is botanically classified as berries within the *Vitis* genus, primarily categorized by use into table grapes (fresh consumption), wine grapes (fermentation), and raisin grapes. They are generally divided into *Vitis vinifera* (European, thin skin) and *Vitis labrusca* (American, thick "slip-skin") species, available in red, green, and black varieties (Anon. 2026). According to a report by Thisen (2020), grapevine is a globally significant horticultural crop, primarily valued for its fruits, which are consumed fresh, dried as raisins, or processed into juice, jam, and wine. Grapevine cultivation is one of the oldest and most economically significant agricultural activities globally, with origins dating back thousands of years. Novello and De Palma (2021) reported that the versatility of grapes, ranging from fresh consumption and dried fruit production to juice and, most notably, wine manufacturing, underscores their widespread importance across diverse cultures and economies. Similarly, the FAOSTAT (2025) report revealed that global grape production has steadily increased over the past decade, driven by growing consumer demand and the expansion of agricultural land dedicated to viticulture. This enduring prominence necessitates a deep understanding of effective cultivation and management practices to ensure sustainable production, enhanced fruit quality, and economic viability for grape growers worldwide. In 2023, world production of grapes was 72.5 million tonnes, led by China with 19% of the total, with Italy and France as major secondary producers (FAOSTAT 2025)

While traditionally associated with temperate regions, tropical viticulture has seen increasing interest, particularly in African countries. Nigeria, with its diverse agro-ecological zones, presents a unique context for grapevine cultivation. However, grape production in Nigeria is less prominent than in other agricultural sectors; its potential for economic diversification and food security warrants closer examination (Adekunle & Olasantan, 2012). A complex interplay of environmental factors and human interventions profoundly influences the success of grapevine cultivation. Palliotti et al. (2020) argued that climatic conditions, including temperature, rainfall patterns, and sunlight exposure, are critical determinants of vine growth, berry development, and ultimately, grape quality. Grapevine sample bundles are presented in Figures 1-3, while the top grapevine growing countries in the World and grapevine production distribution in Nigeria are presented in Tables 1 and 2

**Photo credit**: Rufab grape vine enterprise
**Figure 1** Grape vine bunch (Red Globe)

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The Red Globe grape, discovered in the 1950s by the University of California, arrived in Italy in the 1980s. It is easily found in supermarkets and produce departments thanks to its remarkable resistance to adverse temperatures and long transport. Its distinctive characteristics are the large, round, and few-seeded berries, which offer an excellent balance between taste and practicality. Furthermore, Red Globe is highly digestible, boasts diuretic and laxative properties, and lends itself to various culinary preparations, gaining increasingly widespread appreciation among consumers and chefs. Novello and C. Srl (2025)

This table grape variety, developed by researchers David Ramming and Ron Tarailo at the University of Fresno in California, is particularly valued for its high productive yield and delicate fruity aroma. Its bunches are medium-large in size, with a characteristic pyramidal shape, and the oval, seedless berries are ideal for easy and practical consumption. Its bunches are medium-large in size, with a characteristic pyramidal shape, and the oval, seedless berries are ideal for easy and practical consumption. In addition to guaranteeing good sweetness and a crunchy texture, this variety stands out for its excellent storage stability, both on the vine and during transport, making it highly competitive in the table grape market. Finally, the late-ripening period extends the harvesting and marketing season, offering producers an additional opportunity to satisfy consumer demand when other grapes are already off the market. Novello and C. Srl (2025)

**Photo credit:** Rufab grape vine enterprise
**Figure 2** Grape vine bunch (crimson seedless)

**Photo credit**: Rufab grape vine enterprise
**Figure 3** Grape vine bunch (Sweet sapphire)

Sweet Sapphire grapes, unlike traditional round or oval grapes, have fruit that is instantly recognizable for its elongated, tubular shape and dimpled ends, resembling small dark cylinders. The Sweet Sapphire variety is a product of International Fruit Genetics (IFG), based in Bakersfield, California. Horticulturalist Dr. David Cain primarily developed them. Each grape has a distinct, elongated, uniform, and cylindrical shape, about 3 to 4 centimeters in length and 1 to 2 centimeters in diameter, and showcases a characteristic dimple on one end. The grape's skin is smooth, semi-thick, glossy, and taut. The skin is also dark purple, often appearing black, and is covered in a medium-to-heavy blue-grey bloom. This bloom is natural and edible, but can be easily wiped from the surface if preferred. Underneath the skin, the translucent purple-green flesh is crisp, seedless, and aqueous with a snap-like quality. Sweet Sapphire grapes are a type of black grape. They are seedless, with a sweeter and stronger flavor than black grapes. Sweet Sapphire grapes last a while when stored correctly; keep them whole and unwashed in the crisper drawer of your refrigerator for 1 to 2 weeks. Tadhg Hylier Steven (2026)

**Table 1**. Top Grapevine Growing Countries in the World in 2025

| Rank | Country | Annual grape production in metric tons |
|---|---|---|
| 1 | Italy | 8,307,514 |
| 2 | France | 6,740,004 |
| 3 | United States | 6,206,228 |
| 4 | Spain | 5,676,985 |
| 5 | China | 5,212,090 |
| 6 | Turkey | 3,763,544 |
| 7 | Argentina | 2,519,678 |
| 8 | Iran | 2,297,414 |
| 9 | Chile | 2,122,775 |
| 10 | South Africa | 1,587,913 |

**Source:** World Atlas (2018)

**Table 2**. Grape Exports in Metric Tonnes in 2025

| S/N | Country | Export (MT) |
|---|---|---|
| | Peru | 647,967 |
| | Chile | 529,470 |
| | China | 483,373 |
| | Italy | 386,672 |
| | Netherlands | 346,128 |
| | South Africa | 318,126 |

**Source**: FAOSTAT (2025)

## GRAPEVINE PRODUCTION IN NIGERIA

### Major Growing Regions in Nigeria and Their Agro-Ecological Considerations

The major grapevine-growing regions in Nigeria are presented in Table 3. The nation, rich in agricultural potential, is increasingly exploring grapevine production as a viable, emerging sector. While not traditionally known for grape production, regions, particularly in the northern and central belts such as Kaduna, Kano, Bauchi, Sokoto, and Benue, are showing promising conditions for viticulture. Oikeh et al. (2011) and Eifediyi and Dukku (2009) postulated that the growing interest is driven by both the demand

for fresh table grapes and the potential for a local winemaking industry. These regions often experience distinct wet and dry seasons, which can influence grapevine phenology. For instance, the dry season can be crucial for fruit development and ripening due to reduced humidity and disease pressure, while the wet season necessitates careful disease management. Temperature fluctuations, rainfall patterns, and soil types are critical agroecological factors that determine a region's suitability for viticulture. Ideal conditions for grape cultivation generally involve well-drained loamy soils, adequate sunlight, and temperatures conducive to vine growth and fruit maturation (Adekunle & Olasantan, 2012). Kaduna State is Nigeria's grape farming hub, with the Kudan Local Government Area accounting for 85% of the country's grape production, largely due to its favorable climatic and soil conditions, with farms yielding 25 t/ha twice a year (NGRAPPMAN 2025).

**Cultivation Practices and Management Techniques**

Grapevine cultivation practices in Nigeria vary widely depending on the scale of operation and growers' knowledge. Common practices include site selection, land preparation, planting, trellising, pruning, irrigation, fertilization, and pest and disease management. Trellising systems, such as T-bar and pergola systems, are often employed to support vine growth and improve air circulation (Adekunle & Olasantan, 2012). Pruning is a critical practice for canopy management and yield regulation, with growers often adapting techniques from temperate viticulture to suit the unique growth patterns in tropical environments (Eifediyi & Dukku, 2009). Irrigation is essential, especially during dry spells, to ensure adequate moisture for vine development and fruit swelling. Nutrient management, based on soil analysis, is also crucial for optimal growth and productivity.

However, many smallholder farmers lack access to modern equipment, inputs, and knowledge of best agronomic practices, leading to suboptimal yields and quality.

Vaudour et al. (2021) asserted that site selection is arguably the most critical decision in viticulture, as it dictates the fundamental environmental conditions under which the grapevines will grow and influences the economic viability of the vineyard for decades. According to the researchers, the "terroir," a French term encapsulating the unique combination of climate, soil, topography, and human practices, profoundly shapes grape characteristics and potential quality. For emerging viticulture regions, such as those being considered in Nigeria, careful site selection is paramount for mitigating climatic challenges and maximizing the land's inherent potential. Key factors in site selection include:

**Climate**: Optimal climate for viticulture involves specific temperature regimes during the growing season, adequate sunlight exposure, and suitable rainfall patterns. Bonser et al. (2022) reported this as the primary determinant. In addition, Esnault et al. (2024) claimed that regions prone to late spring frosts, excessive heat during ripening, or prolonged periods of high humidity and rainfall (which favor fungal diseases) are generally less ideal without significant mitigation strategies. In Nigeria, where tropical climates prevail, identifying microclimates at higher altitudes or those benefiting from consistent breezes to reduce humidity might be crucial. Furthermore, Njoku et al. (2017) evaluated climatic parameters, including rainfall, temperature, and relative humidity, in Imo State, Nigeria. They found some areas with potential for viticulture despite the tropical conditions, underscoring the importance of localized studies. Such assessments are fundamental for identifying zones where grapevines can complete their phenological cycle without undue stress.

**Table 3**: Grapevine Production Distribution in Nigeria

| Rank | State | Key producing area (LGA) | Estimated share of national production | Notes |
|---|---|---|---|---|
| 1 | Kaduna | Kudan LGA | 85% | Dominate national output, ideal climate, and soil |
| 2 | Plateau | Jos North & Jos South | 5% | Cooler climate supports small-scale vineyard |
| 3 | Nasarawa | Keffi&Lafia | 3% | Emerging interest in Grape farming |
| 4 | Abuja | Bwari & Gwagwalada | 2% | Experimental farms and research plots |
| 5 | Kano | Dawakin Tofa | 2% | Limited but growing due to agricultural initiatives |
| 6 | Others | | 3% | Bauchi, Niger, and Zamfara, with scattered small farmers |

**Source**: NGRAPPMAN (2025)

**Topography**: Slope, aspect (direction the slope faces), and elevation influence sunlight interception, air drainage (reducing frost risk and fungal pressure), and soil erosion (Vaudour et al., 2021). A discovery by Sanga et al. (2015) revealed that gentle slopes with good air circulation are often preferred. Higher elevations can offer cooler temperatures, which are beneficial in tropical regions by extending the ripening period and promoting the accumulation of desirable aromatic compounds.

**Soil**: Several workers have reported that soil characteristics are critical in grapevine production and that pre-planting soil analysis is indispensable. For instance, Vaudour et al., (2021) wrote that ideal soils provide good drainage, moderate water-holding capacity, and sufficient depth for root penetration, while Njoku et al., (2017;) reported that soil pH, texture, and nutrient composition must be assessed, often requiring amendments to optimize conditions as poorly drained, heavy clay soils or excessively sandy soils can hinder growth.

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**Cultivars and Varieties Grown**

The range of grapevine cultivars grown in Nigeria is relatively limited compared to traditional grape-growing regions. Identifying grape varieties that can withstand Nigeria's unique tropical climate, characterized by high temperatures and varying humidity, is key. Research and practical experience suggest that certain varieties show greater resilience and productivity: Most cultivated varieties are table grapes, with common types including 'Cardinal', 'Black Prince', Muscat, Anab-e-shahi, Bangalore Blue, Concord, Ex-Horticulture Samaru, Ex-Zaria black, and local selections that have adapted to the Nigerian environment (Eifediyi & Dukku, 2009). There is a notable scarcity of wine grape varieties specifically bred or adapted for tropical conditions. Research efforts have been ongoing to identify and introduce new varieties that are tolerant to high temperatures, resistant to common diseases, and possess desirable fruit qualities (Oikeh et al., 2011). However, widespread access to improved and high-yielding varieties remains a significant constraint for many growers. Black Hamburg, Lady Finger, Red Globe, Muscat Alexandria, and Crimson Seedless: These are also being explored and cultivated with varying degrees of success.

**Yields and Economic Contribution**

Accurate data on grapevine yields in Nigeria are scarce, largely due to the fragmented nature of production and the lack of comprehensive national agricultural surveys focused on grapes. However, anecdotal evidence and limited studies suggest that yields are generally lower than those achieved in established grape-producing countries (Oikeh et al., 2011). The economic contribution of grapevine production to the Nigerian economy is currently modest, as it primarily serves local fresh fruit markets. There is limited processing into value-added products like wine or juice on a commercial scale. Despite this, grapevine cultivation offers potential for income generation, particularly for smallholder farmers, and contributes to local food systems. Increased investment and improved practices could significantly boost its economic impact (Eifediyi & Dukku, 2009). Grapevine processing and marketing in Nigeria are showing great promise, with the country having a suitable climate and soil conditions for grape cultivation, particularly in Plateau, Kaduna, and Nassarawa states. Kaduna State is positioning itself to become a major grape-farming hub, with the government providing support to farmers, including seedlings, mechanization, training, and other services to improve per-hectare yields. Yields of 25t/ha twice a year have been reported in the State.

**ACHIEVEMENTS**

Grapevine production in Nigeria is gaining momentum, especially in Kaduna State, which accounts for 85% of the country's grape production. The state government, led by Governor Uba Sani, is committed to making Kaduna a grape-farming hub by supporting farmers, including seedlings, mechanization, training, and other services to improve per-hectare yields (NGRAPPMAN 2025). This initiative is expected to position Nigeria among the top 10 grape-producing countries in Africa. Some notable achievements include. The Government aims to achieve this in four ways: first, through increased Production. Presently, Kaduna State's grape production is on the rise, with Kudan Local Government Area leading the way. In addition, through Government Support. The state government has increased its agricultural budget from N1.4 billion in 2023 to N74 billion in 2025, with a focus on supporting grape farmers and on job creation. Lastly, grape farming is expected to create jobs and stimulate economic growth in the state through partnerships. The state government has partnered with investors, including StarAgri West Africa Limited, to modernize warehouses and silos, and Sunagrow International Oil Ltd to build a soya bean oil refining plant.

**CHALLENGES TO GRAPEVINE PRODUCTION IN NIGERIA**

Grapevine production in Nigeria is an emerging, potentially lucrative agricultural endeavor, particularly in northern states like Kaduna, which accounts for roughly 85% of local production. However, the sector faces significant bottlenecks that limit large-scale, nationwide cultivation, as listed below.

**Climatic Constraints and Environmental Stress**

Grapes thrive in Mediterranean climates (mild, wet winters; warm, dry summers), while Nigeria's climate is mostly tropical to arid. This necessitates precise, sometimes difficult, management of weather-related stresses (Anon. 2026). Oikeh et al. (2011 opined that Nigeria's tropical climate often presents challenges such as high temperatures, which can lead to rapid sugar accumulation and reduced acidity in grapes, affecting quality. These researchers asserted that high ambient temperatures, particularly during the ripening period, can lead to premature sugar accumulation, reduced acidity, and altered flavor profiles, impacting grape quality. Erratic rainfall patterns, including prolonged dry spells and intense wet seasons, can cause water stress or promote fungal diseases, respectively (Adekunle & Olasantan, 2012), while high humidity and heavy rain can cause fungal diseases and affect fruit quality. The lack of distinct cold winters, typical of traditional viticulture regions, can also affect vine dormancy and bud break, impacting yield and quality in some varieties. Despite rain in some areas, managing irrigation during the dry season is crucial and challenging (Anon. 2026). Climate change projections suggest that these challenges may intensify, requiring adaptive strategies and the development of heat and drought-tolerant varieties.

**Pests and Diseases**

Pests and diseases pose a major threat to grapevine production in Nigeria, leading to significant yield losses and increased production costs. Warm, humid conditions encourage pests such as grape berry moths, leafhoppers, and nematodes (e.g., Meloidogyne spp., which are found in 100% of surveyed sites in some studies) (Anon. 2026). Common fungal diseases include downy mildew (*Plasmopara viticola*), powdery mildew (*Erysiphe necator*), and anthracnose (*Elsinoe ampelina*), all of which thrive in humid conditions prevalent during the rainy season (Eifediyi & Dukku, 2009). Insect pests such as fruit flies, mealybugs, and various defoliators also cause considerable damage. The lack of accurate diagnosis, limited access to effective and environmentally sound pest and disease management strategies, and inadequate knowledge among farmers often exacerbate these problems (Oikeh et al., 2011). Integrated Pest Management (IPM) approaches, combining cultural, biological, and chemical methods, are crucial for sustainable control.

**Access to Improved Planting Materials and Genetic Resources**

Nigerian grapevine farmers face difficulty sourcing high-yielding, climate-resistant grape varieties, leading to low yields. A significant challenge is the limited availability of high-quality, disease-free, and well-adapted grapevine planting materials (Anon. 2026). Many

farmers rely on propagating material from existing farms, which may carry diseases or be of unknown genetic origin, leading to poor performance and susceptibility to local stressors (Eifediyi & Dukku, 2009). There is a clear need for established nurseries that can provide certified, improved varieties suited to Nigeria's diverse agro-ecological zones. Investment in germplasm collection, evaluation, and breeding programs is essential for developing varieties with desirable traits, such as heat tolerance, disease resistance, and good fruit quality, for both table consumption and potential wine production (Oikeh et al., 2011).

**Inadequate Research, Extension, and Training**

The lack of sustained and focused agricultural research on viticulture in Nigeria is a major impediment. Grape cultivation is specialized, requiring specific knowledge on vineyard establishment, trellising, pruning, and harvesting, which is largely lacking among local farmers (Anon. 2025). There is limited funding for research into adaptable varieties, optimal cultural practices for tropical conditions, and effective pest and disease management strategies specific to the Nigerian context (Eifediyi & Dukku, 2009). Furthermore, existing research findings often fail to reach farmers effectively due to weak agricultural extension services. Farmers frequently lack access to up-to-date information, training on best practices, and technical support. Strengthening the linkage between research institutions and farming communities through robust extension programs is critical for disseminating knowledge and promoting the adoption of improved technologies (Oikeh et al., 2011).

**Marketing and Value Chain Constraints**

The grapevine value chain in Nigeria is relatively underdeveloped. Challenges include poor market access, inadequate storage facilities, and limited processing infrastructure. Grapes are highly perishable, and inadequate post-harvest handling and cold chain facilities lead to significant post-harvest losses (Adekunle & Olasantan, 2012). Market prices can also be volatile, impacting farmers' profitability. There is also a nascent but largely unexploited potential for value addition through processing into juice, jam, or wine. Developing robust market linkages, improving storage and transportation, and promoting local processing initiatives are essential to enhance the economic viability of grapevine production.

## PROSPECTS AND OPPORTUNITIES FOR GRAPEVINE PRODUCTION IN NIGERIA

**Growing Domestic Demand and Market Potential**

Despite the challenges, there is a significant and growing domestic demand for fresh grapes in Nigeria, driven by an expanding population and increasing awareness of the fruit's nutritional benefits. This growing demand presents a substantial market opportunity for local producers, reducing reliance on expensive imports (Oikeh et al., 2011). Furthermore, the burgeoning hospitality industry and a rising middle class are contributing to increased consumption of fresh produce, including grapes. This demand can serve as a strong incentive for expanding local production.

Grapevine production in Nigeria is showing great promise, with the country having a suitable climate and soil conditions for grape cultivation, particularly in Plateau, Kaduna, and Nassarawa states. The domestic market for grapes is on the rise, driven by growing awareness of the health benefits associated with grape consumption. Kaduna State is positioning itself to become a major grape-farming hub, with the government providing support to farmers, including seedlings, mechanization, training, and other services to improve per-hectare yields. In fact, Kudan Local Government Area in Kaduna State accounts for 85% of the country's grape production. The prospects are bright, with potential for export to international markets. However, challenges such as climate change, inadequate infrastructure, and limited access to credit for small-scale farmers need to be addressed.

**Potential for Value Addition and Processing**

Beyond fresh consumption, there is considerable untapped potential for value addition in the Nigerian grape industry. Processing grapes into products such as grape juice, jams, jellies, and even local wines could significantly increase their economic value and extend their shelf life (Eifediyi & Dukku, 2009). While the Nigerian wine industry is still in its infancy, with most wines being imported, local production could cater to a niche market and reduce foreign exchange expenditure. Investment in small-scale processing units, training in food processing, and market linkages for processed products could unlock new revenue streams for farmers.

**Climate-Smart Agriculture and Sustainable Practices**

The challenges posed by climate change necessitate adopting climate-smart agricultural practices in viticulture. This includes the development and promotion of drought-tolerant and heat-resistant grapevine varieties, efficient irrigation systems (e.g., drip irrigation), and improved soil management techniques to enhance water retention and nutrient cycling (Adekunle & Olasantan, 2012). Sustainable practices such as integrated pest management (IPM) and organic farming approaches can reduce reliance on chemical inputs, minimize environmental impact, and improve the long-term viability of grape farms. Research and extension efforts should prioritize disseminating these sustainable practices.

**Investment in Research and Development**

Increased investment in viticulture research and development (R&D) is crucial to unlock the full potential of grapevine production in Nigeria. R&D efforts should focus on breeding and selecting varieties adapted to local conditions, developing optimal pruning and training systems for tropical environments, and researching effective and sustainable pest and disease management strategies (Oikeh et al., 2011). Collaborative research initiatives between Nigerian institutions and international viticulture centers could accelerate knowledge transfer and technology adoption. Furthermore, strengthening agricultural universities and research institutes to conduct applied research on grapes is paramount.

**Policy Support and Enabling Environment**

Government policies play a pivotal role in fostering agricultural development. For grapevine production, policy support could include incentives for farmers to adopt improved practices, access to credit facilities, and investment in irrigation infrastructure (Eifediyi & Dukku, 2009). Establishing clear regulatory frameworks for grape cultivation, including quality standards for planting materials and fresh produce, could also enhance the industry's competitiveness. An enabling environment characterized by supportive policies, access to finance, and robust institutional support is essential for the sustainable growth of the Nigerian grape

industry. An example of this is Kaduna State, where the Governor (Uba Sani) has assured grape farmers that the state will continue to provide seedlings, mechanization, training, and support services to improve their per-hectare yields. He pledged that Kudan Local Government will not only be a grape-farming hub in the country, but Kaduna State Government will also support businesses around the value chain. According to reports, Kudan Local Government Area of Kaduna State accounts for 85% of the country's grape production, largely due to its favorable climatic and soil conditions (NGRAPPMAN 2025)

**Conclusion**

Grapevine production in Nigeria, though currently small-scale, holds significant promise for agricultural diversification and economic growth. The review highlights that, while the country possesses suitable agroecological zones and a growing domestic market, several critical challenges impede widespread, high-quality production. These include climatic constraints, rampant pests and diseases, limited access to improved planting materials, and inadequate research and extension support. However, opportunities abound, particularly in exploiting rising domestic demand, pursuing value addition, adopting climate-smart agricultural practices, and investing in focused research and development. By addressing the identified challenges through concerted efforts from researchers, policymakers, extension agents, and farmers, Nigeria can cultivate a more robust and sustainable grapevine industry, contributing to food security, income generation, and economic development.

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